User Manual LIFE Model

Supplementary work 1

Collection of data ( "Data Book")

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#### 1. Introduction

The Project Development of Integrated Approach for Environmental Food and Rural Development at Morarano Chrome (hereinafter referred to as "PRODAIRE") started in February 2012 to establish a widely applicable model (hereinafter the "model PRODAIRE") to promote integrated manner rural development and soil conservation in upstream areas degraded Madagascar. To implement the model, PRODAIRE has implemented various activities over the past four years, in the region of Alaotra Mangoro, has developed a methodology and accumulated know-how for the implementation of PRODAIRE model. The Model user manual PRODAIRE (hereinafter the "User Manual") was developed to provide users of the model this methodology with practical advice.

One of the most important features of PRODAIRE model is its simple and cost structure compared to other models used in development projects. The simplicity of the model is explained in the main body of the user manual. This collection of data shows the cost-effectiveness of PRODAIRE model by performing a cost-effectiveness analysis of the costs and results of the project intervention, based mainly expenses recorded by the project and survey results final evaluation conducted in 2016.

#### 2. Description of the impact assessment study

#### (1) Objective of the study

The final evaluation survey (hereinafter the "Investigation") was conducted in 2016 with objectives i) assess the qualitative and quantitative impacts PRODAIRE (hereinafter the "Project") and ii) propose measures for the sustainability of the local population activities after training.

## (2) the study area

In the Alaotra Mangoro region, the study covered 30 fokontany of 4 towns 25 initial targets (hereinafter "common initial target ALM") and 15 fokontany of 2 towns expansion (referring to "new common targets of ALM"). Common initial targets of ALM are Ampasikely, Andrebakely South Morarano Chrome and Ambodirano and new common targets of ALM and Andilanatoby Ranomainty (Figure 1). In Bongolava region 7 fokontany of 2 towns Ambatolampy and Tsinjoarivo imanga (hereinafter "Bongolava common") were the subject of the study (Figure 2).



Figure 1: Map of the study area in the region of Alaotra Mangoro



Figure 2: Map of the study area of the region Bongolava

<sup>25</sup> Part of the municipality of Morarano Chrome becomes the new independent municipality Ambodirano in 2015.

#### (3) Methodology

The survey was conducted during the period from 4 April to 19 July 2016 in the following steps for each target area of study:

- i) Questionnaire survey
- ii) Descent on reforestation sites
- iii) Downhill on site Lavaka
- iv) Estimated project's impacts on the entire area of operations
- v) Cost-effectiveness analysis

#### i) Questionnaire survey

The investigation team has used a structured questionnaire to collect data at the household level, particularly in relation to their participation in training and the practice after training in target municipalities. Samples of households were selected in each target area as described below.

## Common initial targets ALM

The list of households in 32 municipalities Fokontany initial target was achieved through collaboration with the Ministry of Health through the Regional Directorate for ALM. 30 Fokontany 32 are targeted because of their accessibility. This list of households, those with all the required information are available are counted in each Fokontany. With a minimum target of 500 households interviewed a random sample (proportional) of 750 households (that is to say 1.5 times the target number) was performed on this list of households with all required information are complete.

Six investigators were mobilized to conduct the study questionnaire. The total number of households interviewed rises to 556 as shown in Table 1.

#### New ALM target communes

In the new common targets of ALM, it is the area managers who have mobilized to collect the names of heads of households in the 15 Fokontany. All households in these 15 Fokontany, 300 households, that is to say 1.5 times the number of target sample were listed for the investigated (proportional random sampling).

Six investigators were mobilized to this questionnaire study, the total number of households interviewed amounting to 202 as shown in Table 2.

#### Public Bongolava

The list of common household Bongolava was obtained thanks to the collaboration of the CDR 26 and local trainers, who visited every household to take the names of heads of households within 7 Fokontany. 250 households, 1.25 times the number of target households, have been sorted to the random proportional sampling.

Six investigators also were mobilized to conduct the study questionnaire. The total number of households surveyed is 202 as shown in Table 23.

