

Minutes of the Joint Committee Meeting (Progress of PS)

MINUTES OF THE JOINT COMMITTEE MEETING
FOR
THE PILOT STUDY
ON
WATERSHED MANAGEMENT IN MANTASOA AND TSIAZOMPANIRY
IN
MADAGASCAR

The Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Leader of the Advisory Team, Dr. AMANO Masahiro, to Madagascar from 11 to 25 July, 1999 to conduct field survey of the Pilot Study on Feasibility Study on Watershed Management in Mantasoa and Tsiazonpaniry in Madagascar. The Pilot Study has started its implementation at the four villages located in the target area since May 1999. During his visit to the fields, several issues were recognized which were essential to the implementation of the Pilot Study. In this connection, the JICA Study Team and the Ministry of Water and Forest of Madagascar (hereinafter referred to as "the MEF") decided to organize the Joint Committee Meeting (hereinafter referred to as "the Meeting") to discuss the problems to facilitate the implementation of the Pilot Study effectively and productively to achieve the sound watershed management in the areas concerned by the rural population's initiatives.

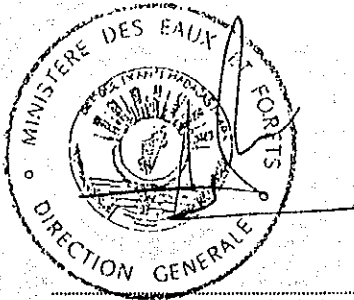
The MEF invited the relevant authorities in Madagascar and the Embassy of Japan to the Meeting held on 23 July, 1999 morning at the Head-quarters of the MEF at Antananarivo. The Meeting was chaired by Mr. RABOTOVAVY Razafimandimby Vincent Hilarion, the Director General of the MEF. The programme and the list of participants of the Meeting are shown in the Appendix -1 and -2 respectively.

The major issues discussed and items confirmed during the Meeting between the Japanese side and the Madagascar side are summarized hereunder.

1. The implementation of the Pilot Study has been steadily and actively carried out in each of the four villages in Mantasoa and Tsiazonpaniry by their own human resources and initiatives under the newly developed rural structure.
2. The NGO-GOAIKA contracted by the JICA Study Team has been giving necessary inputs to each village, facilitating rural population to implement the activities in a proper manner.
3. Both the Japanese side and the Madagascar side recognize the importance of sustainability in implementing and developing the programme of the Pilot Study in each village in order to secure achievement of the final goal for the sound participatory watershed management.
4. In connection with the above context, the Japanese side will provide relevant information on any possible scheme of overseas assistance to support financial and technical inputs which will help the rural population continue the implementation of the programme for sound watershed management at the areas concerned after completion of the Pilot Study.
5. The Director General of the MEF expressed his willingness to assist the rural population to acquire land ownership on either the State land or the MEF's land for the purpose of tree planting. Accordingly, the MEF will authorize, under an agreement with the Watershed Management Committees in the Pilot Study area, rural population to plant seedlings produced in the Pilot Study on its land. In parallel, the MEF and relevant authorities will immediately initiate their action to apply the ZODAFARB, a scheme which combines tree plantation and transfer of land ownership, in the Study area.

Handwritten signature and initials: M.A. with a vertical line to the right.

Antananarivo, 23 July , 1998



Mr. RABOTOVAVY Razafimandimby
Vincent Hilarion
Director General
Ministry of Water and Forest
Madagascar

宮武進

Mr. MIYATAKE Susumu
Sub Leader
JICA Study Team
Japan

Witnessed by

Dr. AMANO Masahiro
Leader
JICA Advisory Team
Japan

Appendix -1

Programme of the Joint Committee Meeting
on
Watershed Management in Mantasoa and Tsiazonpaniry
in Madagascar

Date : 23 July (Friday) 1999, 9:00 to 12:00 hours

Venue : Head Quarters of the Ministry of Water and Forests

Topics :

1. Opening Remarks

by the Representative of MEF

2. Report on Field Visit for Pilot Study

by Dr. AMANO Masahiro

3. Proposal of ZODAFARB System to be Introduced in the
Pilot Study Area

by Mr. MORI Shinichi

4. Comments from the Ministry of Water and Forests

5. Forthcoming Programme of the JICA Study Team

by Mr. MIYATAKE Susumu

6. Closing

23 July 1999
M.A. [Signature]

FICHE DE PRESENCE
REUNION BASSINS VERSANTS / JICA
Le 23 Juillet 1999

NOM	INSTITUTION
1- RABOTOVAVY RAZAFIMANDIMBY Hilarion	- DIRECTEUR GENERAL DES EAUX ET FORETS
2- RARIVOMANANA Philibert	- SERVICE DU DEVELOPPEMENT FORESTIER
3- RAKOTOARISOA RODOLPHE	- SOUS PREFET DE MANJAKANDRIANA
4- RANDIMBIMAHENINA A.	- MINISTERE DE LA RECHERCHE SCIENTIFIQUE
5- RAMBELOSON FRANCOIS RICHARD	- DIRECTEUR INTERREGIONAL DES EAUX ET FORETS
6- RAZAFINDRIAKA BENIE VONJY	- CHARGEE DE LA PROGRAMMATION REGIONALE AU NIVEAU DE LA DIRECTION DE PROGRAMMATION DE L'ONE
7- RATSIMANDRESY HENRI	- CHEF DE SERVICE DES EQUIPEMENTS URBAINS ET PUBLICS DU MINISTERE DE L'AMENAGEMENT DU TERRITOIRE ET DE LA VILLE
8- MIYATAKE SUSUMU	- SUB. LEADER, JICA TEAM
9- AMANO MASAHIRO	- ADVISOR, JICA TEAM
10- RATSIMBAZAFY VERONIRINA	- INTERPRETE, POUR JICA TEAM
11- SAITO AKIRA	- AMBASSADE DE JAPON
12- MORI SHINICHI	- ECONOMIST, JICA STUDY TEAM
13- NAKAMURA MASAHIRO	- EXPERT, JICA
14- TOYODA TAKAKI	- MEMBER OF JICA STUDY TEAM

24/50 - 10/1 //

MINUTES OF THE JOINT COMMITTEE MEETING
FOR
PILOT STUDY AND CONCEPT OF WATERSHED MANAGEMENT
ON
WATERSHED MANAGEMENT IN MANTASOA AND TSLAZOMPANIRY
IN
MADAGASCAR

The JICA Study team represented by Mr. MIYATAKE Susumu, Sub Team Leader, and the Ministry of Water and Forest, Madagascar (hereinafter referred to as "MEF") represented by Mr. RAMBERSON François Richard, Inter-regional Director for Antananarivo organized the Joint Steering Committee Meeting (hereinafter referred to as "the Meeting") at the meeting room in the Headquarters of MEF on 11 October, 1999.

The objective of the Meeting is to review the progress of the Pilot Study on Feasibility Study on Watershed Management in Mantasoa and Tsiazonpaniry in Madagascar (herein after referred to as "the project"), and to discuss the basic concept on watershed management plan. The meeting was chaired by Mr. Ramberson F. Richard and it was proceeded in accordance with the agenda shown in the attached paper. The list of participants is also attached herewith.

The main issues presented and discussed during the Meeting are as follows.

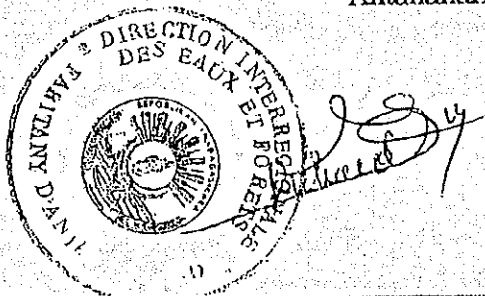
1. The implementation of the Pilot Study has been continuously carried out in each village of Mantasoa and Tsiazonpaniry with some progress and substantial achievement. It is, however, reported that some operations have not been started yet or been behind of the original schedule due to commitment of daily agriculture activities in the villages.
2. It is needed to set up appropriate countermeasure in fodder production in order to manage fire control that often occurs in Antananarivo region. The JICA study team will pay a special attention on this matter for success of this programme.

3. Addendum to the programme of Pilot Study was explained by the JICA Study Team. Feasibility study for hydro-electric power supply at Analamihoatra will be involved in this Pilot Study. And, an application of ZODAFARB will be carried out in 'Tsiacompaniry area during the period of Pilot Study in order to motivate villagers to participate afforestation activity by their initiatives.

