Use of land and distribution of vegetation in the target area

8	zone	tion	1.6	0.3	3.9		1.2		19.0	3.0		C	0.0	18.2	29.2	9.0	3.3	2.5	0.1	0.7	0.0	16.3	100.0
Unit: ha	of the	y vegeta	ļ	150				- 11 - 12 - 13				-							-				1(
	Total area of the zone	covered by vegetation	176.64	37.26	429.04		135.94		2,105.03	337.30		12.56	0.00	2,018.52	3,247.29	66.43	362.56	273.31	12.63	78.78	0.00	1,812.13	11,105.42
			1.4	0.4	1.9		1.3		5.7	0.7		0.0	0.0	30.1	30.5	0.2	0.1	0.2	0.0	0.0	0.0	27.4	100.0
	Ξ		44.59	13.69	62.39		42.23		184.82	23.56		0.00	0.00	19.896	983.19	5.88	3.50	5.72	0.00	0.00	0.00	882.68	3,220.92
			3.9	0.6	0.5		1.2		14.6	5.2		0.0	0.0	21.4	40.6	0.5	4.9	1.6	0.0	0.0	0.0	4.9	100.0
	Q	And the second	131.17	20.50	16.38		41.69		494.10	174.28		1.31	00.0	721.12	1,369.20	17.32	164.44	55.34	0.00	1.13	0.00	165.07	3,373.05
			0.0	0.1	1.4		6.0		43.5	5.5		0.0	0.0	5.9	20.2	0.4	5.4	4.7	9.0	0.1	0.0	11.2	100.0
	D	Same Section Section 5	0.0	2.94	27.62		17.71		868.85	110.72		4.0	00.0	117.57	402.67	7.14	108.02	93.71	12.63	2.51	0.00	223.09	1,995.62
		and the second first	0.0	0.0	16.2		1.2		18.5	0.5		9.0	0.0	5.3	19.3	0.7	3.5	5.5	0.0	3.6	0.0	25.0	100.0
0	a B	west Comme	0.00	0.13	314.77		23.51		360.62	9.48		10.81	00:0	103.99	376.89	13.53	86.89	107.97	00.00	70.55	00:00	486.81	1,948.04
			0.2	0.0	1.4		1.9		34.6	3.4		0.0	0.0	18.9	20.3	4.0	3.1	1.9	0.0	0.8	0.0	9.6	100.0
	A		0.88	0.00	7.88		10.80		196.64	19.26		00.0	0.00	107.17	115.34	22.56	17.62	10.57	0.00	4.59	00:0	54.48	567,79
1) Mantasoa zone			Natural forest (approximate density above 50%)	Natural forest (approximate density less than 50%)	Pine afforestation	(approximate density above 40%)	Pine afforestation	(approximate density less than 40%)	Eucalyptus afforestation	Eucalyptus afforestation	(approximate density tess than 40%)	Other afforestations	Land preparation for afforestation	Shrubs		Wet land (flood plain)	Rice field	Fields	Exposed rocks	Housing area (houses, etc.)	Cemetery	Water surface	Total area of the zone
Ξ				2	3		4	- -	7	91			17 [7	8	ν 6	10 R	11 F	13 E	14 H	15 C	18 W	Total an

Use of land and distribution of vegetation in the target area (2) Tsiazompaniry zone

(1) Zone surface

Zone	Mantasoa Area (ha)	Percentage (%)	Tsiazompan Area (ha)	niry Percentage (%)	Total Area (ha)	Percentage
Forest	5,252	56	10,318	29	15,570	(%) 35
Ntural forest	214	2	3,747	11	3,961	33 9
Afforestation	3,020	32	5,401	15	8,42 <i>1</i>	19
Shrubs	2,018	22	1,154	3	3,172	7
Land preparation for	0	0	16		16	
afforestation		. * *.		18 72	10	
Grass lands	3,247	35	17,916	51	21,163	48
Wet land (flood plain)	66	1	1,314	4	1,380	3
Rice field	363	4	1,957	6	2,320	5
Fields	273	3	3,344	10	3,617	8
Exposed rocks	13		50		63	0
Housing areas (houses,	79	1	105		184	
etc.)					104	Mar de J.
Total	9,293	100	35,004	100	44,297	100

(2) Area through zoning

	ıntasoa	Tsiazompaniry	Total	
And the state of t	ea (ha) Percentage	Area (ha) Percentag		Percentage
	(%)	(%)		(%)
r Ar series e per la companya de la	514	4,304	2 4,818	\mathbb{H}^{n}
	1,461		0 1,461	3
	1,772		4 6,527	15
	3,208 34	and the second of the second o	1 21,058	47
Total	2,338 25		10,433	24
Total	9,293	35,004	0 44,297	100

(1) Mantasoa zone

Zone	Α	В	C	D	E	Unit: ha Total
Forest Ntural forest Afforestation Shrubs Land preparation for afforestation	342(67%)	823(56%)	1,145(65%)	1,601(50%)	1,340(58%)	5,251(56%)
	I(-%)	-(-%)	3(-%)	152(5%)	58(3%)	214(2%)
	234(46%)	719(49%)	1,025(58%)	728(23%)	313(13%)	3,019(32%)
	107(21%)	104(7%)	117(7%)	721(22%)	969(42%)	2,016(22%)
	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Grass lands Wet land (flood plain) Rice field Fields Exposed rocks Housing areas (houses, etc.)	115(22%)	377(26%)	403(23%)	1,369(43%)	983(42%)	3,247(35%)
	23(5%)	13(1%)	7(-%)	17(-%)	6(-%)	66(1%)
	18(3%)	69(5%)	108(6%)	165(5%)	3(-%)	363(4%)
	11(2%)	108(7%)	94(5%)	55(2%)	6(-%)	274(3%)
	0(0%)	0(0%)	13(1%)	0(0%)	0(0%)	13(-%)
	5(1%)	71(5%)	2(-%)	1(-%)	0(0%)	79(1%)
Total Note: ()% indicate the	514(100%) e percentage.	1,461(100%) Water surf	1,772(100%) ace is exclude		2,338(100%)	9,293(100%)

(2) Tsiazompaniry zone

Zone	A	C	D	Е	Unit: ha Total
Forest	925(21%)	1,670(35%)	3,573(20%)	4,150(51%)	10,318(29%)
Ntural forest	6(-%)	28(1%)	1,711(9%)	2,002(24%)	3,747(11%)
Afforestation	827(19%)	1,594(33%)	1,217(7%)	1,763(22%)	5,401(15%)
Shrubs	92(2%)	46(1%)	631(4%)	385(5%)	1,154(3%)
Land preparation ;	for -(-%)	2(-%)	14(-%)	-(-%)	16(-%)
afforestation		a ii Basa			
Grass lands	2,601(61%)	1,576(33%)	10,268(58%)	3,471(43%)	17,916(51%)
Wet land (flo	od 26(1%)	18(-%)	977(6%)	293(4%)	1,314(4%)
plain)			일본하다 살다.		
Rice field	325(8%)	451(10%)	1,052(6%)	129(1%)	1,957(6%)
Fields	406(9%)	1,001(21%)	1,887(10%)	50(1%)	3,344(10%)
Exposed rocks	11(-%)	5(-%)	34(-%)	0(0%)	50(-%)
Housing are	as 10(-%)	34(1%)	59(-%)	2(-%)	105(-%)
(houses, etc.)					
Total	4,304(100%)	4,755(100%)	17,850(100%)	8,095(100%)	35,004(100%)
Note: ()% indi	icate the percenta	ge Water su	rface is evolude		

	zone				1. 1. 1.			4 1.			u U	nit:
Natural forest	1	A		В	C	44	. D	**		E		otal
Approximate	. 11	-%		%	3	%	152 131	9%	58 45	. 4%	5 214 177	
density above 50%											1//	
Approximate density less than	0	0	-		3		21		13		37	
50%									٠.		7.1	
Pine	19	6	339	41%	45	4%	58	4%	104	8%	565	
afforestation Approximate	18	4.5 4.5	315		28		16		62		429	
density above 40%									02		429	1 -1.
Approximate density less than	11		24		17		42		42		136	
40%												
Eucalyptus afforestation	216	63%	369	45%	980	86%	668	42%	209	16%	2.442	
Approximate density above	197		361		869		494		185		2.105	**************************************
40% Approximate	19		9		111		174		24		337	
density less than 40%							Wife in		24		337	٠,
Other afforestations	0	0%	11	1%	1	-%	1	-%	0	0%	13	٠.
Shrubs	107	31%	104	13%	117	10%	721	45%	969	72%	2.018	
Total	343	100%	823	100%	1,146	100%	1,600	100%	1,340	100%		4
Note: Water surface	is exc	luded.								100%		1 (
(2) Tsiazompa				C			D			100%	Ur	nit:
(2) Tsiazompa Natural forest Approximate densi	miry	zone	1%	28 26					E 2	48%		nit:
(2) Tsiazompa Natural forest	miry ty	zone A 6 6		28		1,711	D	2,00	E 2 2		Ur Tota 3.747	nit:
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation	iniry ty	zone	1% 38%	28 26	2%	1,711 1,668 43	D 48%	2,00 1,94	E 2 2	48%	Ur Tota 3.747 3.642	iit:
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation Approximate densi above 40%	miry ty ty	zone A 6 6		28 26 2	2%	1,711 1,668	D	2,00 1,94	E 2 2 0		Ur Tota 3.747 3.642	iit:
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation Approximate densi	miry ty ty	zone		28 26 2	2%	1,711 1,668 43	D 48%	2,00 1,94 6	E 2 2 0	48%	Ur Tota 3.747 3.642 105	nit:
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation Approximate densi above 40% Approximate densi less than 40% Eucalyptus	miry ty ty	zone A 6 6 0 0		28 26 2 1,148 884	2%	1,711 1,668 43 171 139	D 48%	2,00 1,94 66 1,74: 1,04	E 2 2 0 0 5 6	48%	Ur Tota 3.747 3.642 105 3.417 2.315	iit: 3 3 3 3 3 3 3 3 3
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation Approximate densi above 40% Approximate densi above 40% Approximate densi	iniry ty ty	zone A 6 6 0 353 246 107	38%	28 26 2 1,148 884 264	2% 69%	1,711 1,668 43 171 139 32	D 48%	2,00 1,94 6 1,74 1,04 69	E 2 2 0 5 6	48% 42%	Ur Tota 3.747 3.642 105 3.417 2.315	1(C) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation Approximate densi above 40% Approximate densi less than 40% Eucalyptus afforestation Approximate densi above 40% Approximate densi above 40% Approximate densi	iniry ty ty	zone A 6 6 0 353 246 107 472	38%	28 26 2 1,148 884 264 443	2% 69%	1,711 1,668 43 171 139 32 1,039	D 48%	2,00 1,94 66 1,74: 1,04 699	E 2 2 0 5 6	48% 42%	Ur 3.747 3.642 105 3.417 2.315 1.102 1.965	iit:
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation Approximate densi above 40% Approximate densi less than 40% Eucalyptus afforestation Approximate densi above 40%	iniry ty ty	zone A 6 6 0 353 246 107 472 355	38%	28 26 2 1,148 884 264 443 298	2% 69%	1,711 1,668 43 171 139 32 1,039 693	D 48%	2,00 1,94 66 1,74: 1,04 699	E 2 2 0 5 6	48% 42%	Ur 3.747 3.642 105 3.417 2.315 1.102 1.965 1.357	iit:
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation Approximate densi above 40% Approximate densi less than 40% Eucalyptus afforestation Approximate densi above 40% Approximate densi above 40% Approximate densi above 40% Approximate densi	iniry ty ty	zone A 6 6 0 353 246 107 472 355	38% 51%	28 26 2 1,148 884 264 443 298	2% 69% 26%	1,711 1,668 43 171 139 32 1,039 693 346	D 48% 5%	2,00 1,94 60 1,74: 1,04: 69:	E 2 2 0 5 6	48% 42% -%	Ur 7ote 3.747 3.642 105 3.417 2.315 1.102 1.965 1.357 608	iit:] 3
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation Approximate densi above 40% Approximate densi less than 40% Eucalyptus afforestation Approximate densi above 40% Approximate densi above 40% Other afforestations Shrubs Land preparation for	iniry ty ty	zone A 6 6 7 0 353 246 107 472 355 117 2	38% 51% -%	28 26 2 1,148 884 264 443 298 145	2% 69% 26% -%	1,711 1,668 43 171 139 32 1,039 693 346	D 48% 5% 29%	2,00 1,94 60 1,74 1,04 699	E 2 2 0 5 6 1	48% 42% -%	Ur 7ote 3.747 3.642 105 3.417 2.315 1.102 1.965 1.357 608	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
(2) Tsiazompa Natural forest Approximate densi above 50% Approximate densi less than 50% Pine afforestation Approximate densi above 40% Approximate densi less than 40% Eucalyptus afforestation Approximate densi above 40% Approximate densi above 40% Approximate densi above 40% Approximate densi above 40% Approximate densi bess than 40% Other afforestations Shrubs Land preparation for	miry ty ty y	zone A 6 6 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	38% 51% -%	28 26 2 1,148 884 264 443 298 145 3	2% 69% 26% -% 3%	1,711 1,668 43 171 139 32 1,039 693 346 7	D 48% 5% 29%	2,00 1,94 66 1,74 1,04 699	E 2 2 0 5 6 6	48% 42% -% 10% 0%	Ur Tote 3.747 3.642 105 3.417 2.315 1.102 1.965 1.357 608 19 1.154	nit:

Present state of cultivated land and population density

(1) Cultivated land

a. Mantasoa zone

$\theta = \frac{1}{2} - \frac{1}{2} \theta = \frac{1}{2} - \frac{1}{2} $		•	*		
Zone	· A · A	В	C	D	Е
	ha	ha	ha	ha	ha
Rice field	18	69	108	165	3
Field	11	108	94	55	6
Total(a)	29	177	202	220	9
Wet land	23	13	7	17	. 6
Fokontanys	Ambatolaona	Anjozoro	Andrefanivorona	Ambohimanjaka	0
concerned	7-3-10-11-11-11-11-11-11-11-11-11-11-11-11-	Mantasoa	7 Hoteralli votolia	Amoonmanjaka	14.
		Masombahiny			
Number of	80	-	67	132	
households (b)	•			132	
(a)/(b) ha	0.4		3.0	1.7	
		rea: 1,762 at around 2:		1./ ouesholds	
the control of the co	gramma and the second s	ica. 1,702 at around 2.	z wnouschold – 60 li	ouscholds	
b. Tsiazompaniry	y zone				
Zone	Α	C	D	Е	1. 1. 1.
	ha	ha	ha	ha	
Rice field	325	451	1.052	129	
Field	406	1.001	1.887	50	
Total(a)	731	1.452	2.939	179	· "我,我"
Wet land	26	18	977	293	
Fokontanys	Andriantsiazo	Morarano	Analamihoatra	Ankazotelo	r i etjeljak
concerned	Angodongodona		Ambohijanaka		
	o je lačal Janija		Kelimafana		
Number of	335	474	1.022	100	
households (b)					regeri e feto i ligori. Cerego
(a)/(b) ha	2.2	3.1	2.9	1.8	
(2) Population de	ensity	글들이 되는 항상 회사의			
Zone	2110114	Α	c di di		기교 설치
Mantasoa zone				D	Е
Total area (km²)	얼마 나를 보려고	5.14	17.72	22.00	
Population (persons)		1,290	308	32.08	
Density (persons/km		251	306 17	662	
Tsiazompaniry zone				21	•
Total area (km²)		43.04	47.55	170 6	40.0
Population (persons)		2,378	3,321	178.5	43.9
Density (persons/km		2,576 55	3,321 70	7,159	702
2 2orej (poroonsikin			/∪	40	16

Estimation of usable land area

(1) Calculation of land use for livestock breeding

Mantasoa zone			100	
Zone	Α	C	n	
Total number of cattle	37	54	90	2 27 - 57
Grazing area (ha)	56	81	135	
Tsiazompaniry zone				
Zone	\mathbf{A}	C	n	E
Total number of cattle	630	1,071	1,748	30
Grazing area (ha)	945	1,607	2,622	45

(2) Calculation of the number of cattle heads

The number of cattle heads per village was calculated by "number of households per village x percentage of households raising cattle x average number of raised cattle heads", according to the study documents on socio-economic conditions. In certain villages, this was calculated according to the results of the pilot study.

IVIAIII	isoa	zone	
Zone			Ambatolaona

77		processing the process of the control of the contro
Zone	A Ambatolaona	$80 \times 0.23 \times 2 = 37$
	C Andrefanivorona	$67 \times 0.27 \times 3 = 54$
	D Ambohimanjaka	
	2 i intonimanjaka	$132 \times 0.34 \times 2 = 90$
Tsiazomp	paniry zone	
Zone	A Andriantsiajo	$59 \times 0.88 \times 4 = 208$
	Angodongodona	$276 \times 0.51 \times 3 = 422$
	C Manandriana	$100 \times 0.53 \times 3 = 159$
	Analandambo	$55 \times 0.55 \times 4 = 121$
	Morarano Saofiraisana	$136 \times 0.57 \times 5 = 388$
	Anosibola	$96 \times 0.55 \times 4 = 211$
	Andohariana	69 x 0.55 x 4 = 152
	Andranofankatia	$18 \times 0.55 \times 4 = 40$
	D Analamihoatra	$77 \times 0.71 \times 3 = 164$
	Anovondriana	$68 \times 0.58 \times 3 = 118$
	Kelilafina	$74 \times 0.58 \times 3 = 129$
J. Harris	Ambohijanaka	$555 \times 0.48 \times 3 = 799$
	Kelimafana	$212 \times 0.56 \times 4 = 475$
	Ambatamitsangana	$36 \times 0.58 \times 3 = 63$
	의 이이 된 이렇답았던 단하 많은 '뭐 하는 과장으로 이 사람이 되어 되었다.	"我们,我们的一个多数的一个好事,不是什么

E Ankazotelo (Results of the RRA study)

(3) Distribution of land usable area

Mantasoa	7	70	ne.

	하는 그렇게 그렇게 하는 것이 하는 물로 나를 가는 그 그 그 가장이 있는 것 같아.
Zone	A Prince Services Calaba and Abbrill Branch
	67
Cultivated area by 1 household	
Cultivable land (b)	/ 3.5ha 3.5ha
Present situation (c)	/ 3.0ha 1.7ha
Grass land (d)	/ 403ha 1,369ha
For planting (e)	/ 34ha 238ha
For livestock raising (f)	/ 54ha 90ha
For afforestation (g)	/ 315ha 1,041ha
Shrubs (h) her specified a series of the ser	/ 117ha 721ha
Areas where can be afforested (j)	/ 432ha 1,762ha
Motor The selector Cit	

Note: The calculation of the grass land area to be used for planting was made: e = (b-c) x number of households. Land for afforestation (g) was calculated, d-e-f, areas which can be afforested: (j) g+h.

Tsiazompaniry zone				•
Zone	A	C	D	Е
Number of households (a)	335	474	1,022	100
Cultivated area by 1 household		: '		
Cultivable land (b)	4ha	4ha	4ha	4ha
Present situation (c)	2.2ha	3.1ha	2.9ha	1.8ha
Grass land (d)	2,601ha	1,576ha	10,268ha	3,010ha
For planting (e)	603ha	427ha	1,124ha	220ha
For livestock raising (f)	630ha	1,071ha	1,748ha	30ha
For afforestation (g)	1,368ha	78ha	7,396ha	2,760ha
Shrubs (h)	92ha	46ha	631ha	139ha
Areas where can be afforested (j)	1,460ha	124ha	8,024ha	2,899ha

Note: Calculation of the grass land area to be used for planting was made: $e = (b-c) \times c$ number of households. For afforestation: g = d-f, areas which can be afforested: i = g+h.

(4) Prospects for addressing of population growth

The following table lists the rates of increase of cultivable land areas relative to the current status.

Zone Aller A	Α	С	D	Е
Mantasoa zone		THE CONTRACT		1,211
Cultivated area by 1 household			100	
Present situation ha (a)	1	3.0	1.7	1
Cultivable land ha (b)	I = I	3.5	3.5	1 1
(b)/(a)%	1	× 117 💯	206	7.5
Tsiazompaniry zone	E F/34.	77.		11.74
Cultivated area by 1 household	A A Section			
Present situation ha (a)	2.2	3.1	2.9	1.8
Cultivable land ha (b)	4.0	4.0	4.0	4.0
(b)/(a)%	182	129	: 138 :	222

Assuming the population increase, estimated to be 2.3%, 2.5% as the mean value, the cultivated areas listed in the above table indicate that the population growth can be addressed for the numbers of years shown in the table below as long as the cultivated land increases as the population grows. Furthermore, since comprehensive addressing of population growth is required, efforts are currently made on (1) improvement of land productivity through agroforestry and (2) spread of family planning. It is concluded that the implementation of these items will allow the population growth to be addressed for even more years than shown in the table below.

Zone	$A \sim A$	180 th C (1818)	D	244 - E 144
Mantasoa zone	75.8 1 ₩45.5	6-7 years	29-30 years	886 M / 270 g
Tsiazompaniry zone	24-25 years	10-11 years	13-14 years	32-33years

The Implementation of ZODAFARBs in the Zone of Study

1. Introduction

In the context of management of the watersheds, the Ministry of Water and Forests (MINISTRY OF WATER AND FORESTS) has neither the financial means nor the human means for directly improving the zones to be conserved in the Zone of Study. In fact, the forests and meadows (grasslands), in particular in the areas surrounding Tsiazompaniry lake, are in the process of being transformed into agricultural fields in accordance with the growth of the population. Although, for some cases, the extension of the agricultural lands must be permitted, it is essential, in such case, to determine the zone to be permanently conserved for the purpose of protecting the watersheds on the one hand, and for the purpose of increasing the area of the forests by means of reforestation, on the other hand. Moreover, the residents are interested in the reforestation so as to be able to produce charcoal and to collect wood for heating and for construction for domestic consumption.