<sup>26</sup> CDR is the abbreviation of "Advisor in Rural Development" which is an extension agent set up at the Commune.

# Table 1: Number of targeted households during thequestionnaire survey by Fokontany

(Comm <u>i</u>	nitial targets each ALM)	
town	fokontany	Number of targeted households
Ampasikely	Ampasikely	35
Subtotal		35
South	Ambodifarihy	15
Andrebakely	Ambongabe	7
	Andilambarika	4
	Andranombainga	6
	South Andrebakely	11
	Antanimalalaka	18
Subtotal		61
Morarano	Ambaiboho	44
Chrome	Ambatomanga	35
	Ambohidrony	21
	Ambohimanarivo	20
	Andoharano	11
	Ankoririka	19
	Anosiboribory	18
	Antanimafy	22
	Antanimena	28
	Antetezantany	13
	Antsahamanga	9
	Maharidaza	21
	Mahatsinjo	32
	Maheriara	15
	Manakambahinikely	11
	Morarano Andrefana	15
	Morarano Chrome	37
	Tanandava	25
	Tsarahonenana	11
Subtotal	1	407
Ambodirano	Ambodiantafana	11
	Ambodirano	18
	Andranofasika	11
	Moratelo	13
Subtotal		53
Grand total		556

# Table 2: Number of targeted households during thequestionnaire survey by Fokontany

(New<u>common targets</u>ALM)

town	fokontany	Number of targeted households
Andilanatoby Am	bodifiakarana	7
	Ambodinonoka	27
	Ambohimasina	13
	Ambohimiarina	12
	Andasibe	5
	Andilanatoby	26
	Ankasina	11
	Antsapanimahazo	13
	Sahanidingana	13
Subtotal		127
Ranomainty Amb	ohimanatrika	9
	Amparihivola	9
	Fiadanana	13
	Mahatsara	12
	Ranofotsy	12
	Ranomainty	20
Subtotal		75
Grand total		202

Table 3: Number of targeted households during thequestionnaire survey by Fokontany

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(Co_	mmunes	of Bongola	go)

town	fokontany	Number of targeted households
Ambatolampy Am	pohimahavelona	26
	Andranovelona	55
	Antaniditra	21
Subtotal		102
Tsinjoarivo imanga	Tsinjoarivo imanga	37
	Andandihazo	12
	Ambohimarina	38
	Fonoraty	13
Subtotal		100
Grand total		202

#### ii) Lowering the planting sites

#### Common initial targets and new common ALM

Based on the data obtained from the questionnaire survey concerning afforestation on steep terrain after starting the project, 556 households and 202 municipalities initial targets and new common ALM respectively are classified into 5 categories 27. Compared to the ratio in each category, 158 households for ALM initial target communes and 67 new households ALM common targets are selected as candidates for the study on reforestation site.

#### Public Bongolava

The 202 households surveyed during the study questionnaire were classified into six groups 28 compared to responses on reforestation slope after starting the project. On the ratio of each group, 63 households are ordered to be candidates for the site visit.

#### iii) Descent on the sites of Lavaka

Until May 2016, when the study was conducted final impacts, the project has implemented training on stabilizing lavaka in 100 sites. These lavakas, 49 are located in the commuted initial targets of ALM, 38 in the new common targets of ALM and 13 in public Bongolava. Twelve (12) lavakas in common initial targets of ALM, 10 in the new common targets of ALM and 1 lavaka in Bongolava towns are excluded from the site visit because of great difficulty of access.

#### iv) Estimation of project impacts on all of the area of intervention

The impacts of the project on the whole area of intervention are estimated by applying the results obtained during the study questionnaire to all households in the target area with a 95% confidence interval. The impacts of training are thus estimated for households throughout the project area, ie: 12.883 households in the communes initial targets of ALM, 3,635 households in the new municipalities and 2,205 ALM in public Bongolava.