4. Midterm evaluation for Pilot Study will be conducted in early November '99 by the villagers with technical assistance of NGO (GOAIKA). Main objective of the midterm evaluation is to help villagers establish the self-sustenance mechanism for future watershed management by their initiatives.

5. Basic concept of "Watershed Management Plan" was presented by Mr. MIYATAKE Susumu and specific points were highlighted which are explicated in the document prepared by the JICA Team. JICA Study Team welcomes any question or comments from the participants or relevant authorities upon the basic concept any time to develop the ultimate watershed management plan of the project .

Antananarivo, 13 October, 1999



Mr. RAMBERSON François Richard
Inter-regional Director for Antananarivo
Ministry of Water and Forest
Madagascar

宮武 進

Mr. MIYATAKE Susumu
Sub Team Leader
JICA Study Team
Japan

Attachment

Agenda of the meeting

1. Pilot Study

1) Progress of Pilot Project in each village.

2) Addendum to the programme of Pilot Project.

* Feasibility study on hydro-electric power.

* Application of ZODAFARB.

3) Midterm Evaluation for Pilot Project.

* Purpose, method and schedule.

2. Basic concept of "Watershed Management Plan".

* Refer the paper.

3. Forthcoming Programme.

FICHE DE PRESENCE

du 11 Octobre 1999

NOMS	INSTITUTIONS
1 - RAMBELOSON François Richard	Directeur Interrégional des Eaux et Forêts Antananarivo
2 - RAZAFIMAHATRATRA Mahefason	Direction de la Gestion Durable des Ressources Forestières (DGDRF), Ministère des Eaux et Forêts, Division Bassins Versants
3 - RAHARISOA Henrison Roland	Chef de Division Reboisement à la Direction de la Gestion Durable des Ressources Forestières (DGDRF) Ministère des Eaux et Forêts
4 - RAZAFINTSALAMA Claudie	Chef Circonscription des Eaux et Forêts Antananarivo
5 - RAZAFINDRIAKA Benie V.	Office National pour l' Environnement (ONE)/Programmation Régional
6 - RABEMANANJARA Rivo	Ministère de l'Environnement, Chef de Division de la Contribution à la Gestion des Ressources Naturelles
7 - TATA Henri	Ministère de l'Environnement Collaborateur Technique à la Direction de la Protection et de la Politique Environnementale TI : 409-08
8 - RAOLINJATOVO Gèneviève	Ministère de l'Agriculture Programme PPI Chef Cellule Environnement
9- RANDRIANARITIANA Pierrot	Ministère de l'Agriculture Direction du Génie Rural
10- RANIRINARISON A. Florence	Ministère de l'Elevage, Chef Service des Animaux à cycle court
11 - RANDRIANJOHARY Alain Pierre	Secrétariat Multi-Bailleurs, Programme Environnemental II
12- NAKAMURA Masahiko	JICA Expert
13- MIYATAKE Susumu	Sub. Leader, JICA
14- SAWANOBORI Yoshihide	Member of JICA Study Team
15- RAVELOARISOA Juliana	Interprete, Pour JICA Team

Amendment Of Agreement
On
Implementation of Participatory Watershed management Program

Three parties of the JICA Study Team, Ministry of Water and Forests of the Government of Madagascar and Gasy Ory Azo Ikarohan Ampivoarana agreed to amend the AGREEMENT made on the day of April 26, 1999 as the following:

The operational program of hydroelectric (2~3KW) set shall be added as No.9 operation in the village of Analamihoatra of Attached paper No.1.

ZODAFARB program shall be applied in some villages under the forestry activity in Attached paper No.1.

The amount of seventeen million five hundred thousand FMG for hydroelectric set shall be in Analamihoatra of Attached paper No.2.

This Amendment was made on the day of October 16, 1999 by three parties through their authorized representatives.

JAPAN OVERSEAS FORESTRY
CONSULTANTS ASSOCIATION

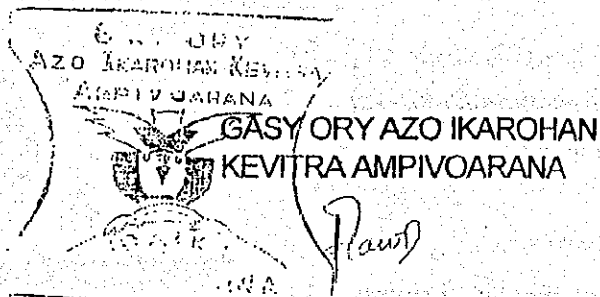
宮武進

MIYATAKE Susumu
Sub Team Leader
Sub Team Leader
Feasibility Study on Watershed Management
In Mantasoa and Tsiazompaniry



Richard

RAMBELOSON François Richard
Directeur



Paul
RAHARIJAONA Williams Jacobs
Representative

Minutes of the Meeting (Explanation and Discussion of the Interim report)

MINUTES OF THE MEETING
ON
THE INTERIM REPORT
OF
WATERSHED MANAGEMENT IN MANTASOA AND TSIAZOMPANIRY
IN
MADAGASCAR

In pursuant to the objectives of the Scope of Work for the Feasibility Study on Watershed Management in Mantasoa and Tsiacompaniry in Madagascar, (hereinafter referred to as "the Study") signed on 3 October, 1997, Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Study Team headed by Mr. HANDA Tsutomu from 21 April to 9 June, 2000.

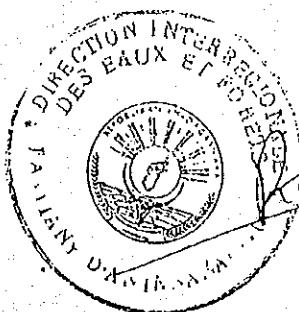
The Study Team had submitted twenty (20) copies of the Interim Report to the Madagascar side, and held the meeting of Joint Committee on 26 April, 2000 with the Madagascar authorities and counterparts headed by Mr. RAMBELOSON François Richard, Director of Direction Inter-region in ANTANANARIVO, Ministry of Water and Forests.

The list of attendants for the meeting is shown in Appendix 1.

The results as well as comments from the meeting are as follows;

1. The Madagascar side and the JICA Study Team discussed the Interim Report and both parties agreed upon the contents of the Report with some confirmation and suggestion as shown in Appendix 2.
2. Both sides fully agreed to cooperate each other to implement effectively the Participatory Watershed Management Program to achieve the objectives of the Study.

Antananarivo, 28th April, 2000



Mr. RAMBELOSON François Richard
Director
Direction Inter-region in ANTANANARIVO
Ministry of Water and Forests
Madagascar

Mr. HANDA Tsutomu
Team Leader
JICA Study Team
Japan

LIST OF PARTICIPANTS

<u>Name</u>	<u>Position</u>	<u>Institution</u>
The Madagascar Side :		
1.RAMBELOSON François Richard	Directeur	Ministère des Eaux et Forêts Direction Inter-régionale des Eaux et Forêts Antananarivo
2.RAZAFIMATRATRA Mahefason	Chef de Service Développement Forestier	Ministère des Eaux et Forêts Direction de la Gestion Durable des Ressources Forestières
3.ANDRIAMANANORO Fidy	Chef Système d'Information Géographique Direction Générale Des Eaux et Forêts	Ministère des Eaux et Forêts
4.NDRIANANJA Tevehery	Chef Division Etudes	Ministère des Eaux et Forêts
5.RAOLINJATOVO Geneviève Marie	Chef de cellule Environnement Coordination Nationale Petit Périmètre Irriguée	Ministère de l' Agriculture
6.RANDRIANARISOA Nhélsou	Chef de Service Energie et Eau	Ministère de l' Energie et des Mines
7.RANDIMBIMAHENIAA	Chef de Service d' Appui à la Recherche Environnemental	Ministère de la Recherche Scientifique
8.RABE Harimamana	Chef Service Planification Direction Générale des Plans	Ministère de l' Aménagement du Territoire et de la Ville
9.SUGITA Eiji	Expert Japonais	Ministère des Eaux et Forêts

<u>Name</u>	<u>Position</u>	<u>Institution</u>
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The Japanese Side :

Study Team:

1. HANDA Tsutomu	Team Leader	Japan Overseas Forestry Consultants Association (JOFCA)
2. SAWANOBORI Yoshihide	Team Member	- do -
3. MIURA Kazuya	Coordinator	- do -
4. ARAI Tadao	Interpreter	- do -