The ZODAFARBs (Zones Marked out for Action in Favor of Trees) define the program of the transfer of lands from the State to the rural residents provided that the latter perform the reforestation of the lands. The implementation of ZODAFARBs permits: 1) an effective reforestation and good maintenance, by motivating the rural residents by means of the transfer of the land property rights and the transfer of the planting technology; 2) a consensus at the level of the village, with regard to the zone to be conserved and its maintenance by the individuals.

2. Experience concerning the Implementation of ZODAFARBs

ZODAFARBs have been introduced by the Ministry of Water and Forests in seven rural communities in the prefecture of Fandriana, in the rural commune of Ambatofotsy, the prefecture of Antananarivo, and in the rural commune of Fihaonana, the prefecture of Ankazobe.

The ZODAFARBs which are in progress in Fandriana were started in 1984. Up to the year 1998, the reforestation of Eucalyptus trees was completed in 40 villages, over an area of 4,337 hectares. The evaluation of the progress of reforestation was performed in 1998 in two villages, where it was ascertained that the reforestation has been practically completed on 320 hectares of land. Consequently, the certificates of utilization of lands were issued to 104

operators.

3. The Procedure of ZODAFARBs

Decree No. 3145/87 prescribes the procedure of ZODAFARBs. In practice, the ZODAFARBS follow the following stages in accordance with the regulations of the Ministry of Water and Forests:

- (1) The officials of the Ministry of Water and Forests sart the program of increasing the awareness of the residents with regard to the objectives and the procedure of the ZODAFARBs in the targeted village, and also in the rural commune and in the prefecture to which this village belongs.
- (2) In order to implement the ZODAFARBs, a consensus of more than 50 percent of the residents must be attained at the general meeting of the village. A report must be prepared and sent to the Ministry of Water and Forests, in which there shall be given the agreement of the villagers, the list of the places constituting the subject of the ZODAFARBs, and the names of the representatives of each community which is participating in the ZODAFARBs.
- (3) The farmers who are interested in the program must prepare the documentation concerning the request of the ZODAFARBs, in conformity with Article 31 of Law No. 60-004, in collaboration with the Ministry of Water and Forests. The legal status of the ownership of the lands must be verified at the level of the state property department. The rough plan and the plan of the layout of the ZODAFARBs must be prepared. (The zones must be demarcated with stakes on the land.) The zone of the ZODAFARBs is not necessarily a series of properties, but it may be dispersed throughout the village. The status of the ownership of the lands (the titled lands, the lands of which the request for title has been submitted but of which the appraisal is still in progress, the lands utilized in the context of the local custom, etc.) is in principle, known at the level of the village.
- (4) The documents (the official request, the Report, the rough plan, the plan of the layout and the ministerial decree concerning the establishment of the village) must be submitted to the rural commune from the village. After the evaluation by the rural commune, the request is transferred to the prefecture. At this level, the authorities concerned, such as the land property service, the Ministry of Water and Forests and the Ministry of Agriculture, evaluate the request, and the final decision is made for the granting of the lands to the community for the implementation of ZODAFARBs.

- (5) In parallel with the process of the request, the villagers who are interested in ZODAFARBs must register themselves in the program. The division into lots of land to be reforested is discussed between the participants and determined as zones on the map of the ZODAFARBs. Each lot of land must be demarcated on the land with stakes.
- (6) After a certain period of display of the documentation at the prefecture, at the rural commune and at the office of the village, the demarcation of the zone and of the assignment of the lots of land are decided upon by the general meeting of the village, and the Executive Committee of the village will be established.
- (7) In the context of the ZODAFARBs, the Ministry of Water and Forests offers technical assistance, for the setting-up of nurseries and for the planting of young plants. The nurseries are maintained by the operators and the young plants are sold or supplied free of charge, to the operators. The duties of the operators are summarized in the decree.
- (8) If the appropriate reforestation is verified after the implementation of the ZODAFARBs, the certificate of transfer of the right to use the land as a forest will be issued to the residents. Even though the time of verification is not specified in the decree, the evaluation is taken at the end of the third year to verify whether the reforestation has been carried out appropriately, in conformity with the policy of the Ministry of Water and Forests. The second evaluation is made five years later, and if the reforestation activities have been verified, then the certificate ate is issued to the operator.

4. Relationship between the ZODAFARBs and the land rights

(1) Final transfer of the land rights

The decree of the ZODAFARBs prescribes the final appropriation of the lands to the operators. However, the transfer of the land rights does not take place automatically after the implementation of the ZODAFARBs, because a long period of time and a large sum of money are required for the registration of the land, it being necessary for the said registration to be accompanied by a topographical study and an official verification of the property right by the Ministry of land preparation. Now at last, there is a contradiction between the description on land transfer of the ZODAFARB decree and Law No. 60-004 concerning the land property. Moreover, the ZODAFARB decree itself constitutes a contradiction because the certificate issued to the operators in conformity with the decree does not mention the final appropriation of the land.

In conformity with the property law, a title of ownership is given, based on the request of

the users, to the land within the limit of 30 hectares which has been occupied for ten years as of 1965, whereas the occupation of the lands after the year of 1965 is considered to be illegal until the said request has been evaluated and the land has been titled. However, since the time and the money required for the registration of the land do not permit the rural residents to easily obtain the title, several types of occupation are practiced and permitted in a customary manner at the level of the village, such as the utilization of the land before obtaining the title, or even without claiming ownership. Since the residents know, that in reality, they are still not the owners of the new lands, they are rather hesitant to perform the reforestation which requires a long-term management activity on the lands of which the ownership is not still final.

In the process of the ZODAFARBs, the distribution of the lands is clearly determined, and the certificates are eventually issued by the Ministry of Water and Forests. Since the State guarantees to the operators, by means of certificates, the right of utilization of the land, the incentive is greater for the residents to participate in the ZODAFARBs, even without the official property titles.

(2) Different Implementation of ZODAFARBs depending on the statuses of ownership
In the past, the ZODAFARBs were implemented only on land belonging to the State
where there was no dispute concerning the ownership. When the ZODAFARBs are
implemented on lands where several interests in the ownership exist, the states of
ownership of the land and the modes of present utilization must be considered as follows:

Status of Ownership of the Land	Private Title	Requisition in progress	Customary right to use the land (framed)	Assigned to the Ministry of Water and Forests	Belonging to the State
Mode of present utilization	(a)	(b)	(c)	(d)	(e)
Forests utilized in an appropriate ① manner	X	X	X	X	
Lands (except for the forest) ② utilized in an appropriate manner	X	X	X (S)	X	
Lands utilized but to be 3 transformed into forests		Z	Z	Z	
Lands not utilized but to be (4) reforested	18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Z	Z	Z	Z
Natural forests S		2 2 2 3		X	

In the table above, the oblique lines mean "none", "X" means the maintaining of the present utilization, "Z" means the implementation ZODAFARBs. The manner of implementation of the ZODAFARBs, depending on the case, is the following:

- ③ (b) and ③ (c): For the purpose of protecting the watersheds, the transformation of the lands into forests should be suggested to the present users at the village meeting. The exchange of lands is one option. The procurement of the land title may give them motivation to participate in the ZODAFARBs.
- (b) and (c): Since the right of utilization of the land and finally, the title of the land will be guaranteed to the participants, active participation in the ZODAFARBs is expected. It is essential to integrate the present occupants of the land in the reforestation activity of ZODAFARBs. The exchange of lands is one option. In light of the equality between the villagers, the redistribution of the lands can be suggested in the process of the deliberation of the village.
- ③ (d) and ④ (d): Since the Ministry of Water and Forests does not have sufficient means for the reforestation of the lands, these lands must be reclassified in order to become the subject of ZODAFARBs.
- (e): Ordinary procedure of ZODAFARB will be applied.

5. Implementation of ZODAFARBs in the Zone of Study of the Project

The Zone of Study is classified into three parts from the point of view of paragraph 4(2) above. It is possible to implement the ZODAFARBs in the following manner:

Zone of Study	Implementation of the ZODAFARBs
West coast of Mantasoa lake	It is not necessary to implement ZODAFARBs since most of the lands are classified as ① and ②.
West coast of Tsiazompaniry lake	Large lands are classified as 3 and 4. Before the ZODAFARBs are implemented, the zones to be conserved must be specified and the consensus of the residents with regard to the appropriate utilization of the land must be reached in the deliberation.
East coast of Mantasoa and Tsiazompaniry lakes	Large lands are classified as ①. Before the ZODAFARBs are implemented, the zones to be conserved must be specified.

Calculation of annual quantities of operations

1 Agriculture

1) Fruit production

Village type	The Cart Arthur	II	III Take II Take and Take Till
Target village	Andriantsijo Angodongodona	Andrefanivorona Ambohimajaka	Morarano, Anosivola Andoharian, Ambohijanaka Kelimafana, Ankazotelo
Number of households	340	200	1,180
Rate of households having interest in the project (%)	Andrian. 25 Angodon. 10	30	36
Number of households having interest in the project	43	60	425
Number of trees per household	20	20	20
Labor per unit (person-days/trees)	0.7	0.7	0.7
Labor required for a household (person-days)	14 14	14	14
Total labor (person-days)	602	840	\$ 5,950
Total quantity of operations (1000)	0.86	1.20	8.50

Note: Labor per unit: Digging hole for Compost = 0.5 person-days/hole, Planting = 0.05 person-days/tree, Nursing = 0.15 person-days/tree. Total 0.7 person-days/tree

2) Compost production

Village type	aw deley 📘 Kekabu	awa alika a 📘 ta Salayi 🚶	CONTRACT III
Target village	Andriantsijo Angodongodona	Andrefanivorona Ambohimajaka	Morarano, Anosivola Andoharian, Ambohijanaka Kelimafana, Ankazotelo
Number of households	340	41. 11. 200 11. 14.	1,180
Rate of households having interest in the project (%)	25	25	30
Number of households having interest in the project	85	50	354
Units per household	(1964) 3 - 19 - 1	144 AUR 2.5 187 FS	11 A A A A A A A A A A A A A A A A A A
Labor per unit (person-days/unit)	1.5	1.5	# 6 4 5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1
Labor required for a household (person-days)	4.5	3.75	3.75
Total labor (person-days)	383	188	1,328
Total quantity of operations (unit)	255	125	885

Note: Labor per unit: Loading = 1 person-day; switchover = 0.5 person-day; Total = 1.5 person-days. Collection of materials is a daily work that they do on the way back from the farming work, which is not included in this statistics.