#### v) Cost-effectiveness Analysis

All contributions of the project for the training of May 2012 until May 2016 are recorded in expenses for each training topic. The contributions by training session are calculated by dividing the total expenditure to the number of sessions conducted during the same period. The other topics that could not be recorded in the spending diary, they are estimated by multiplying the unit cost to the number of completed training sessions.

All contributions relating to the implementation of the model are classified into the following categories: i) Awareness, II) Training; III) Monitoring, IV) and V Zone Manager) Implementation and management model. Table 3 shows the elements of each category.

Category	elements
I Sensitization	- Public Relations and DVD projection on the Project
II Training	- Honorary Local Trainer
	- Training materials including their transport costs
III Followed	- Honorary Local Trainer
IV Manager area	- the Manager Salary area
	- Allowances CDR
	- Fuel for motorcycles zone Managers / CDR and Executive Manager
V Implementation and Management	- Salaries of Senior Manager, Executive Manager, Financial Manager
model	- Allowances staff Regional Directorates

#### Table 3: List of contributions by category

<sup>27</sup> The five categories are established based on the total number of feet replanted during periods of 2012/2013, 2013/2014, 2014/2015 and 2015/16 as follow: 1) none; 2) 1-99; 3) 100-499; 4) 500-999; and 5) over 1,000 feet planted.

<sup>28</sup> The following six groups are established on the basis of the total number of feet planted during periods of 2014/2015 and 2015/16: 1) none; 2) 1-50; 3) 51 100: 4) 401 500: 5) 501 1000 and 6) ever 1001

<sup>51-100; 4) 101-500; 5) 501-1000</sup> and 6) over 1001.

#### I. Awareness

Awareness is the first project action to intervene in a village. This step includes public relations at the central village with sound. It also includes the DVD projection on the fight against lavaka and home improvement as public relations activities on specific topics. The total cost of inputs Awareness is assigned to two training topics, namely the stabilization lavaka and improved focus, and it is based on the number of participants in training, monitoring the topic by contributions from the division number of sessions obtained contributions by theme.

#### II. Training

The elements required included in this section include costs for local trainers and all costs of training materials, transportation expenses included.

#### III. Followed

Monitoring is implemented by the zone Manager / CDR and the local trainer. The project encourages them to visit all training units (UF) at least once a month. The total contribution for the monitoring on the local trainer is allocated to each training theme proportion to the number of training participants, followed by the division of contributions by theme to the number of sessions for the contributions by theme. Contributions related to area managers / CDR are included in the following category "IV. Zone Manager ".

#### IV. Manager area

The area manager / CDR is responsible for overseeing training, joint monitoring with local trainers and sharing of information on land to the implementing agency, that is to say the NGOs in the region Alaotra Mangoro and Regional Directorates in Bongolava region for the case of PRODAIRE. This section contains the salaries of area managers, allowances CDR and fuel costs motorcycles zone Managers / CDR and Executive Managers / staff of regional departments.

The area managers in the Mangoro Alaotra region receive monthly salaries, while the CDR in the region Bongolava are paid as compensation. According to the observations, about 80% of workloads area Manager are devoted to the implementation of the model on ground. The remaining 20% are for model development as discussion with the Senior Manager and Executive Manager during internal meetings of NGOs. As this collection of data shows the cost of implementation of the model, only 80% of the total salary of area managers are considered. Similarly, CDR allowances to attend the meeting with the project and regional management staff are excluded. Adjusted total contributions relating to managers of area / CDR is allocated to each theme of training,

#### V. Implementation and Management Model

In the case of the region of Alaotra Mangoro, it is the local NGO is the implementing agency of the model. Three staff are affected with monthly salaries for the implementation and management of the model, namely the main manager, executive manager and financial manager. The Principal Manager takes full responsibility for the implementation and management of activities to deploy the model on the basis of terms of reference and the budget plan signed between the NGO and the project. The Executive Manager is responsible for all activities on land for training and monitoring and supervision and coaching zone Managers. The Financial Manager is responsible for managing the budget and payments for training and monitoring. According to the observations, about 30%, 50% and 80% of workloads are assigned to run the model to the financial Manager, the Manager and Senior Executive Manager, respectively. The remaining workload is devoted to the development of the model such as the meeting with the area managers during internal meetings of the NGO. Adjusted total contribution is allocated to each training topic based on the number of participants in training, followed by contributions divided by theme to the number of training sessions for the contributions by training.