Embassy of Japan:

1. SAITO Akira	First Secretary	Embassy of Japan in Madagascar
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SPECIFIC ISSUES DISCUSSED DURING THE MEETING

1. Regarding the fish farming activity in the Pilot Study area, some village had success on hatching fry but the other had not. Cause of the failure has not been identified yet whether it happened due to the management system of the villagers or the technical issue. The Pilot Study needs to continue to assess the reasons.
2. Fish farming activity on the fallow land has an important role for an effective land use system. Therefore, it is advisable to apply the fish farming program in each zone of the areas concerned taking into account of the results of the Pilot Study. It should be introduced to the farmers by their own initiatives.
3. The matter of water resource does not affect only the people lives in the periphery but also the surroundings. Therefore, it would be advisable if the committee of watershed management is registered as an authorized public sector. Thus, it will facilitate the committee to extend its role to other areas concerned.
4. Since the family plan is related to the property inheritance of the land in the Pilot Study area, this issue has to be taken into account for the component of future program for dissemination.
5. The Pilot Study will conclude to formulate the participatory watershed management plan on the basis of results of the pilot projects carried out in the previous year, and the plan should be feasible and manageable for the local population.
6. The proposed watershed management plan has a period of ten years which consists of first phase (five years) and second phase (five years). Details of the second phase plan will be formulated on the basis of assessment and evaluation of the overall activities during the first phase.

Results of Study at Forests (Tree plantation, natural forest)

Results of Plot Survey at Eucalyptus robusta Plantation

Date	4 May, 1998	Plot size	20 x 20m
Plot No.	1	Tree species	Eucalyptus robusta
G.P.S.	S19° 04' 55" E47° 51' 34"	Tree age	15 years old
Location	Ambohipeno	Year after harvesting	0
Topo/Grade	Hill slope/East 20°	Spacing	about 2 x 3m
Soil	Yellow-brown soil, gravel rich	Forest floor	Bush, grass, fern
Complete enumeration		Distance from village	2.2 km
Remarks : Young regeneration trees exist Affected by forest fire			

No.	DBH	Height	Volume	No.	DBH	Height	Volume	No.	DBH	Height	Volume
1	6	6		41	10	9		81			
2	14	7		42	12	9		82			
3	4	5		43	22	14		83			
4	6	6		44	20	12		84			
5	4	5		45	26	13		85			
6	14	8		46	4	8		86			
7	2	4		47	20	16		87			
8	12	9		48	14	12		88			
9	16	9		49	14	12		89			
10	4	5		50	4	7		90			
11	10	7		51	6	4		91			
12	4	5		52				92			
13	4	5		53				93			
14	8	7		54				94			
15	16	11		55				95			
16	16	9		56				96			
17	14	9		57				97			
18	10	8		58				98			
19	4	6		59				99			
20	16	10		60				100			
21	10	8		61				101			
22	8	9		62				102			
23	18	12		63				103			
24	16	11		64				104			
25	6	7		65				105			
26	12	11		66				106			
27	8	8		67				107			
28	14	10		68				108			
29	6	8		69				109			
30	20	11		70				110			
31	14	10		71				111			
32	4	4		72				112			
33	6	6		73				113			
34	14	9		74				114			
35	6	8		75				115			
36	12	9		76				116			
37	20	10		77				117			
38	8	8		78				118			
39	10	8		79				119			
40	20	14		80				120			

Results of Plot Survey at Eucalyptus robusta Plantation

Date	6 May, 1998	Plot size	20 x 20m
Plot No.	2	Tree species	Eucalyptus robusta
G.P.S.	S19° 04' 55" E47° 51' 34"	Tree age	8 years old
Location	Ampasimpotsy	Year after harvesting	8 years
Topo/Grade	Hill Slope-East 20°	Spacing	about 1.5~2.0 x 1.5~2.0m
Soil	Brown clay soli, gravel rich Low organic matter	Forest floor	Anjavidy, Rambiazina Astoro
Remarks	North-west of Mantasua lake West of dam	Distance from village	7 km from Ambatorona

No.	DBH	Height	Volume	No.	DBH	Height	Volume	No.	DBH	Height	Volume
1	10	8		27	10	11					
2	4	7			8	11					
3	8	7			8	10					
	10	8			6	8					
4	6	5			6	8					
	8	6		28	6	9					
5	10	7			6	7					
6	8	5			12	12					
	6	5		29	6	8					
	8	6		30	8	9					
	6	6			8	8					
	6	6		31	10	9					
7	8	8		32	6	7					
	8	8		33	6	8					
8	6	7		34	14	8					
9	6	7		35	6	10					
10	8	7		36	6	8					
11	6	6		37	10	7					
12	6	7		38	12	11					
	6	7			8	11					
13	10	8			6	7					
14	8	9		39	8	11					
15	6	7			10	11					
16	8	10			10	11					
17	6	7			8	10					
18	6	6		40	8	9					
19	6	7		41	6	7					
	6	7		42	6	8					
20	10	10		43	6	7					
21	6	8									
	6	8									
22	8	10									
	6	9									
	6	9									
23	8	9									
24	10	10									
25	6	9									
26	10	10									
	10	10									

Results of Plot Survey at Pine Plantation			
Date	7 May, 1999	Plot size	20 x 50m
Plot No.	5	Tree species	P. kesiya, P.patula, P. chinensis
G.P.S.	S19° 0' 1"	Planted year	1952
	E47° 51' 44"	Year after harvesting	0
Location	Antsahondra	Spacing	about 2 x 2m
Topography	Lake side(west), Mantasoa	Forest floor	Natural regeneration rich,
Grade	South-west, 5°		Shrub exists
Soil	Yellow-brown, gravel rich A layer:14cm (humus layer)	Land category	Land for cottage
Remarks	Natural regeneration exists Affected by forest fire		

Abbreviation: PK=P. kesiya, PP=P. patula, PC=P. chinensis

No.	Species	DBH	Volume	No.	Species	DBH	Volume	No.	Species	DBH	Volume
1	PK	30		41	PK	32		81	PK	10	
2	"	32		42	"	24		82	"	6	
3	"	8		43	"	8		83	PP	6	
4	"	6		44	"	12		84	"	18	
5	"	8		45	"	8		85	"	24	
6	"	22		46	"	6		86	"	18	
7	"	30		47	"	14		87	"	30	
8	"	38		48	"	28		88	"	12	
9	"	14		49	"	16		89	"	14	
10	"	28		50	"	12		90	"	10	
11	"	8		51	"	16		91	"	14	
12	"	6		52	"	14		92	"	14	
13	"	6		53	"	22		93	"	16	
14	"	8		54	"	18		94	"	6	
15	"	12		55	"	12		95	"	12	
16	"	18		56	"	8		96	"	20	
17	"	8		57	"	12		97	"	18	
18	"	38		58	"	16		98	"	10	
19	"	8		59	"	16		99	"	16	
20	"	14		60	"	16		100	"	18	
21	"	26		61	"	42		101	"	16	
22	"	20		62	"	8		102	"	12	
23	"	12		63	"	10		103	"	14	
24	"	32		64	"	24		104	"	16	
25	"	8		65	"	8		105	PC	48	
26	"	12		66	"	22		106	"	10	
27	"	20		67	"	18		107	"	36	
28	"	8		68	"	18		108	"	32	
29	"	18		69	"	16		109	"	36	
30	"	8		70	"	32		110			
31	"	32		71	"	14		111			
32	"	34		72	"	24		112			
33	"	28		73	"	10		113			
34	"	6		74	"	18		114			
35	"	32		75	"	12		115			
36	"	6		76	"	14		116			
37	"	26		77	"	16		117			
38	"	6		78	"	16		118			
39	"	6		79	"	52		119			
40	"	18		80	"	32		120			

Results of Plot Survey at Eucalyptus robusta Plantation

Date	7 May, 1998	Plot size	20 x 50m
Plot No.	3	Tree species	Eucalyptus robusta
G.P.S.	S19° 03' 43" E47° 50' 04"	Planted year	1948
Location	Fandanjana	Year after harvesting	0
Topo/Grade	Hill slope /North 20°	Spacing	
Soil	Brown-gray clay soil	Forest floor	No grasses
		Distance from village	2 km from Ambohipeno
Remarks	Undergrowth: Few Acacia dealbata (~3m) exists To be harvested for lumber, seeds are collected and sold out		