2 Agroforestry

1) Hedges

1) 1104803		and the second second second	
Village type	I	II	III
Target village	Andriantsijo	Andrefanivorona	Morarano, Anosivola
	Angodongodona	Ambohimajaka	Andoharian,
			Ambohijanaka Kelimafana, Ankazotelo
Number of households	340	200	1,180
Rate of households having interest in the project (%)	5	30	30
Number of households having interest in the project	17	60	354
Seedling per household (kg)	1.0	1.5	1.5
Labor per unit (person-days/kg)	2	2	
Labor required for a household (person-days)	2	3	3
Total labor (person-days)	34	180	1,062
Total quantity of operations (kg)	17	90	531
Not: Labor per unit: 1.5 person do	ve for 750~ 1 5	1 (0.05)	

Not: Labor per unit: 1.5 person-days for 750g, 1.5 person-days/0.75kg = 2 person-days for per kg

2) Fodder production

Village type	I	II	III of Margaret and teachers
Target village	Andriantsijo Angodongodona	No applicable	Morarano, Anosivola Andoharian, Ambohijanaka Kelimafana, Ankazotelo
Number of households	340	Service Services	1,180
Rate of households having interest in the project (%)	5		30
Number of households having interest in the project	Pagalagi 17 ay an Sash Pagasay a Sas	A M. Mar. 19. Marian Edit	354
Number of trees per household	100		100
Labor per unit (person-days/100)	50.50 × 2 × 1.	ANTO SERVE	2 - 100 - 1
Labor required for a household (person-days)	2		2
Total labor (person-days)	34 perce.		708
Total quantity of operations (100)	2002 17 6 40		354

Note: Labor per unit: 50 seedling in hill including division per person-day

3 Forestry

1) Production of young plants

Village type	I	[II	III da
Target village	Andriantsijo Angodongodona	Andrefanivorona Ambohimajaka	Morarano, Anosivola Andoharian, Ambohijanaka
Number of households	340	200	Kelimafana, Ankazotelo 1,180
Rate of households having interest in the project (%)	20	15	50
Number of households having interest in the project	68	30	590
Number of trees per household	1,000	1,500	1,500
Labor per unit (person-days/1000)	8.2	8.2	8.2
Labor required for a household (person-days)	8.2	12.3	12.3
Total labor (person-days)	558	369	7,257
Total quantity of operations (1000)	68 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 1894 - 189	45	885

Note: Per seedbed (10m x 1m), ploughing = 2 person-days; seeding = 1 person-day (incl. sand collection); sunshading = 1 person-day; sun-shade control = 1.5 person-days; sprinkling = 10 person-days; weeding = 2 person-days; Total = 17.5 person-days. It is planned to make sprinkling 85 times during the period of cultivating young plants: 0.12 person-days x 85 = 10 person days.

3,200 young plants with bare roots per seedbed (200 x 20 x 80%) will be produced. 8.2 person-days per 1000 (1,500/3,200 x 17.5).

2) Afforestation

All households engaged in production of young plants are involved in afforestation. Of types I and III, one half of the households is engaged in the production of one third of

young plants in ZODAFARB.

Village type	and the I have a fi	Sassan Palace	To the contract of the second
Target village	Andriantsijo Angodongodona	Andrefanivorona Ambohimajaka	Morarano, Anosivola Andoharian, Ambohijanaka Kelimafana, Ankazotelo
Number of households	340	411 of 200 Not with	1,180
Rate of households having interest in the project (%)	20	15	50
Number of households having interest in the project	68	30	590
Number of trees per household	825	1,500	1,250
Labor per unit (person-days/1000)	30	27	30
Labor required for a household (person-days)	25	41	38
Total labor (person-days)	1,700	3 % 1,230 Same	22,420
Total quantity of operations (1000)	56.1	115.5	737.5

Note: 1) Digging holes for planting = 16.7 person-days; planting (incl. transport of plants) = 10 person-days (13 person-days in Type I and III); total = 27 person-days (30 person-days in Type I and III)

For digging holes for planting, 60 holes/person-day is used on the conditions of 40 x 40 x 40 cm (100 holes/person-day) and 70 x 70 x 70 cm (50 holes/person-days) in average.

1000/60 = 16.7 person-days

Planting: made at the same time as transporting young plants; transported twice per day (1.5 times in Type I and III); 50 plants x 2 = 100 plants (50 x 1.5 = 75 plants in Type I and III). Planting = 1000/100 = 10 person-days (1000/75 = 13 person-days).

3) ZODAFARB

Village type	I	II	III
Target village	Andriantsijo	No applicable	Morarano, Anosivola
	Angodongodona		Andoharian, Ambohijanaka Kelimafana, Ankazotelo
Number of households	34		295
Number of trees per household	350		500
Labor per unit (person-days/1000)	40		40
Labor required for a household (person-days)	14		20
Total labor (person-days)	476		5,900
Total quantity of operations (1000)	11.9		147.5

Note: Labor per unit: Digging holes for planting = 1,000/50=20 holes/person-day at 50 holes/person-day. Planting is made at the same time as transport of young plants. Transport = 1,000/50 = 20 person-days at 50 plants once per day. The above 2) process is used for zone E at a short distance.

4 Fishery (Fish farming in rice fields)

Fish farming in rice fields

Village type	A same this same	C 197 A	D From the control of the latest and the
Target village	Andriantsijo Angodongodona	No applicable	Morarano. Anosivola Andoharian. Ambohijanaka Kelimafana. Ankazotelo
Number of households	340		1,180
Rate of households having interest in the project (%)	10		30 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
Number of households having interest in the project	34		354
Number of fry per household (fry)	100		100
Labor required for a household (person-days)	4		4
Total labor (person-days)	136	7.7. 1.1. 1.1. 1.1.1.1.1.1.1.1.1.1.1.1.1	1,416 State
Total quantity of operations (100)	34		354

Note: Ploughing the fish farming field = 1 peson-day; bait feeding = 3 person-days

Project plan by village type Quantity of operations

1 Type I

Sc	ope of work	1st year	2nd year	3rd year	4th year	5th year	6th year and after
Agriculture	Fruit production Number of households having interest in the project Per household (tree) Quantity of operations (1000)	Planning	43 20 0.86	43 20 0.86	Independent execution	Independent execution	Independent execution
Agric	Compost Number of households having interest in the project Units per household Quantity of operations (unit)		85 3 255	85 3 255			
Agroforestry	Hedges Number of households having interest in the project Per household (kg) Quantity of operations (kg)		17 1	17 1 17			
Agrof	Fodder production Number of households having interest in the project Per household (tree) Quantity of operations (100)		17 100 17	17 100 17			
A CONTRACTOR OF THE STATE OF	Production of young plants Number of households having interest in the project Per household (1000) Quantity of operations (1000)		68 1 68	68 1 68			
Forestry	Afforestation Number of households having interest in the project Per household (1000) Quantity of operations (1000)		68 0.825 56.1	68 0.825 56.1			
Commence of the second	ZODAFARB Number of households having interest in the project Per household (1000) Quantity of operations (1000)		34 0.35 11.9	34 0.35 11.9			
Fishery	Fish farming in rice fields Number of households having interest in the project Number of fry per household Quantity of operations (100)		34 100 34	34 100 34			

2 Type II

Sc	cope of work	1st year	2nd year	3rd year	4th year	5th year	6th year and
griculture	Fruit production Number of households having interest in the project Per household (tree) Quantity of operations (1000)	Planning	60 20 1.2	60 20 1.2	Independent execution	Independent execution	
Agric	Compost Number of households having interest in the project Units per household Quantity of operations (unit)		50 2.5 125	50 2.5 125			
oforestry	Hedges Number of households having interest in the project Per household (kg) Quantity of operations (kg) Fodder production Number of households having interest		60 1.5 90	60 1.5 90			
Agr	Fodder production Number of households having interest in the project Number of trees per household Quantity of operations (100)		No applicable	No applicable			
Supplemental Control of the Control	Production of young plants Number of households having interest in the project Per household (tree) Quantity of operations (1000)		30 1,500 45	30 1,500 45			
	Afforestation Number of households having interest in the project Per household (tree) Quantity of operations (1000)		30 1,500 45	30 1,500 45			
	ZODAFARB Number of households having interest in the project Per household (tree) Quantity of operations (1000) Fish farming in rice fields		No applicable	No applicable			
Fishery	Number of households having interest in the project Number of fry per household Quantity of operations (100)		No applicable	No applicable			

3 Type III

	Scope of work	1 st year	2 nd year	3 rd year	4 th year	5 th year	6th year and after
			Planned 4	Execution	Execution	Independent	- Jourand and
			villages	Planned 2	Execution	execution	1 1 1 1 1 1 1 1 1 1 1
	Fruit production			villages	1, 1, 1, 1	A CONTRACTOR OF	Independent
	Number of households having			148	425	277	execution
1	interest in the project			100	1-0		CACCULON
일	Per household (tree)			20	20	20	
=	Quantity of operations			2.96	8.50	5.54	
griculture	(1000)	100	199		.1		
A A					7.	No. 5 W	V . Va
	Compost						
1	Number of households having			123	354	231	
	interest in the project			- 1 ATT 4 - 4			
	Units per household			2.5	2.5	2.5	
	Quantity of operations (unit)		1.5	308	885	578	
,						5.0	Agent a land extension
- 1	Hedges						
	Number of households having			123	354	231	The state of the s
	interest in the project				J	4.71	
Ĕ	Per household (kg)			1.5	1.5	1.5	Kar V S S A
<u>Ş</u>	Quantity of operations (kg)		Si kara	185	531	347	
groforestry	Manifeld (Gr. D. J.)	1. 4.4.		in a military fra			
5	Fodder production					Carlotte A	
~	Number of households having			123	354	231	
į.	interest in the project				7 a 11 a 2	231	
1	Per household (tree)			100	100	100	N 12 26 2000
	Quantity of operations (100)	al Ayear		123	354	231	Needs in the first section of the se
1	ARRAMMENTS COLLEGE	his gas				23.	1. (F. 17. (A+17.2), 33. (
	Production of young plants						
1	Number of households having	1		205	590	385	And Andrews
1	interest in the project						
	Per household (tree)			1,500	1,500	1,500	
÷.	Quantity of operations			307.5	885.0	577.50	
1	(1000)			Of the Book			Same Salayee
	10 4 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	75.34	150		3 15. 144	4 14 1 June 191	1987 (A) 48 (1988)
Ė	Afforestation						gyr i wwis Pi
Ę	Number of households having	3		205	590	385	
Forestry	interest in the project	1000	[基、接近]				
윤		()		1,250	1,250	1,250	
=======================================	Quantity of operations			256.25	737.5	481.25	I de tracta de tr
-	(1000)	M1536				<u></u>	
		1.13	47 6x 21 3	Na Alijerate	54.41.5	TO THE STORY	化自动线线线 医二
	ZODAFARB						
	Number of households having			102.5	⁴⁸ 295	192.5	
	interest in the project						
	Per household (tree)			500	500	500	
-	Quantity of operations			51.25	147.5	96.25	
	(1000)			a was different			
	Lapping a pake kagilah se				Alter Air S	A. Talley	
5	Fish farming in rice fields						
Fishery	Number of households having			123	354	231	
ΞĚ	interest in the project				Marking.		
1	Number of fry per household			100	100	100	
1 3	Quantity of operations (100)	1.03.44.4	William State of the second	123	354 Lin the 3rd ve	<u> </u>	<u> </u>

Note: For Ambohijanak and Kelimafana, the work will be planned in the 3rd year and executed in and after the 4th year, but for other 4 villages, the work will be planned in the 2nd year and executed in and after the 3rd year.