In the case of Bongolava region, the implementing agencies are the Regional Directorate of Environment, Ecology and Forestry (hereinafter the "DREEF") and the Regional Department of Agriculture and the Breeding (hereafter the "DRAE"). For each DREEF and DRAE, a coordinator and a few support staff have been appointed and are paid on the basis of daily allowances for the execution of the model. Since they are paid for performance and not the development of the model, the inputs on the DREEF DRAE and staff have not been adjusted for Bongolava region unlike the Mangoro Alaotra region. Total contributions for coordinators and support staff is allocated to each theme based on the number of participants,

## 3. Inputs and results for the common initial targets

					Unit: I	MGA / training session
		Soil Conservati	on Activities	Activities for	or Amelio ration o	of the living conditions
	Category contributions	I-1 reforestation	I-2 Stabilization Iavaka	I-3 improved Fireplace	I-4 Layering lychee	I-5 Production of fry
Sensitization						
	Public Relations & DVD projection	0	740	1,033	0	0
Training						
	Honorary trainer	10.222	15.194	10.235	10,520	167.940
	Materials for training (including materials					
	transport costs)	34.038	6,740	0	7,769	129.236
	Subtotal	44.260	21.934	10.235	18,289	297.176
Followed						
	Honorary trainer	9.347	7,589 10	.596	9,204	7.905
Manager area	a					
	Salary zone Managers	7,172	5.823	8,131	7,062	6,066
	Fuel motorcycles zone managers	15,279	12.405 17.	.322	15,045	12.923
	Subtotal	22.451	18.228 25.	.453	22,107	18.989
Management and	d implementation of the Model					
	the Principal Manager Salary	2,103	1,707	2,384	2,071	1,778
	Executive Manager Salary	1,996	1,620	2,262	1,965	1,688
	Financial Manager Salary	1,310	1,063	1,485	1,290	1,108
	Subtotal	5,409	4,390	6,131	5,326	4,574
TOTAL		81.467	52.881 53.	.448	54.926	328.644

Table 4: Summary of project inputs by training theme (Commons initial targets)

## Soil conservation activities (main activities in the model)

## 3-1. Reforestation

1. Summary

Contributions by training session	
Category contributions	Amount (MGA)
Sensitization	0
Training	44.260
Followed	9.347
Manager area	22.451
Management and implementation of the Model	5,409
TOTAL	81.467

Qty	Unit
174 sessions	
_	sessions
	ssions
43.424 p	eople
	Qty 174 s - <u>2,894</u> se 43.424 p

## Training Impacts

ltem	For 3 years before PRODAIRE	Qty (2012/2013)	Qty (2013/2014)	Qty (2014/2015)	Qty (2015/2016)	Unit
Households that produces	3,607	3,053	3,891	5,888	3,710 house	eholds
seedlings of Eucalyptus robusta	28.0	23.7	30.2	45.7	28.8% of <u>tr</u>	12.883 arget households
households referented	4,831	3,607	4,058	5,772	3,685 house	eholds
Eucalyptus robusta	37.5	28.0 31.5 44.8 28.6% of 12.	12.883 arget households			
Feet planted / replanted area	N / A	380.619	505.239	637.020	545.863 plants	6
by households who participated in the training (all species)	N / A	189.67	251.23	318.52	271.97 ha	

\* The number of households participating in the training is estimated at 9.616 among the 12.883 target households.