No.	DBH	Height	Volume	No.	DBH	Height	Volume	No.	DBH	Height	Volume
1	26	23		41	50	31		81	8	7	
2	24	22		42	8	7		82	8	7	
3	50	31		43	20	19		83	28	24	
4	10	10		44	6	4		84	16	16	
5	8	7		45	36	27		85	10	10	
6	32	25		46	24	22		86	16	16	
7	36	27		47	10	10		87	8	7	
8	12	13		48	22	20		88	10	10	
9	28	24		49	64	34		89	6	4	
10	8	7		50	18	18		90	10	10	
11	14	15		51	10	10		91	8	7	
12	26	23		52	54	32		92	10	10	
13	18	18		53	26	23		93	14	15	
14	6	4		54	24	22		94	8	7	
15	12	13		55	10	10		95	52	31	
16	38	27		56	42	29		96	12	13	
17	26	23		57	12	13		97	10	10	
18	26	23		58	30	24		98	10	10	
19	6	4		59	26	23		99	6	4	
20	34	26		60	18	18		100	8	7	
21	24	22		61	22	20		101	12	13	
22	6	4		62	20	19		102	12	13	
23	42	29		63	24	22		103	50	31	
24	18	18		64	20	19		104	40	28	
25	36	27		65	48	30		105	26	23	
26	8	7		66	40	28		106	12	13	
27	20	19		67	22	20		107	12	13	
28	12	13		68	18	18		108	10	10	
29	12	13		69	12	13		109	56	32	
30	52	31		70	30	24		110			
31	34	26		71	18	18		111			
32	42	29		72	40	28		112			
33	44	29		73	32	25		113			
34	24	22		74	52	31		114			
35	16	16		75	14	15		115			
36	8	7		76	6	4		116			
37	36	27		77	10	10		117			
38	34	26		78	8	7		118			
39	14	15		79	18	18		119			
40	24	22		80	6	4		120			

Results of Plot Survey at Natural Forest

Sheet No. 2

Plot Number	6	(Remarks)
Date	21 May, 1998	
G.P.S.	S18° 57' 35" E47° 54' 05"	
Location	Antananaribokely	
Topography	Hill slope	
Soil	Yellow brown clay soil	
Direction of slope	South-east-south	
Gradience	30°	
Plot size	10 x 10m	
Measured tree	DBH : 4-9	

	Species	D(cm)	H(m)	aveD	No		Species	D(cm)	H(m)	aveD
1	<i>Ampalis sp.</i>	4		4	1					
2	<i>Anthocleista sp.</i>	8		8	1					
3	<i>Aphloia theaeformis</i>	5		6.3	3					
4	<i>Aphloia theaeformis</i>	7								
5	<i>Aphloia theaeformis</i>	7								
6	<i>Brachylaena sp.</i>	7		7.3	3					
7	<i>Brachylaena sp.</i>	8								
8	<i>Brachylaena sp.</i>	7								
9	<i>Canthium sp.</i>	4		5.7	3					
10	<i>Canthium sp.</i>	8								
11	<i>Canthium sp.</i>	5								
12	<i>Elaeocarpus sp.</i>	7		6.7	3					
13	<i>Elaeocarpus sp.</i>	6								
14	<i>Elaeocarpus sp.</i>	7								
15	<i>Eugenia emirnensis</i>	6		6.5	2					
16	<i>Eugenia emirnensis</i>	7								
17	<i>Ilex mitis</i>	4		4	1					
18	<i>Memecylon sp.</i>	5		5	1					
19	<i>Ravensara sp.</i>	9			2					
20	<i>Ravensara sp.</i>	9		9						
21	<i>Tambourissa sp.</i>	9		7.4	7					
22	<i>Tambourissa sp.</i>	6								
23	<i>Tambourissa sp.</i>	7								
24	<i>Tambourissa sp.</i>	4								
25	<i>Tambourissa sp.</i>	8								
26	<i>Tambourissa sp.</i>	9								
27	<i>Tambourissa sp.</i>	9								
28	<i>Weinmannia sp.</i>	5		7	2					
29	<i>Weinmannia sp.</i>	9								
30										
31	Total Number				29					
32										
33										
34										
35										
36										
37										
38										
39										
40										

D : Diameter breast height(cm), H : Height(m), aveD : average of diameter, No : Number of trees

Results of Plot Survey at Natural Forest

Sheet No. 3

Plot number	6
Date	21 May, 1998
G.P.S.	S18° 57' 35" E47° 54' 05"
Location	Antananaribokely
Topography	Hill slope
Soil	Yellow brown clay soil
Direction of slope	South-east-south
Gradience	35°
Plot size	2 x 2m
Measured tree:	Undergrowth above 1m high

(Remarks)

	Species	D(cm)	H(m)				Species	D(cm)	H(m)
1	<i>Apodocephala sp.</i>								
2	<i>Apodocephala sp.</i>								
3	<i>Apodocephala sp.</i>								
4	<i>Ceoton sp.</i>								
5	<i>Dombeya sp.</i>								
6	<i>Macaranga sp</i>								
7	<i>Macaranga sp</i>								
8	<i>Tambourissa sp.</i>								
9	<i>Tambourissa sp.</i>								
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
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27									
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30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									

D : Diameter breast height(cm), H : Tree height(m)

Plot Number	6	(Remarks) *12 stumps found in a plot *Palm tree(Ravenea robustior) exists *Forest was disturbed by local people before Nov. '98.
Date	21 May, 1998	
G.P.S.	S18° 57' 35" E47° 54' 05"	
Location	Antananaribokely	
Topography	Hill slope	
Soil	Yellow brown clay soil	
Direction of slope	South-east-south	
Gradient	30-35°	
Plot size	20 x 50m	
Measured tree	Over 10m height	

	Species	D(cm)	H(m)		Species	D(cm)	H(m)
1	<i>Agauria sp.</i>	11	12	41	<i>Ocotea sp.</i>	11	10
2	<i>Agauria sp.</i>	10	9	42	<i>Polyscias sp.</i>	11	7
3	<i>Agauria sp.</i>	13	11	43	<i>Polyscias sp.</i>	12	8
4	<i>Anthocleista sp.</i>	11	8	44	<i>Polyscias sp.</i>	10	9
5	<i>Anthocleista sp.</i>	11	9	45	<i>Polyscias sp.</i>	12	8
6	<i>Anthocleista sp.</i>	10	7	46	<i>Polyscias sp.</i>	13	9
7	<i>Anthocleista sp.</i>	11	7	47	<i>Polyseias sp.</i>	16	11
8	<i>Anthocleista sp.</i>	10	9	48	<i>Ravensara sp.</i>	11	11
9	<i>Anthocleista sp.</i>	16	11	49	<i>Schefflera sp.</i>	13	7
10	<i>Anthocleista sp.</i>	10	11	50	<i>Schefflera sp.</i>	21	14
11	<i>Anthocleista sp.</i>	19	9	51	<i>Schefflera sp.</i>	11	7
12	<i>Aphloia theaeformis</i>	11	7	52	<i>Schefflera sp.</i>	10	9
13	<i>Aphloia theaeformis</i>	12	7	53	<i>Schefflera sp.</i>	15	13
14	<i>Aphloia theaeformis</i>	11	7	54	<i>Schefflera sp.</i>	11	10
15	<i>Brachylaena sp.</i>	14	10	55	<i>Schefflera sp.</i>	18	9
16	<i>Brachylaena sp.</i>	15	13	56	<i>Sloanea sp.</i>	14	13
17	<i>Brachylaena sp.</i>	10	7	57	<i>Sloanea sp.</i>	16	12
18	<i>Brachylaena sp.</i>	11	10	58	<i>Symphonia sp.</i>	13	14
19	<i>Canthium sp.</i>	10	8	59	<i>Tambourissa sp.</i>	11	8
20	<i>Canthium sp.</i>	11	9	60	<i>Tambourissa sp.</i>	11	7
21	<i>Canthium sp.</i>	14	11	61	<i>Tambourissa sp.</i>	10	11
22	<i>Canthium sp.</i>	10	13	62	<i>Tambourissa sp.</i>	12	11
23	<i>Canthium sp.</i>	10	12	63	<i>Tambourissa sp.</i>	14	11
24	<i>Canthium sp.</i>	11	10	64	<i>Tambourissa sp.</i>	12	10
25	<i>Canthium sp.</i>	14	9	65	<i>Tambourissa sp.</i>	10	12
26	<i>Canthium sp.</i>	11	7	66	<i>Tambourissa sp.</i>	11	11
27	<i>Canthium sp.</i>	10	7	67	<i>Tina chapelieriana</i>	11	15
28	<i>Canthium sp.</i>	11	11	68	<i>Tina chapelieriana</i>	17	13
29	<i>Canthium sp.</i>	10	8	69	<i>Tina chapelieriana</i>	11	12
30	<i>Canthium sp.</i>	13	14	70	<i>Tina chapelieriana</i>	11	12
31	<i>Canthium sp.</i>	14	8	71	<i>Tina chapelieriana</i>	11	8
32	<i>Deuteromalotus sp.</i>	16	12	72	<i>Tina chapelieriana</i>	16	14
33	<i>Garcinia sp.</i>	10	10	73	<i>Vitex coursii</i>	10	10
34	<i>Garcinia sp.</i>	11	8	74	<i>Weinmannia sp.</i>	10	8
35	<i>Homalium sp.</i>	13	12	75	<i>Weinmannia sp.</i>	18	14
36	<i>Ilex mitis</i>	10	11	76	<i>Weinmannia sp.</i>	11	11
37	<i>Ilex mitis</i>	14	12	77	<i>Weinmannia sp.</i>	13	10
38	<i>Malleastrum sp.</i>	21	14	78	<i>Weinmannia sp.</i>	10	7
39	<i>Ochrocarpus sp.</i>	14	10	79	<i>Weinmannia sp.</i>	18	12
40	<i>Ocotea sp.</i>	11	8	80	<i>Weinmannia sp.</i>	10	13
				81	<i>Weinmannia sp.</i>	10	9
				82	<i>Weinmannia sp.</i>	13	12
				83	<i>Weinmannia sp.</i>	15	13
				84	<i>Xylopa sp.</i>	15	12