Project plan by village type Labor

1 Type I

Γ	Scope of work	1st year	2nd	1 2 1	T		<u>kan santan</u> kacam
f		rot year	2nd year	3rd year	4th year	5th year	6th year and after
	Fruit production		1 1 1				
	Quantity of operations (1000)	Planning	0.86	0.86	Independent	Independent	Independent
	Labor for a tree		0.7	0.7	execution	execution	execution
	For Total labor (person-		602	602			
.]	days)			1 2 3			
	Total labor (person-days) Compost	. 1:1					
	Quantity of operations		255	255		1.0	1, 21, 14
	(unit)		233	233			H 345 - 542
	Labor per unit		1.5	1.5		to the sale.	
	Total labor (person- days)		383	383			
	Hedges		ng da sait				
-	Quantity of operations (kg)	+ 4:	17	17			
	Labor per unit		2				
	Total labor (person-		34	2 34			
	Total labor (person-days)						
	Fodder production						
'	Quantity of operations		17	14			
	(100)			17			
	Labor per unit		2	2			
	Total labor (person-days)		34	34			
				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	79 (1 10)		
	Production of young						
	plants						
	Quantity of operations (1000)		68	68			
	Labor per unit		8.2	8.2			
	Total labor (person-		558	558			
	days)	**************************************	10.54				
	Afforestation						
Forestry	Quantity of operations		56.1	56.1			
H.	(1000)			3417 1 4 4			
1	Labor per unit Total labor (person-	1.000	30 1,683	30			
'	days)		1,063	1,683			
	700 454 50						
	ZODAFARB Quantity of operations		11.0				
	1(1000)		11.9	11.9			
	Labor per unit		40	40			
	Total labor (person-		476	476			
-	days)	*			3.5		
	Fish farming in rice					\Box	
2	fields						
Fishery	Quantity of operations (100)		34	34			
ΙÏ	Labor per unit		4				
	Total labor (person-		136	136			
L_	days)			130	4 4 4		
1 / T							

2 Type II

	Scope of work	1st year	2nd year	3rd year	4th year	5th year	6th year and after
	Fruit production	:					
- 1	Quantity of operations	Planning	1.2	1.2	Independent	Independent	Independent
	(1000) Labor for a tree		0.7		execution	execution	execution
e		100	0.7 840	0,7 840			
1 5	days)			0.0			
Agriculture	Compost						
	Quantity of operations		125	125			
'	(unit) Labor per unit						
	Total labor (person-		1.5 188	1.5 188			
	days)			100			
	Hedges						1.44
	Quantity of operations		90	90	an en el		
	(kg) Labor per unit						
Š	Total labor (person-		2 180	2 180			
je je	days)			.00			
Agroforestry	Fodder production			No			The second of th
₹	Quantity of operations			applicable			
	(100)						
.	Labor per unit Total labor (person-						
	days)						
	Production of young		45	15			
	plants		8.2	45 8.2			
	Quantity of operations		369	369			
	(1000) Labor per unit						
	Total labor (person-						
	days)						
5	Afforestation		45	45			
rest	Afforestation Quantity of operations (1000)		27	27			
F	Lacor per unit		1.215	1.215			
1 1 2	Total labor (person-						
1	days)						
1	ZODAFARB						
10	Quantity of operations			No No			
Sec.	(1000) Labor per unit			applicable			
	Total labor (person-						
	days) Fish farming in rice	-6.9-1-73a				garil - Tei	
	fields	¥ to a line					
ery	Quantity of operations (100) Labor per unit Total labor (person)			No			
Fish	(100) Labor per unit			applicable			
		7 (24 K)					Hadi Aliya
Ш	days)			We will		14.4	With the transfer

3 Type III

ſ		Scope of work	1st year	2nd year	2-4	T		
ſ				Planned 4	3rd year Execution	4th year Execution	5th year Independent	6th year and after
				villages	Planned 2 villages	Execution	execution	
ĺ		Fruit production Quantity of operations					Oxecution	Independent
		(1000)			2.96	8.50	5.54	execution
. [ø				0.7			
	ΙĒ	Total labor (person-			0.7 2.072	0.7 5,950	0.7	
ĺ	Agriculture	days)			2.072	3,930	3,878	
.	Ą	Compost						
	÷	Quantity of operations					Taradha es	
1		(unit)		gas egist i de	308	885	578	
		Labor per unit			1.5	1.5	1.5	
		Total labor (person-			462	1,328	2,023	
\vdash	\dashv	days)				1 1 11111		
		Hedges			A Barrier			
		Quantity of operations			185	531	247	
		(kg)				331	347	
	싀	Labor per unit Total labor (person-		a Kara	2	2	2	
	<u>s</u>	Total labor (person- days)			370	1,062	694	
١,	ĕ۱	arter par et la ville				State of the state		
	8	Fodder production						
		Quantity of operations (100)			123	354	231	
13		Labor per unit						
		Total labor (person-			2 246	2	2	
_		days)			240	708	462	
		Production of young						
	1	plants						
	ŀ	Quantity of operations			370.5	885.0	570.5	
١.		(1000)			3,0.3	662.0	577.5	
١.		Labor per unit Total labor (person-			8.2	8.2	8.2	
		Jays)			3,522	7,257	4,736	
	Γ	W. 野点水火用的			<u>an transpirite</u> Transpirite			
1	1	Afforestation						
Forestry,	3 3	Quantity of operations 1000)			256.25	737.50	481.25	
ŭ	ï	abor per unit			20			A Joseph Ed.
	-	Total labor (person-			30 7,688	30 22,125	30	
1	4	lays)			7,000	22,123	14,438	
3	1	ZODAFARB				ty Atherin His	Transaction	
		Quantity of operations						
:	11	1000)			51.25	147.50	96.25	
		abor per unit	15.00		30	40	40	
ľ		otal labor (person-			2,050	5,900	3,850	
 	١	ays)	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1					
		ish farming in rice	1044					•
2	fi	ielde						
Fishery	ζ	Quantity of operations			123	354	231	
įΞ	Ţ	100) abor per unit						
3. 24	T	otal labor (person-			400	4	4	
÷.	đ	ays)			492	1,416	924	
. :	1	the state of the s						

Grounds of addition of expenses related to materials

Fruit trees

As the price per young plant, the purchase price of popular tree species such as apple trees in the PSs, 7,500 fmg, shall be used.

Compost

The number of forks to turning compost shall be two per 22 households, which is the average number in a hamlet (1,720 households/total number of hamlet 80 = 19). As one household has 3.0 units and one hamlet has 66 units, one fork per about 33 units shall be prepared. One spray for sprinkling per 66 units shall be prepared.

Fork price:

24,000 fmg.

Spray price: 150,000 fmg

Materials cost in the first year:

24,000 + 75,000 = 99,000 fmg for 33 units

Materials cost in the second year: Expecting 50% of the amount in the first year, i.e. 49,5000

fmg.

Hedges

The price per kg of Tephrosia vogelii, 9,500 fmg, shall be used.

Production of fodder

The price per one of Penissetum, 750 fmg, shall be used.

Production of young plants

In pots:

One-third of the quantity of production of young plants shall be made from

seedlings in pots. Price of a pot: 80 fmg

Watering pots: Two watering pots shall be prepared for one hamlet. Price: 24,000 fmg/pot

Seeds:

On the assumption that 200,000 seedlings of E. robuster per kg will be able

to be obtained, a price of seeds for 1000 seedlings shall be used.

Materials cost in the first year:

[80 (hamlets) $\times 2 \times 30,000 + 998,000 \times 1/3 \times 10/8 \times 80] \times$

1/998 + 500 = 38,643 fmg/1000 trees

Materials cost in the second year: $[2,400,000 + 998,000 \times 1/3 \times 10/8 \times 80] \times 1/998 + 500 =$

36,283 fmg/1000 trees

Afforestation

There is no particular necessity of material cost.

ZODAFARB

There is no particular necessity of material cost.

Fish farming in rice fields

Price purchase of fry shall be expected. General prices to purchase fry of different kinds are the same.

Fry price: 200 fmg per one fry

Participation of Part	Material expenses by villages	penses by																
Public part of the lite of t				2nd ye	ar			3rd year			4th vear		_	13				
Authorise de la composition dela composition de la composition de la composition dela composition de la composition	- 6	je je	Amount	Unit	rice	7	mount	Unit price	Price	Amount	Unit price	Price	Amoun			Price		
Comparison unit 255 99,000/33 7.65 205,000/100 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 3.00 1.72 <th< th=""><th>L'iabling and culture of fruit trees</th><th>1000 trees</th><th>0.86</th><th>7.500</th><th>'trees</th><th>6,450</th><th>0.86</th><th>7,500 /trees</th><th>6,43</th><th>0</th><th></th><th></th><th>_</th><th>-</th><th></th><th>~</th><th>Trinomic</th><th>955</th></th<>	L'iabling and culture of fruit trees	1000 trees	0.86	7.500	'trees	6,450	0.86	7,500 /trees	6,43	0			_	-		~	Trinomic	955
Hedging billions of young planes 150	Compost production	unit	255	000.66	33	765	255	49,500/33	38	2		1-					1.72	12,900
Fooklet production 100 trees 1,275 175	Hedging	, kg	17	9,500/	Kg.	162	171	9.500 /kg	1			-			+		510	1,147
Secondaries 1000 trees Secondaries S	Fodder production	100 trees	41	750/	rees	1.275	12	750 /trope	1 22	1 4		-			1		34	324
Afforcisation 1000 trees 56.1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Production of young plants	1000 trees	89	38.643/	801	2 628		36.738	1,2,	2					+		32	2,550
COOAFINES 11.9 0 11.9 0 11.41.3 0 0 11.41.3 0 0 11.41.3 0	Afforestation	1000 tees	56.1	C		0.00		00,436/1000	2,40	d		1			-		136	5.092
Fight framing in rice fields 100 fishes 680 3.4 200/Inces 680 3.5 200/Inces 3.00 1.1,413 9.00 9.00 9.00 1.1,413 9.00	ZODAFARB	1000 trees	ō I	6		2 0	1 0 11	> <		3 .		1	-				112.2	0
Sub-bound Planting and culture of fruit trees 11.500 12.700 /rees 2.000 /rees 1.1.413 1.1.900 1.1.500 <td>Fish farming in rice fields</td> <td>100 fishes</td> <td>₩</td> <td>2007</td> <td>rees</td> <td>2 08</td> <td>22.22</td> <td>300</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>23.8</td> <td>0</td>	Fish farming in rice fields	100 fishes	₩	2007	rees	2 08	22.22	300									23.8	0
Planting and colures of finit trees 1.00 trees 1.15 to 0.00 trees <t< td=""><td>Sub-total</td><td></td><td></td><td></td><td>╁</td><td>07011</td><td>5</td><td>Saan/ooz</td><td>00</td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td>89</td><td>1.360</td></t<>	Sub-total				╁	07011	5	Saan/ooz	00			-					89	1.360
Composition position problems 1.2 9,000 flyers 9,000 1.2 9,000 flyers 9,000 1.2 9,000 flyers 9,000 flyers <t< td=""><td>_</td><td>0001</td><td>-</td><td>100</td><td>+</td><td>006</td><td>1</td><td>1</td><td>14</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0</td><td>23,373</td></t<>	_	0001	-	100	+	006	1	1	14								0	23,373
Hedging kg 90 9,500 kg 125 9,900 kg 125 9,500 kg 125		1000 Irees		7.500/	rees	000	_[7,500 /trees	9,00								2.4	18.000
Problems kg 90 9.500 kg 855 90 9.500 kg 855 855 855 9.500 kg 855 855 9.500 kg 9.500 kg 855 9.500 kg 1.750 45 36,238 f1000 1.631 9 <th< td=""><td>100000000000000000000000000000000000000</td><td>Tin I</td><td>C71</td><td>3,000,66</td><td>25</td><td>375</td><td>ı</td><td>9,500/33</td><td>18.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>050</td><td>173</td></th<>	100000000000000000000000000000000000000	Tin I	C71	3,000,66	25	375	ı	9,500/33	18.								050	173
Production of young plants 1000 trees 45 36,238 1000 1,639 1,673 1,670 1,673 1,770	Burguar	kg	8	9,500	39	855	8	9,500 /kg	855								000	700
Afforesiation 1000 trees 45 1,673 0 4,500 4,500 4,500 4,500 4,500 4,500 4,500 4,500 4,500 4,500 4,500 4,500 4,500 4,500 4,500 4,500 1,73 4,500 1,73 1,73 4,500 1,73 4,500 1,73	Production of young plants	1000 trees	\$	38,643 //	90	1,739		6,238 /1000	1,63								2001	1,710
Sub-total 11.969 11.673 11.6	Afforestation	1000 trees	45	31,632	0	0	45	0						 	-		3 :	5,370
Planning and culture est from trees 1000 trees 2.96 7,500 /rrees 2.500 R.S. 7,500 /rrees 63,750 5.54 7,500 /rrees 41,550 17 Compost production unit with 185 9,500 /rees 1,758 33 49,500 /rees 5,750 /rees 49,500 /rees 1,734 48,231 1,734 48,231 1,734 48,231 1,734 48,231 1,734 1,734 1,734	Sub-total			-		1 969			11.672								8	0
Part		1000 trees			-	l	1				1	1				1	0	23,642
post production unit kg 99,000 /33 49.500 /38 49.500 /39 49.500 /39 49.500 /39 49.500 /39 49.500 /39 77.13 867 1771 ting kg 188 99,000 /38 531 95.00 /38 50.45 347 95.00 /38 329 1773 1773 gr production 1000 trees 1000 trees 337.5 38,648 /1000 11,884 307.5 36,238 /1000 20.136 77.5 36,238 /1000 11,43 577.5 36,238 /100 20.927 1775 77.5 36,438 /1000 20.143 577.5 36,438 /1000 20.143 577.5 36,438 /1000 20.143 577.5 36,438 /1000 20.143 77.5 36,238 /1000 20.927 77.5 77.5 36,438 /1000 20.918 77.5 36,438 /1000 20.918 77.5 36,438 /1000 20.918 77.5 36,438 /1000 20.918 77.5 36,438 /1000 20.918 77.5 36,438 /1000 20.918 20.918 20.918 20.918 20.918 20		200			-		7.70	/,500/trees	22,000		7.500 /tree	4			trees	41,550	17	127.300
ting kg 133 9,500 Rg 578 99,000/33 1,734 347 9,500 Rg 3.297 1063 er production 100 trees 100 trees 123 750 /rrees 9,200 Rg 5,045 347 9,500 Rg 3.297 1063 estation 1000 trees 307.5 38,648 1000 11,884 307.5 36,435/1000 22,316 750 /rrees 1732 708 AFARB 1000 trees 256.25 0 0 147.5 0 0 481.25 0 0 29.23 7.080 23.15 0 0 29.23 7.080 0 <td>Compost production</td> <td>_</td> <td></td> <td><u> </u></td> <td></td> <td></td> <td>$e_{i}\in\mathbb{N}$</td> <td>9,000/33</td> <td>924</td> <td></td> <td>49,500/33</td> <td>462</td> <td>9. Ge</td> <td>1.1. 29</td> <td>/33</td> <td>2,4%</td> <td>1771</td> <td>1 007</td>	Compost production	_		<u> </u>			$e_{i}\in\mathbb{N}$	9,000/33	924		49,500/33	462	9. Ge	1.1. 29	/33	2,4%	1771	1 007
Frequencion 185 9,500 (Rg 1,758 531 9,500 (Rg 3,645 347 9,500 (Rg 3,500 (Rg 3,297 1,065 er production 1000 trees 1000 trees 307.5 36,238 (1000) 11,184 377.5 38,643 /1000 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 11,143 577.5 36,238 (1000) 36,238 (1000) 36,238 (1000) 36,238 (1000) <	Hadoing			-		+			-	578	99,000/33	1.734	:				:	1000
et production 123 736 /trees 9,225 354 756 /trees 26,550 231 756 /trees 17,325 708 action of young plants Lobo trees 307.5 38,648 /1000 11,884 307.5 36,238 /1000 11,143 577.5 36,238 /1000 11,143 577.5 36,238 /1000 11,143 577.5 36,238 /1000 11,143 577.5 36,238 /1000 11,143 577.5 36,238 /1000 11,143 577.5 36,238 /1000 17,170 17,137 17,133 1000 trees 1000 trees 1000 trees 1000 trees 1000 trees 1000 trees 123 200 /fishes 2,460 354 200 /fishes 7,080 231 200 /fishes 4,620 7,080 231 200 /fishes 1000 trees	Dodder on the second	S S	+					9,500 Ag	1,758		9,500 /kg	5,045			85	3,297	1063	10.100
uction of young plants 1000 trees 307.5 38.648 / 1000 11,884 307.5 36.238 / 1000 22,316 577.5 36,238 / 1000 20,927 / 100 1770 Station 1000 trees 256.25 0 737.5 0 0 481.25 0 0 147.5 0 0 481.25 0 0 147.5 0 0 0 147.5 0	roduci producijon	100 trees		+	-		123	750 /trees	9,225	354	750 /trees				rees	17,325	708	\$3 100
restation 1000 trees 256.25 0 0 737.5 38,643/1000 22,316 77.5 1000 trees 77.5 1000 trees 77.5 0 0 481.25 0 0 481.25 0 0 481.25 0 0 147.5 0 0 481.25 0 0 147.5 0 0 96.25 0 0 295 farming in rice fields 100 fishes 100 fishes 2.460 354 200 fishes 7.080 231 200 fishes 4,620 708 oial 23,929 71.337 71.337 138,080 88,586 0 20	Production of young plants			1				8,648/1000	11,884	307.5	36,238 /1000			26	000	000		
AFARB 1000 trees 256.25 0 0 737.5 0 0 481.25 0 147.5 0 0 96.25 0 0 147.5 0 0 96.25 0 0 295 farming in rice fields 100 fishes 100 fishes 200 /fishes 2.460 354 200 /fishes 7.080 231 200 /fishes 4,620 708	4 66	1000 frees					+		, \$41	577.5	38,643/1000			 21.	0001	77.6.07	0//	66,270
AFARB 1000 trees 51.25 0 147.5 0 96.25 0 29.5 farming in rice fields 100 fishes 123 200 /fishes 2.460 354 200 /fishes 7.080 231 200 /fishes 4,620 708 otal 23,929 71.337 138,080 88,586 0 238,586	Attorestation	1000 trees	1	+	1	2	56.25	0	0	737.5	0	0	481.25		-	-	1475	
arming in rice fields 100 fishes 123 200 /fishes 2,460 354 200 /fishes 7,080 231 200 /fishes 4,620 708 otal 23,929 71,337 138,080 138,080 88,586 0 2	ZODAFARB	1000 trees		-	N		51.25	0	0	147.5	0	2	3C 90			> 0	200	5 - 3
Otal 48,251 138,080 138,080 88,586 0 2 23,929 71,337 138,080 88,586 0 2	Fish farming in rice fields	100 fishes					123	200/fishes	2,460	354	200/fishe				i ka	000	26.2	5 (
71.337	Sub-rotal	-	-						48,251						-	88 586	0	274 917
	Lotal				2	3,929			71,337			138,080				98 586		223 022

Additions of management expenses

NGO expenses: For 1 year

Head office:

1 person: 12 months x 20 days/month x 250,000fmg/day=60,000,000fmg 1 person: 8 months x 20 days/month x 200,000fmg/day=32,000,000fmg

Local office

1 person: 8 months x 20 days/month x 250,000fmg/day = 40,000,000fmg 1 person: 8 months x 20 days/month x 200,000fmg/day = 32,000,000fmg

Vehicle expenses:

Vehicle expenses of 4WD should be added up as rental rates. (including fuel and driver fees)

1 vehicle (1 year):12 months x 20days/month x 480,000fmg/day = 115,200,000fmg 1 vehicle (10 months): 10 months x 20days/month x 480,000fmg/day = 96,000,000fmg For forest management

Motorbike 31,000,000 (including tax) x 2 units = 62,000,000 fmg Motorboat with outboard motor $14,600,000 \times 1$ unit x 1.2 (tax) = 17,520,000 fmg

Office operating expenses:

Office supplies

Expenses for lightning and heating, and communication and so on

Total expenses: 10% of the total operating expenses (including on-site operating and NOG expenses, etc.) should be anticipated.