D : Diameter breast height(cm), H : Tree height(m)

Species	No	a D	a H
<i>Agauria sp.</i>	3	11	11
<i>Anthocleista sp.</i>	8	12	9
<i>Aphloia theaeformis</i>	3	11	7
<i>Brachylaena sp.</i>	4	13	10
<i>Canthium sp.</i>	13	11	10
<i>Deuteromalotus sp.</i>	1	16	17
<i>Garcinia sp.</i>	2	11	9
<i>Homalium sp.</i>	1	13	14
<i>Ilex mitis</i>	2	12	12
<i>Malleastrum sp.</i>	1	21	14
<i>Ochrocarpos sp.</i>	1	14	10
<i>Ocotea sp.</i>	2	11	9
<i>Polyscias sp.</i>	6	12	9
<i>Ravensara sp.</i>	1	11	11
<i>Schefflera sp.</i>	7	14	10
<i>Sloanea sp.</i>	2	15	13
<i>Symphonia sp.</i>	1	13	14
<i>Tambourissa sp.</i>	8	11	10
<i>Tina chapelieriana</i>	6	13	12
<i>Vitex coursii</i>	1	10	11
<i>Weinmannia sp.</i>	10	13	11
<i>Xylopia sp.</i>	1	15	12
Total	84		

No : Number of trees, a D : average of DBH, a H : average of tree height

Results of Plot Survey at Natural Forest

Plot Number	7	(Remarks) *Species were identified by binocular *Natural forest remains on bottom of valley *Commercial big trees were felled
Date	21 May, 1998	
G.P.S.	S18° 57' 49" E47° 54' 21"	
Location	Manampisoa	
Topography	Valley	
Soil	Yellow brown clay soil	
Direction of slope	South east	
Gradience	about 20°	
Plot size		
Measured tree	over 15m high	

	Species	Utilization		Species	Utilization	
1	<i>Anthocleista madagascariensis</i>		many			
2	<i>Aphloia theaeformis</i>					
3	<i>Brachylaena ramiflora</i>		many			
4	<i>Canthium sp.</i>					
5	<i>Croton sp.</i>					
6	<i>Dichaetanthera sp.</i>		many			
7	<i>Dilobeia thoursii</i>					
8	<i>Dombeya sp.</i>		many			
9	<i>Enterospermum sp.</i>					
10	<i>Eugenia emirnesis</i>	Commercial tree				
11	<i>Garcinia sp.</i>	Commercial tree				
12	<i>Grewia cuneifolia</i>					
13	<i>Harungana madagascariensis</i>					
14	<i>Homallium sp.</i>	Commercial tree				
15	<i>Ilex mitis</i>	Commercial tree				
16	<i>Ocotea sp.</i>	Commercial tree				
17	<i>Polyscias sp.</i>		many			
18	<i>Ravenea robustior (Palmier)</i>					
19	<i>Ravensara crassifolid</i>	Commercial tree	many			
20	<i>Rhotmannia talagnignia</i>					
21	<i>Schefflera vantsilana</i>		many			
22	<i>Sloanea rhodantha</i>		many			
23	<i>Symphonia sp</i>	Commercial tree				
24	<i>Tambourissa sp.</i>	Commercial tree				
25	<i>Trema orientalis</i>					
26	<i>Weinmannia rutenbergii</i>	Commercial tree	many			
27	<i>Wlaedcarpus alnifolius</i>					
28	<i>Zanthoxylum madagascariensis</i>					
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						

Results of Plot Survey at Eucalyptus robsta Plantation

Sheet 1

Date	27 May, 1998	Plot size	20 x 50m
Plot No.	4	Tree species	Eucalyptus robusta
GPS	S19° 15' 06" E47° 47' 09"	Planted year	1978
		Year after harvesting	1.5 year
Location	Mandritsara	Spacing	2 x 2m
Topography	Hill top, flat	Forest floor	No undergrowth
Slope, Grade	North-east, 4°	Distance from village	1km from Ambohimiadana
Soil	Redish brown, no surface soil	Mesuring method	DBH6cmup, each 2cm
Remarks	No undergrowth, Growth ring was not clear, No heart wood developed, Plenty coppices below DBH 6 cm grow		

No.	DBH	Height	Volume	No.	DBH	Height	Volume	No.	DBH	Height	Volume
1	8	8		33	8	8		61	6	7	
2	8	8		34	6	7			6	7	
	8	7		35	8	7		62	6	8	
3	8	9			8	7		63	6	7	
4	8	7		36	6	6			6	7	
	6	7		37	6	6			6	7	
5	10	8		38	6	7		64	10	8	
6	8	8		39	6	6		65	6	7	
7	8	9		40	6	7		66	6	6	
8	8	8		41	6	6			8	7	
9	6	9			6	7			10	9	
10	8	8			10	9			10	9	
11	6	8			8	8		67	6	6	
12	8	9		42	8	8		68	6	6	
13	6	7		43	8	8			8	8	
14	6	7		44	8	7			8	8	
15	6	7		45	6	6		69	6	7	
16	10	9		46	6	7			8	8	
17	10	9			8	7		70	6	7	
18	6	8		47	8	7		71	8	8	
	8	8		48	8	9			10	9	
19	10	9		49	8	9		72	6	7	
20	6	7		50	8	7			6	6	
21	8	9		51	6	7		73	8	9	
22	6	9		52	6	5		74	6	8	
23	8	8		53	6	5		75	8	9	
24	10	9		54	10	8			6	7	
	8	8		55	8	8		76	8	8	
25	6	7		56	10	8		77	8	9	
26	10	9		57	6	7		78	6	6	
	8	8			8	7		79	6	7	
	6	6		58	6	6			6	7	
27	6	8			8	7		80	6	7	
28	6	7			10	8			6	6	
29	8	9			6	6		81	6	6	
	6	8			6	6		82	6	7	
30	10	8			8	8		83	6	6	
31	8	8		59	6	8		84	8	8	
	6	6			6	7		85	8	8	
32	6	7		60	6	6			8	7	

No.	DBH	Height	Volume	No.	DBH	Height	Volume	No.	DBH	Height	Volume
86	10	8		113	10	9					
	6	6			10	9					
	6	6			8	8					
87	6	6			6	6					
88	8	9		114	8	8					
	6	6			8	7					
89	8	7			6	7					
	8	7		115	8	7					
	6	6			8	8					
90	8	7									
91	6	6									
92	6	6									
93	8	7									
	8	8									
94	6	7									
95	6	7									
96	6	6									
97	6	7									
98	6	6									
99	6	6									
100	8	7									
101	6	6									
	8	7									
	10	8									
102	6	7									
	8	8									
103	6	6									
	6	7									
104	6	7									
105	6	7									
	6	7									
106	6	7									
107	6	6									
	6	6									
108	6	7									
109	6	7									
110	6	6									
111	6	7									
	6	6									
112	6	7									

Classification of trees in relation to forestry (cutting, transformation, export)

Category 1

(special species/species prohibited for cutting)

Scientific name	Family	Local name
<i>Erythrophleum couminga</i>	Leguminosae	Kimanga
<i>Hernandia voyroni</i>	Lauraceae	Hazomamanga
<i>Santalina madagascariensis</i>	"	Masinjana

Category 2

(wood for furniture, construction, luxury use)

Scientific name	Family	Local name
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1. Rosewood

<i>Darbergia louvelii</i>	Leguminosae	Volombodipona
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2. Ebony

<i>Diospyros perrieri</i>	Ebenaceae	Hazomainty
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3. Palissander wood

<i>Albizzia bellula</i>	Leguminosae	Manarizoby
<i>Dalbergia baroni</i>	"	Voamboana
<i>Dalbergia greveana</i>	"	Manary
<i>Dalbergia ikopensis</i>	"	"
<i>Dalbergia pterocarpifolia</i>	"	Sovoka
<i>Dalbergia retusa</i>	"	Manarizoby
<i>Dalbergia trichocarpa</i>	"	Manikipa
<i>Dalbergia tricolor</i>	"	"

4. others

<i>Azelia bijuga</i>	Leguminosae	Hintsy
<i>Brachylaena ramiflora</i>	Compositae	Merana
<i>Brachylaena sp.</i>	Compositae	Tendrokazo
<i>Crapidosperum verticillatum</i>	Apocynaceae	Vandrika
<i>Khaya madagasucariens</i>	Meliaceae	Hazomena
<i>Maspilodaphne tapack</i>	Lauraceae	Varongy mainty
<i>Podocarpus madagasucariens</i>	Podocarpaceae	Hetatra

Category 3

(wood for furniture, boards, small objects, sleepers)

1. Species originating from Madagascar

Scientific name	Family	Local name
<i>Acacia morondavensis</i>	Leguminaceae	Roibokida
<i>Albizzia boinensis(greveana)</i>	Leguminosae	Fandrianakanga
<i>Antidesma madagascariensis</i>	Euphorbiaceae	Varonala
<i>Asteropeia amblyocarpa</i>	Samydaceae	Andrevola
<i>Astrotrichilia micraster</i>	Meliaceae(Samyd)	Manoka mena
<i>Astrotrichilia rhopaloides</i>	Meliaceae(Samyd)	Manoka mevo
<i>Brachylaena ramiflora</i>	Compositae	Hazotokana
<i>Breonia madagascariensis</i>	Rubiaveae	Molompangady, Valotra
<i>Brenonia perrieri</i>	"	"
<i>Brenonia piptocarphoides</i>	Compositae	Nerana
<i>Bridelia tulasneana</i>	Euphorbiaceae	Arina
<i>Calophyllum inophyllum</i>	Guttiferae	Foraha
<i>Canarium madagascariense</i>	Burseraceae	Ramy
<i>Carissa densiflora</i>	Apocynaceae	Monty

Classification of trees in relation to forestry (cutting, transformation, export)

Category 1

(special species/species prohibited for cutting)

Scientific name	Family	Local name
<i>Erythrophleum couminga</i>	Leguminosae	Kimanga
<i>Hernandia voyroni</i>	Lauraceae	Hazomamanga
<i>Santalina madagascariensis</i>	"	Masinjana

Category 2

(wood for furniture, construction, luxury use)

Scientific name	Family	Local name
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1. Rosewood

<i>Darbergia louvelii</i>	Leguminosae	Volombodipona
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2. Ebony

<i>Diospyros perrieri</i>	Ebenaceae	Hazomainty
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3. Palissander wood

<i>Albizia bellula</i>	Leguminosae	Manarizoby
<i>Dalbergia baroni</i>	"	Voamboana
<i>Dalbergia greveana</i>	"	Manary
<i>Dalbergia ikopensis</i>	"	"
<i>Dalbergia pterocarpifolia</i>	"	Sovoka
<i>Dalbergia retusa</i>	"	Manarizoby
<i>Dalbergia trichocarpa</i>	"	Manikipa
<i>Dalbergia tricolor</i>	"	"

4. others

<i>Azelia bijuga</i>	Leguminosae	Hintsy
<i>Brachylaena ramiflora</i>	Compositae	Merana
<i>Brachylaena sp.</i>	Compositae	Tendrokazo
<i>Crapidospermum verticillatum</i>	Apocynaceae	Vandrika
<i>Khaya madagasucariensis</i>	Meliaceae	Hazomena
<i>Maspilodaphne tapack</i>	Lauraceae	Varongy mainty
<i>Podocarpus madagasucariensis</i>	Podocarpaceae	Hetatra

Category 3

(wood for furniture, boards, small objects, sleepers)

1. Species originating from Madagascar

Scientific name	Family	Local name
<i>Acacia morondavensis</i>	Leguminaceae	Roibokida
<i>Albizia boinensis(greveana)</i>	Leguminosae	Fandrianakanga
<i>Antidesma madagascariensis</i>	Euphorbiaceae	Varonala
<i>Asteropeia amblyocarpa</i>	Samydaceae	Andrevola
<i>Astrotrichilia micraster</i>	Meliaceae(Samyd)	Manoka mena
<i>Astrotrichilia rhopaloides</i>	Meliaceae(Samyd)	Manoka mevo
<i>Brachylaena ramiflora</i>	Compositae	Hazotokana
<i>Breonia madagascariensis</i>	Rubiaveae	Molompangady, Valotre
<i>Breonia perrieri</i>	"	"
<i>Breonia piptocarphoides</i>	Compositae	Nerana
<i>Bridelia tulasneana</i>	Euphorbiaceae	Arina
<i>Calophyllum inophyllum</i>	Guttiferae	Foraha
<i>Canarium madagascariense</i>	Burseraceae	Ramy
<i>Carissa densiflora</i>	Apocynaceae	Monty

<i>Terminalopsis tetrandrus</i>	"	"
<i>Tina madagascariensis(chapelieriana)</i>	Sapindaceae	Hazompoza
<i>Trachylobium hornemannianum</i>		Mandrorofo
<i>Trachylobium verrucosum</i>		"
<i>Uapaca thouarsii</i>	Euphorviaceae	Voapaka
<i>Vernonia piptocarphoides</i>		Hazotokana
<i>Weinmannia minutiflora</i>	Cononiaceae	Lalona mena, Llonafot
<i>Weinmannia rutenbergii</i>	Cunoniaceae	Hazomanga

2. Imported species, rare species

<i>Acacia heterophylla</i>	Leguminosae	
<i>Eucalyptus citriodora</i>	Myrtaceae	Eucalyptus
<i>Eucalyptus corymbosa</i>	"	"
<i>Eucalyptus dongifolia</i>	"	"
<i>Eucalyptus maculata</i>	"	"
<i>Eucalyptus punctata</i>	"	"
<i>Eucalyptus punctata</i>	"	"
<i>Eucalyptus resinifera</i>	"	"
<i>Eucalyptus rostrata</i>	"	"
<i>Eucalyptus tereticornis</i>	"	Colossea
<i>Grevillea robusta</i>	Proteaceae	Silver oak
<i>Pinus excelsa</i>	Pinaceae	
<i>Pinus halepensis</i>	"	
<i>Pinus insignis</i>	"	
<i>Pinus kesiya(khasya)</i>	"	kesiya pine, Khasya pi
<i>Pinus leucodermis</i>	"	
<i>Pinus patula</i>	"	Patula pine
<i>Pinus pinaster</i>	"	
<i>Pinus ponderosa</i>	"	
<i>Pinus pseudostrobus</i>	"	
<i>Pinus taeda</i>	"	
<i>Tectona grandis</i>	Verbenaceae	Teck, Teak

Category 4

(wood of moderate quality)