Qualitative pro	ject evaluation c	Qualitative project evaluation of watershed management plans from the viewpoint of socio-economic conditions	ement plans fron	n the viewpo	int of socio-e	economic co	nditions				
Evaluation item	Contents of	Evaluation index	7000	Agric	Agriculture	Agrofe	Agroforestry		Forestry		Fishery
	evaluation			Planting of fruit trees	Planting of Production of fruit trees compost	Hedge	Production of fodder	Production of Production of fodder		Afforestation ZODAFARB	崑
Appropriateness from the viewpoint Fosterage of	Fosterage of	Necessity	Mantasoa	High	High	High	Low	Low	Low	Low	High
ot residents technical ability	necum/dne		Tsiazompaniry	High	High	High	High	High	High	High	High
	Practice of	Possibility	∴ Малтаsоа ∞	High	High	High	Low	Low	Low	Low	High
	ecumque		Tsiazompaniry	High	High	High	High	High	High	High	High
	Spread of	Possibility	Mantasoa	े High	High	High	: Tow	Low	Low	Low	Unknown
	tecnnique		Tsiazompaniry	High	High	High	High	High	High	High	Unknown
	Ability to solve	Degree of	े Маптаѕоа	ं High	High	High	High	Unknown	Unknown	Unknown	Unknown
	problems	Improvement	Tsiazompaniry	High	High	High	High	High	High	High	Unknown
	Traditional	Influence	Mantasoa 💮	Low	Low	Low	· MOT	High	High	High	Low
	rechniques		Tsiazompaniry	Low	Low	Low	Low	Low	Low	Low	Unknown
Appropriateness Land ow from the viewpoint System	Land ownership system	Appropriateness	Common to both zones	Appropriate	Cannot be determined	Appropriate	Appropriate	Арргортіате	Appropriate	Appropriate	Appropriate
of the legal systems	Land inneritance system	Appropriateness	Common to both zones	Cannot be determined		Appropriate	Cannot be determined	Appropriate	Appropriate	Appropriate	Cannot be
	PE-I	Appropriateness	Common to both zones	Appropriate	Appropriate	Appropriate ,	_	Appropriate	Appropriate	Appropriate	Appropriate
	Forest law system	Appropriateness	Common to both zones	Cannot be determined	Cannot be determined	Cannot be	Cannot be	Appropriate	Appropriate	Appropriate	Cannot be
					┨	+	מבוכונוווים				determined

Appropriateness Organizational from the viewpoint system of the organizational administration peration operation side Technical aspect Common to both residents organizations organizations independence of the Organization	High High High High High High	Unknown Unknown Unknown Low Low Low Unknown	High High High High High High High	Unknown Unknown Unknown High High High Unknown	Low Low High High High Low	Low	*Unknown : Unknown : Unknown : Unknown : Low Low Low High	or High or High or High or High High High or High or High or High or High	Unknown Unknown Unknown Low Low Low	High High High High High High High High	Nothing whigh thigh High High High High High High	S Nothing S Soluting S Nothing S Nothing S Nothing S High S High S High S S	Low here so High to High to High to High to Low to Low to Low to Low to High t	Low : Low : High Service High High High Low	Nothing Mothing High High High High	Nothing Solution of Low Solution Solution of High Solution High Solution	Low Nothing Wigh Low High High High High Low	
Organizational system of the administration side side continuity of residents' organizations organizations Forests Water	Common to both zones	Common to both	Common to both zones	Common to both zones	Mantasoa	Tsiazompaniry	Mantasoa 🗧	Tsiazompaniry	Mantasoa	Tsiazompaniry	Common to both	Common to both zones	Common to both zones	Common to both zones	Common to both	Common to both	Common to both zones	
	Human aspect	Financial aspect	Technical aspect	Facilities aspect	7. (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	Assistantin to aastac	Continuousness of	the organization	Independence of the	44	Preservation of forest resources	Increase in quantity of charcoal	Improvement of soil fertility	=	Improvement of function of soil and water conservation	Improvement of	Increase in the volume of water kept	
	Organizational	administration	Side		Establishment and	residents	OI gallizations					3.57	Soil		Water			

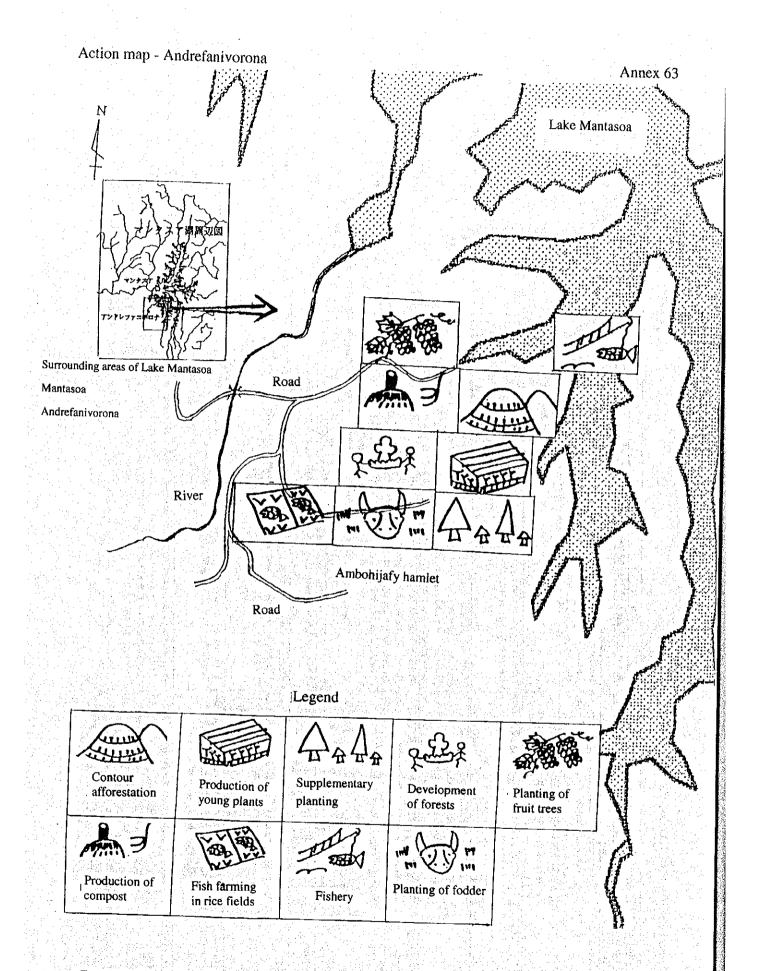
Appropriateness from the viewpoint R	Appropriateness from the viewpoint Residents' lives	Improvement of the	Mantasoa	High	High	Low	Low	High	High	Nothing	High
<u> </u>		living standard	Tsiazompaniry	High	High	Low	High	High	High	High	High
		Increase in cash	Mantasoa	High	High	High	Nothing	Nothing	High	Nothing	High
		income	Tsiazompaniry	High	High	High	High	Nothing	High	High	High
<u>8. 334</u> 8. 33.		Reduction of farming	Mantasoa	Nothing	High	High	Nothing	Low	Low	Low	High
		away Irom home	Tsiazompaniry	Nothing	High	High	Low	Low	Low	High	High
1 / L		Reduction of	Mantasoa	Low	High	High	Low	Low	Low	Nothing	Low
<u> </u>		mgration	Tsiazompaniry	Low	High	High	High	Low	Low	Low	Low
54 54 <u>1</u> 11 J		Improvement in inheritance of	Mantasoa	Low	High	High	Low	Low	Low	Low	Low
1		farm!and 👙	Tsiazompaniry	Low	High	High	Low	Low	Low	Low	Low
5 д Ц Э		Elevation of the	Mantasoa	Low	Section	Low	Unknown	Low	Unknown	Unknown	Unknown
		status of women	Tsiazompaniry	Low	Low	× Tow	Unknown	Low	Unknown	Unknown	Unknown
T. ST	Traditional social organizations	(a Hamlet	Mantasoa	Low	Low	Low	Low	Low	Low	Low	Low
		autonomous guarding organization)	Tsiazompaniry	Low	Low	Low	Low	Low	Low	Low	Low
		Influence upon Faritanana (an	Mantasoa	Low	Low	Low	Low	Low	Low	Low	Low
		organization for mutual aid for	Tsiazompaniry	Low	Low	Low	Low	Low	Low	Low	Low
<u> </u>		Influence upon Indorana (a mutual	Mantasoa	Sec Low Sec	S. Low	Low	Low	Low	Low	Low	Low
		aid organization)	Tsiazompaniry	Tow :	Low	Low	Low	Low	Low	Low	Low

Characteristics of PS – (1) MANTASOA zone

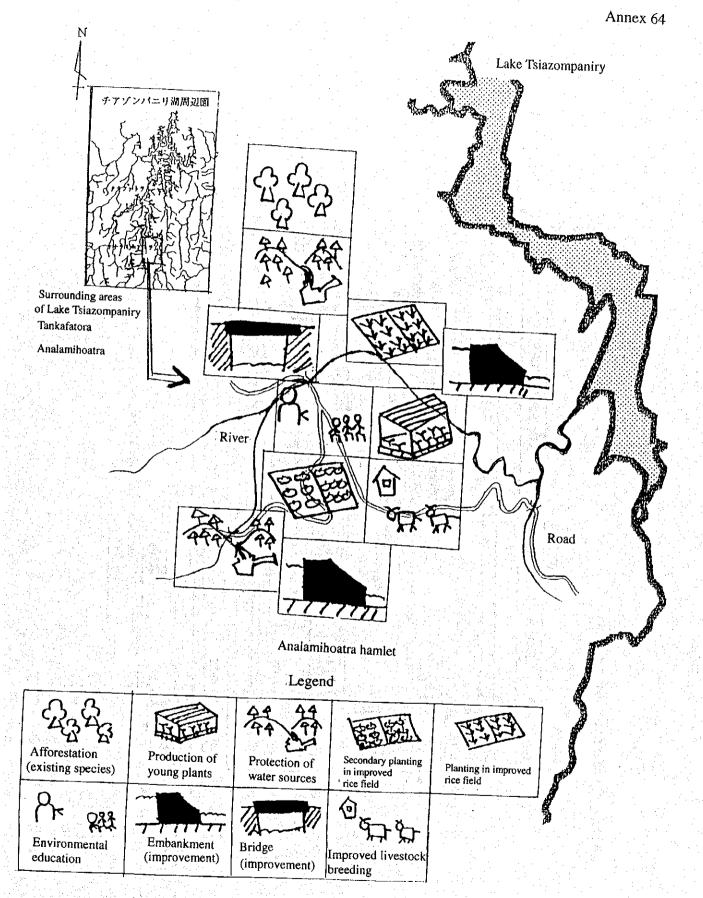
,	,				_																							
Eastern part	Ministry of Land ManagementLand occupants	Small scattered villages	Many natural forests at the eastern end			Planting of eucalyptus on lake banks	• Cutting of natural trees and charcos	Droduction		Scattered farming activities	Partial use of burned fields around natural	forests	Scattered instances of farming away from	nome	Short valleys with surface excellent countries.	mild slopes of the principal valleys		Arrival of other ethnic groups from the eastern	side	• Fear of soil erosion due to the fragile	vegetation and extensive use of land		• Deterioration of the natural vegetation hy	forest fires and illegal cutting	• Absence of forest management measures and	absence of forest management	Establishment of a forest management plan and	determination of fands to be used by residents
Southern part	Ministry of Land Management/Residents		· Existence of natural forests at the edge of	the torrent beds, etc.	 Shrub/meadow areas largely extending from 	the center to the east Oncoing planting of engalymes	Production of charcoal, firewood from	natural shrubs and planted trees		• Use for farming (from the south-west to the	center)	 Partial planting of trees 	• Extensive use of the land due to the small	illimited of villages		slope at the bottom of the valley, no	particular problem		この のは、これのでは、一般のないのでは、	· Fear of soil erosion due to the fragile	vegetation and extensive use of land	1、1、1、1、1、1、1、1、1、1、1、1、1、1、1、1、1、1、1、	• Deterioration of the natural vegetation due	to forest fires and illegal cutting	• Absence of an overall plan for use of the	tand and soil management	Establishment of a land use and cutting plan	נון מול מונים וומווים ביים וווי ויים וויים
Western part	Residents	Dense	Principally the planting of	eucalyptus seemen	不分為人以不知此一致 第五次	· 有一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个一个	Production of charcoal/digging	of planted trees (eucalyptus)	evaluated	· Typical model: planting of trees	based on altitude, starting from	the top, use of the tanety,	terraces and rice fields	for narricular program if the basic				Combination of charcoal	production, rishing and farming	· A single species of trees planted	everywhere	Saturated use of land	Acceleration of migration	17.17	ivity, or	nn nome	rease of yield	And the second of the second o
North-west part	Housing area	Houses/hoteis	 Principally the planting of 	eucalyptus and pine trees	一次分割等 即 经营工 一日日 香港等等人		Nothing particular	(本) はいかないという。(本) はいひゅうご ないはいないには、		Houses/hotels, intensive use of	land of grant and an article and article article and article and article article and article article and article and article article and article article article article and article artic		から、 いちが ちょうきん 1 新子子 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	• Land on mild slopes	No particular problem			of work with wages	and farming	Insufficient trees and flowers to		environment, insufficient trees to nourish birds	Nothing particular		· · · · · · · · · · · · · · · · · · ·		Establishment of a land we recommend the planting of use plan by the residents trees and flowers, including	nutritive trees
North-east part	Ministry of Land Management/ Residents	Scattered	Ongoing planting of	eucalyptus	Principally meadows	and shrub areas	Production of	charcoal/firewood from	planted trees (eucalyptus)	Much land unused	(meadows and shrub	areas)		• Land on mild slones	Surface erosion of	shrub and meadow	areas	Support of family	with wages	 Mild fear of soil 	erosion due to fragile	vegetation	Deterioration of	natural vegetation due	to forest fires		establishinent of a fanduse of the period of the residents	themselves
Characteristic	Form of land ownership	Form of hamlet	Forest vegetation				Use of the forest			Land use				Conservation of	watersheds			Socio-economic	Collections	Problems			Causes for the	deterioration of	watersheds	T	watersheds	

Characteristics of PS - (2) TSIAZOMPANIRY zone

	٠,٠																																										An
	Hasters north	Ministry of I and Management I and age	Small contend offi	Silian scallered Villages		 Planting of pine trees around the lakes in the 	center	 Meadows throughout the southern part 	 Extensive natural forests in the eastern side of a 	peak in the north-south direction	•	Cutting of planted pine trees	• Production of charcoal by cutting natural	9	•	away from home, partial planting on	land	Use of wide surfaces as orazing areas					 Extensive surface erosion from the meadows 	2.				Concentration of residents		Deterioration of natural forests	• Deterioration of forested areas under that	1	• Fear of surface erosion due to extensive use of	land	· Deterioration of land due to forest fires and		• Absence of measures for forest management	and grazing land management	· Establishment of a forest management plan and	determination of lands used by the residents			
	Southern part	Ministry of Land Management/ Residents	Scattered	Extensive natural forests in the court.		- Fareign to incarows in the center					 Production of charcoal/digging of planted trees 	(eucalyptus) in the south-west part			 Limited farm use around villages 	 Extensive land use except for a portion in the 	south-west	The second of th	 Principal water source area from the 		• Area of undulated hills principally mandous/chark	area	Host of Hoods in some large	Treat of 1100ds 16 some locations	 The principal watercourse is long and there are no 	fandslides due to the mild slope of the valley.	However, surface erosion is extensive.	 Villages with productive rice fields 		• Fear of erosion due to the fragile vegetation and • Deterioration of natural forests	extensive use of land				of natural vegetation due to forest	lires and some and the second	Absence of an overall land use plan		land use plan in	areas managed by the residents	• Establishment of a forest management plan		ucursaves
	Western part	Ministry of Water and Forests/ Residents	Slightly Dense	Subsistence of some natural vegetation	- Reduction of eucalyptus planting	_			· 清· · · · · · · · · · · · · · · · · ·	Production of charges (disc. ;		nees (encarypins) evaluated			n the western		I land and many grazing	area towards the south	>-	 Steep slopes in some areas, but short! 	mild slope for principal	sand and landslides								planting sites under the	14,	 Fear of soil erosion due to extensive use 			land	management measures			a forest management	Fetablishmant of all and and all and	a rang use plan by the	<u>•</u>	
Northern part	Ministry of I and Management Decision	Sentend Contend Mainagement Residents	Scattered	• Big prairies around the lake banks	• Eucalyptus planting area towards the • Reduction of	north a second and a second and a second	No natural vegetation			Production of charcoal/digging of planted	trees (encalvntus) in the northern halt			• Extensive use of land	• Partial planting of trees			- Polist of coloring waild start	No soil engine mild slope	• 100 soil erosion except for surface • Steep slopes in	erosion from the meadows due to the torrent bed and	mild slope of the valleys	おおとないという はんしんかいん			「 新 · 在 · 经经济 一	Grouns of village residents who bound	migrated due to the building of a dam	• Fear of mild soil erosion due to the Datasian as	fragile vegetation and extensive use of				• Deterioration of the natural vegetation by . Extension of	forest fires and livestock breeding			Fetablishment of a land use alon bush	residents themselves	for orazino land			
Characteristic	chin	_	Forest money in	rolest vegetation						Use of the forest				Land use				Conservation of									Socio-economic		Problems •					Causes for the				Measures to manage	٠.	•			



Carte d'action Exemple du hameau d'Ambohijafy dans le fokontany d'Andrefanivorona



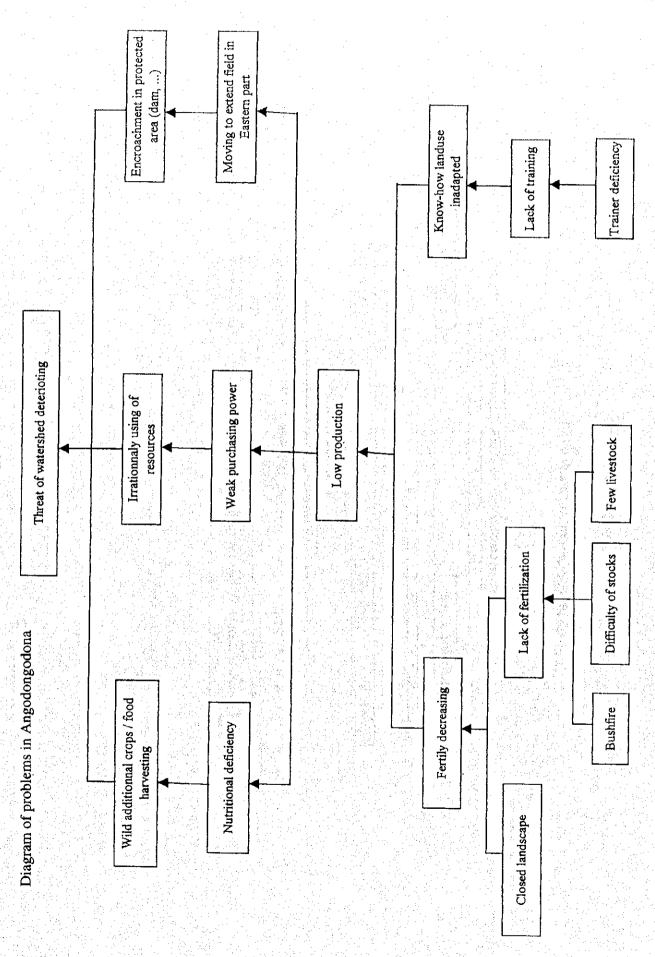
Carte d'action Exemple du hameau d'Analamihoatra dans le fokontany d'Analamihoatra

limited lowland pressure on the lake surface resources low income **EXAUSTION OF WATERSHED NATURAL RESOURCES** surroundings hawkering activities sees low production sees bushfire decreasing forest cover nutritional problem fertility decreasing heath condition lack of fertilizers livestock limitation

Diagram of problems in Andrefanivorona

irrational use of natural resources irrational techniques lack of agricultural encrochment land extention equipments Bad consequences on the watershed management LOW PRODUCTION limited land superficie bad soil conditions health problem mainutrition irrational use of land lack of chemical low fertility fertilizer Migration law incame ack of manure

Diagram of problems in Anbohimanjaka



lack of fertilizer destruction of forests Low purchasing low fertility Low forest power Erosion cover obstacle to the watershed management Bushfire Livestock didease Low income Low production Limited lowland surface Mainutrition Low price of product Health problem Low marketing

Diagram of problems in Analamihoatra

Schedule of various activities (example of Andrefanivorona)

Mar						· .																<u> 1 4 </u>		
Feb				/refilling		je je	<u> </u>	·. :																
Jan				plantation/refilling		alambarion							seeding	1		anting			olentation					
Dec		1 (A)	 aration									eds				preparation and planting			preparation and plantation		, <u> </u>	seeding	,	
Š			Nacodiot preparation								1	distribution of seeds	training			preparat			prepar	, JO 00				
Ö			A¤0							panization		distrib 					1	training	1					
Sept			5un			n oreftino	n n		1 20 1 20 1	information and organization							i.	noization			-			
Aug			ransplan			Training on grafting				informatio							1	and orgo	\$ 1 \$ 1 \$ 1 \$ 2,1	information to contamination				; >
yluly			seeding + transplanting															information and organization		informati				Feasability study
June	ation		vazning					training						E	2									-1 is
May	ne organi	1				ursery	,																	
April	noincineation and ordering of the					training on nursery								and the state of t										
Activities	1 - Forestry *tree planting	oduction	(refilling		fruit trees	nursery grafting	<i>no</i>	*charcoal oven	2 - Agroforestry	soil fertility/management	(Live hedges	(.biomass production		*compost	"Vegwer		3 - livestock breeding	fodder production	A - Action there are second	* - Agricultulal support	veoetable seeds		5 - Others	•micro - dam