Species originating from Madagascar

Scientific name	Family	Local name
<i>Artabotrys digosperma</i>	Anonaceae	Ambavy
(<i>Ambavia gerrardii</i>)		"
(<i>Popowia gerrardii</i>)		"
(<i>Popowia maritima</i>)		"
(<i>Unona gerrardii</i>)		"
<i>Agauria salicifolia</i>	Ericaceae	Angavodiana
<i>Alluaudia procera</i>	Didieraceae	Fantsilisy
<i>Canarium madagascariense</i>	Burseraceae	Ramy, Aramy
<i>Casearia nigrescens</i>	Flacourtiaceae	Hazomalany
<i>Casuarina divers</i>	Casuarinaceae	Filaos
<i>Cedrela odonata</i>	Meliaceae	
<i>Cedrelopsis grevei</i>	Ptaeroxylaceae	Katrafay
<i>Clerodendron pyrifolium</i>		Vatonna
<i>Cupressus lambertina</i>	Cupressinae	Cypress

<i>Cupressus lawsoniana</i>		"
<i>Cupressus lusitanica</i>		"
<i>Elaeocarpus sp.</i>	Tiliaceae	Voanana
(<i>Sloanea rhodantha</i>)	Elaeocarpaceae	"
<i>Ficus tiliifolia</i>	Moraceae	Voara
(<i>Ficus trichosphaera, F. Pachyclada, F. Apodocephala</i>)		"
<i>Gambeya madagascariensis(boivinianum)</i>	Sapotaceae	Famelona
<i>Hibiscus lasiococcus</i>	Malvaceae	Alampona
<i>Homalium humblotii</i>	Samydaceae	Madaditra
<i>Ilex monticola(mitis)</i>	Aquifoliaceae	Hazondrano
<i>Macronychia madagascariensis</i>	Anacardiaceae	Tsiramiramy
<i>Neobaronia phyllantoides</i>	Leguminosae	
<i>Phylloxylon ensiflorum</i>	Leguminosae	Arahara
<i>Ravensara sp.</i>	Lauraceae	Tavolo
<i>Tamarndus grevei</i>	Leguminosae	Kily
<i>Trichilia peltostylis</i>	Meliaceae	Ramaindafy
(<i>Tina chapelieriana</i>)		"
(<i>Tina conjugata</i>)		"
(<i>Neotina isoneura</i>)		"

Category 5

(Species for charcoal)

Species originating from Madagascar or imported which are not included in categories 1 to 4

Scientific name	Family	Local name
<i>Albizzia lebbek</i>	Leguminosae	
<i>Azadirachta indica</i>	Meliaceae	Neem
<i>Acacia decurrens</i>	Leguminosae	Mimoza
<i>Acacia dealbata</i>	"	"
Hybride of <i>E. robusta</i>	Myrtaceae	Eucalyptus
<i>Melaleuca leucadendron</i>	Myrtaceae	Niaouli

Summary of living conditions

Zone	Rural commune	Fokonositany	Households interviewed		Percentage of households residing in the same area for more than 5 years	Average years of residence in the same place	Percentage of houses per type of ownership (%)							Percentage of households per type of source used (%)							Percentage of households per type of principal fuel (%)							Percentage of households per type of principal lighting (%)				
			Households	%			Owner	Titular	Ownership	Others	Spring water	River	Wells	Pond	Manual pump	Others	Firewood	Subsidiary	Charcoal	Fuel oil	Others	Electricity	Candles	Fuel oil	Others							
																										100	100	30	100	100	100	100
Mantasia	Ambatolaoana		30	100	93	18	53	17	30	0	0	0	33	67	0	0	0	0	0	0	83	0	7	0	0	0	0	0	10	57	36	
	Mahitsigady		70	100	94	20	81	0	19	0	0	0	61	40	0	0	0	0	0	0	99	0	0	0	0	0	0	1	11	56	31	
	Andrianivorona		22	100	85	16	95	0	3	0	0	0	100	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	14	64	23	
	Antozoro		26	100	96	25	81	0	19	0	0	0	58	12	31	0	0	0	0	0	100	0	0	0	0	0	0	8	12	54	27	
	Mantasia		48	100	90	20	77	4	19	0	0	0	77	8	4	4	0	0	0	0	98	0	2	0	0	0	0	0	15	10	63	12
	Misobahiny		55	100	87	22	69	13	18	0	0	0	67	24	5	2	0	0	0	0	83	0	4	0	0	13	0	30	13	50	7	
	Midiananjaka		33	100	79	27	79	6	15	0	0	0	85	6	6	0	0	0	0	0	94	0	0	0	0	0	0	3	0	58	39	
	Ambohimanjaka		46	100	88	18	89	1	10	0	0	0	73	0	14	12	0	0	0	0	99	0	0	0	0	0	0	1	0	13	56	31
	Ambatompoko		44	100	89	24	91	0	9	0	0	0	87	10	3	0	0	0	0	0	95	0	8	0	0	0	0	5	0	3	78	18
	Mentanjaka		39	100	95	19	78	5	17	0	0	0	37	0	3	0	50	0	0	0	92	0	8	0	0	0	0	0	18	48	34	
Tsaocompany	Mentanjaka		34	100	94	23	88	0	12	0	0	82	12	3	0	0	0	0	0	3	100	0	0	0	0	0	0	0	0	0	88	12
	Miantarivo		22	100	93	22	91	0	9	0	0	82	18	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	87	13
	Sub-Total		509	100	93	21	89	0	11	0	0	82	18	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	64	36	
	Anosibe		25	100	96	29	92	0	8	0	0	44	24	32	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	7	83	10
	Trinotoloharano		61	100	93	23	90	0	10	0	0	39	3	56	0	2	0	0	0	0	39	0	2	0	0	0	0	0	0	7	85	10
	Makaitilo		24	100	92	21	100	0	0	0	0	67	0	33	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	92	8
	Ambobisa		23	100	84	22	84	0	16	0	0	48	0	52	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	4	80	16
	Iharantana		68	100	93	27	60	0	8	0	0	31	3	46	0	0	0	0	0	0	54	0	0	0	0	0	0	6	0	10	75	15
	Ambohimadama		32	100	97	24	91	0	9	0	0	50	15	28	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	9	82	9
	Mamandriana		99	100	94	24	100	0	0	0	0	70	1	29	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	1	96	3
Tankalatora		24	100	100	32	100	0	0	0	0	96	4	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	100	0	
Fianjovana	Analaminhoatra		109	100	93	21	83	0	15	0	0	67	3	30	0	0	0	0	0	100	0	0	0	0	0	0	0	0	2	91	7	
	Ambohimanjaka		27	100	96	28	89	0	11	0	0	92	4	4	0	0	0	0	0	96	0	0	0	0	0	0	0	0	4	0	100	0
	Kollimaiana		452	100	95	25	89	0	11	0	0	92	4	4	0	0	0	0	0	96	0	0	0	0	0	0	0	0	0	0	100	0
	Sub-total		1001	100	93	23	89	0	11	0	0	82	18	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	64	36	

Source: JICA socio-economic study, 1998

Scope of production activities (principal farming production activities)

Zone	Rural commune	Fokomany	Households interviewed		Percentage of households per source of principal cash revenue (%)										Cultivated rice field area (a)				Percentage of households per type of rice field owned (%)				Percentage of households practicing farming (%)		Percentage per principal crop (%)		
			Households	%	Sale of agricultural cash crops, etc.			Fishing products			Others				Average area	Minimum area	Maximum area	Owner	Tenant	Owner and tenant	Cassava	Sweet potato	Cush-cush	Others			
					Potatoes	Rice	Charcoal	Livestock	Fruits	Employment with wage	Others																
Mantsoa	Ambatolaoana	Ambatolaoana	30	100	0	0	0	0	0	3	0	70	0	22	2	120	68	18	13	87	38	50	0	12			
			70	100	0	0	0	0	11	0	0	77	12	17	0	100	70	10	20	99	72	23	0	5			
			22	100	5	0	0	0	32	22	0	0	32	0	33	2	200	64	9	27	91	100	0	0	0		
			26	100	0	0	0	0	84	0	0	0	84	0	24	5	60	73	4	23	100	69	19	0	0		
			48	100	0	0	0	0	19	4	0	8	67	2	32	1	500	53	14	32	86	80	11	0	0		
			55	100	0	0	0	0	16	4	0	0	65	13	20	1	80	40	31	29	78	92	4	0	0		
			33	100	0	0	0	0	33	6	3	0	40	18	22	5	80	67	10	23	97	88	9	0	0		
			86	100	9	1	36	14	1	36	14	1	20	19	30	3	160	68	2	30	93	86	12	0	0		
			44	100	14	5	7	7	5	23	30	9	30	9	46	3	200	93	0	7	93	82	7	0	11		
			39	100	42	0	10	3	0	0	34	11	34	11	33	1	90	79	13	8	87	58	14	3	25		
Tsiacompany	Mantsoa	Merikanjaka	34	100	6	3	0	44	0	0	29	18	55	8	600	88	0	12	100	38	38	0	24	0			
			22	100	14	4	0	0	0	0	59	23	35	4	100	90	0	10	86	50	32	5	13	0			
			509	100																							
Tsiacompany	Anosibe	Triantoharano	25	100	44	4	0	12	16	0	12	12	66	14	120	83	0	16	92	92	8	0	0	0	0		
			61	100	50	3	0	5	13	3	10	15	60	10	300	77	3	20	100	98	0	0	0	0	2		
			24	100	29	8	8	17	13	0	17	8	99	5	1500	68	0	32	92	100	0	0	0	0	0	0	
			23	100	20	0	4	24	16	0	12	20	26	1	60	52	4	44	27	44	92	100	0	0	0	0	
			68	100	43	6	1	6	12	0	16	16	39	1	110	73	0	27	73	84	6	63	3	26	0	10	
			32	100	50	0	0	9	9	6	22	3	29	4	60	94	0	6	81	90	0	0	0	0	0	0	
			99	100	42	1	0	3	10	13	9	22	44	4	160	80	1	19	91	93	6	0	0	0	0	1	
			24	100	63	0	0	8	8	0	21	8	62	26	160	100	0	0	92	70	30	0	0	0	0	0	
			109	100	54	0	0	0	1	7	1	16	21	16	44	4	230	76	2	22	94	81	14	1	4	0	
			27	100	33	0	0	0	0	0	7	0	19	41	43	6	100	78	0	22	89	83	13	0	0	0	
			492	100																							
			Total			1001	100																				

Source: JICA socio-economic study, 1998

Registration of farm lands and forested zones

Zone	Rural commune	Fokontany	Households interviewed		Registered lands		Taniery		Afforestation		Min.	Max.						
			Households interviewed	%	Number of households	%	Average area (a)		Number of households	%			Average area (b)					
							Min.	Max.					Min.	Max.				
Mantasoa	Ambatolalona	Ambatolalona	30	100	16	53	27	2	120	18	60	18	100	5	1	5		
		Mahitsiady	70	100	43	61	11	1	70	35	50	17	1	200	7	1	200	
	Mantasoa	Households interviewed	22	100	13	59	17	1.2	52	10	59	17	1.2	100	3	14	6	
		Ajzozoro	26	100	18	69	25	2	60	12	46	30	0.5	100	7	27	17	
		Mantasoa	48	100	24	50	90	1	1800	24	50	42	1	500	9	19	63	
	Miasombihiny	Miasombihiny	55	100	26	47	15	1	80	22	40	34	0.8	200	4	7	11	
		Miadamaanjaka	33	100	19	58	25	5	80	17	52	21	0.2	100	9	27	25	
	Miadanaandriana	Ambohimanajaka	86	100	54	63	40	4	200	48	56	87	0.4	2000	12	14	219	
		Ambolipeno	44	100	35	80	50	8	200	23	52	89	1	400	15	35	189	
	Merikanjaka	Merikanjaka	39	100	33	85	20	0.1	60	23	59	19	0.2	180	7	18	17	
Tsiazompanary-Kely		34	100	30	88	75	8	120	15	44	70	5	200	4	12	53		
Sub-Total	Miarinarivo	22	100	13	59	30	1	100	12	55	27	1	100	1	5	10		
	Sub-Total	506	100	324	64				259	51				90	18			
Tsiazompanary	Anosibe	Andriantsiajo	25	100	8	32	27	0.5	50	5	20	47	5	100	4	16	14	
		Angodongodona	61	100	20	33	92	28	600	17	28	53	1	250	9	15	70	
	Trinolocharano	Mahatsingo	24	100	12	50	18	1	100	15	63	13	1	200	10	42	9	
		Ambobitsoa	23	100	11	44	24	10	50	7	28	10	0.5	50	7	28	10	
	Ambohimiedana	Iharanaiaza	68	100	30	44	34	3	80	32	47	46	0.5	1000	13	19	586	
		Maaandriana	32	100	14	44	23	4	44	14	44	7	0.5	25	5	13	23	
	Tankafotra	Monarano	99	100	33	33	39	0.3	140	1	0	3	3	3	3	13	13	10
		Analamihosara	24	100	22	92	50	0.5	120	16	67	19	0.5	80	12	50	12	
	Fisitajovana	Ambohijanaka	106	100	61	56	34	0.2	120	41	38	20	0.5	150	13	12	14	
		Kelimañana	27	100	12	44	49	0.6	50	10	37	11	0.5	40	6	22	35	
Bakaro	Sub-Total	492	100	223	45				158	32				92	19			
	Sub-Total	1001	100	547	55				417	42				182	18			
Total																		

Source: JICA socio-economic study, 1998

Request for registration of farmlands and forested zones

Zone	Rural commune	Fokontany	Households interviewed		Lands applied for registration				Tanety				Afforestation				
			Households	%	Number of households	Rice fields		Average area (a)	%	Number of households	Average area (a)	%	Number of households	Average area (a)		Max.	
						Min.	Max.							Min.	Max.		
Mantasia	Ambatolaoana	Ambatolaoana	30	100	1	3	8	8	203	7	2	5	400	0	0	0	
		Mahitsitady	70	100	2	3	1.5	1	38	16	11	1	2000	10	1	500	
	Mantasia	Andrefanivorona	22	100	2	9	55	10	18	18	4	3	200	3	0.5	40	
		Anjozororo	26	100	2	8	115	30	200	23	6	2	50	147	1	600	
		Mantasia	48	100	3	6	66	28	100	19	9	1	1500	311	2	850	
		Masonbahiny	55	100	2	4	19	18	20	4	2	4	7	230	5	700	
	Miadanandriana	Miadanandriana	33	100	3	9	13	3	26	9	3	1	3	600	104	0.5	600
		Ambohimanjaka	86	100	9	10	71	1	500	13	11	1	600	137	2	600	
	Merikanjaka	Ambohipeno	44	100	11	25	43	1	150	23	10	2	350	260	15	800	
		Merikanjaka	39	100	5	15	8	0.5	20	21	8	0.1	400	51	0.1	200	
Tsiacompaniny-Kely		34	100	11	33	103	2.5	400	12	4	14	1500	125	30	200		
Miarinarivo		22	100	6	27	29	1	100	27	6	3	500	90	1	200		
Tsiacompaniny	Anosibe	Sub-Total	509	100	57	11	169	7	400	15	76	100	100	200	200	200	
		Andriantsiajo	25	100	3	12	8	1	200	4	1	4	150	15	2	40	
	Trimokohazano	Angongodona	61	100	13	21	8	1	200	7	4	16	3	5	15	2	40
		Mahatsiavo	24	100	5	21	3	1	36	4	1	3	3	0	0	0	
	Ambohimidana	Ambohitsoa	23	100	1	4	20	20	20	1	1	1	1	1	0	0	0
		Iharamalaza	68	100	2	3	4	3	5	1	1	2	2	2	0	0	0
	Tankafatora	Manandriana	32	100	3	9	18	1	50	6	2	26	50	0	0	0	0
		Morarano	99	100	13	13	34	3	100	9	9	14	1	30	1	1	1
	Fitsinjovana	Analamboara	24	100	6	25	31	0.5	80	0	0	0	0	0	2	2	2
		Ambohijanaka	109	100	6	6	17	1	80	4	4	24	0.5	60	0	0	0
Bakaro	Ambohijanaka	27	100	1	4	2	2	2	1	1	2	2	2	0	0	0	
	Kelinanana	492	100	53	11	11	11	11	4	24	5	2	2	6	1.2	0	
Total	Sub-Total	1001	100	110	11	110	110	110	10	100	10	80	3	80	3	80	
	Total	1001	100	110	11	110	110	110	10	100	10	80	3	80	3	80	

Source: JICA socio-economic study, 1998