	Description		Qty	Unit	
Total cost per foot pl	anted by households who participated in the t	training	114 MGA / ft		
Total cost per area	reforested by households who participated	in the training 228.585 M	GA / hectare Total cost pe	er partic	cipant
in training			5,429 MGA / pa	rticipan	<u>t</u>
	2. Training Ove	erview			
	Training period Au	ugust 2012 - January 2015			
	duration 1 c	day x 2 sessions			
	Iraining content () Production of pi	iants, II) Dubbing			
	2 Project Contributions by	training appaign			
	3. Project Contributions by	training session			
Category contributions	Description	Amount	Cal	culation	
opoitization		(MGA)	N / /	<u> </u>	
raining		U	IN / A	٩	
5	Trainer (for training of				
Honorary trainer	Trainer (for training of local trainers)	54.274	MGA 9,443,632	/	174 sessions
Honorary trainer	Trainer (for training of local trainers)	54.274	MGA 9,443,632	1	174 sessions
Honorary trainer	Trainer (for training of local trainers) local trainer Average	54.274 7,403 10.222	MGA 9,443,632 MGA 20,137,519 / MGA 29,581 151	1	174 sessions 2,720 sessions 2,894 sessions
Honorary trainer	Trainer (for training of local trainers) local trainer Average	54.274 7,403 10.222 34.038	MGA 9,443,632 MGA 20,137,519 / MGA 29,581,151 MGA 98,505,800 /	1	174 sessions 2,720 sessions 2,894 sessions 2,894 sessions
Honorary trainer Materials for training Subtotal	Trainer (for training of local trainers) local trainer Average	54.274 7,403 10.222 34.038 <b>44.260</b>	MGA 9,443,632 MGA 20,137,519 / MGA 29,581,151 MGA 98,505,800 / MGA 128 086 951 /	1	174 sessions 2,720 sessions 2,894 sessions 2,894 sessions 2,894 sessions
Honorary trainer Materials for training <i>Subtotal</i>	Trainer (for training of local trainers) local trainer Average	54.274 7,403 10.222 34.038 <b>44.260</b>	MGA 9,443,632 MGA 20,137,519 / MGA 29,581,151 MGA 98,505,800 / <i>MGA 128 086 951 /</i>	/	174 sessions 2,720 sessions 2,894 sessions 2,894 sessions 2,894 sessions
Honorary trainer Materials for training <i>Subtotal</i> Nowed Honorary local trainer	Trainer (for training of local trainers) local trainer Average	54.274 7,403 10.222 34.038 <b>44.260</b> <b>9.347</b>	MGA 9,443,632 MGA 20,137,519 / MGA 29,581,151 MGA 98,505,800 / MGA 128 086 951 <u>/</u> MGA 27,049,301 <u>/</u>	/	174 sessions 2,720 sessions 2,894 sessions 2,894 sessions 2,894 sessions 2,894 sessions
Honorary trainer Materials for training <i>Subtotal</i> Nowed Honorary local trainer anager area	Trainer (for training of local trainers) local trainer Average	54.274 7,403 10.222 34.038 <b>44.260</b> <b>9.347</b>	MGA 9,443,632 MGA 20,137,519 / MGA 29,581,151 MGA 98,505,800 / <i>MGA 128 086 951 <u>/</u></i> MGA 27,049,301 <u>/</u>	/	174 sessions 2,720 sessions 2,894 sessions 2,894 sessions 2,894 sessions 2,894 sessions

Fuel for motorcycles zone				
Managers	15,279	MGA 44,218,602	/	2,894 sessions
Subtotal	22.451	MGA 64,973,981 <u>/</u>		2,894 sessions
Aanagement and implementation of the Model				
the Principal Manager Salary	2,103	MGA 6,085,383 /		2,894 sessions
Executive Manager Salary	1,996	MGA 5,775,513 /		2,894 sessions
Financial Manager Salary	1,310	MGA 3,790,211 /		2,894 sessions
Subtotal	5,409	MGA 15,651,107 /		2,894 sessions
	81.467	MGA 235 761 340		2,894 sessions
IVIAL				

#### Production plants transplanting Training Training Formation Formation Total trainers local population trainers local population 1,436 68 1,284 106 2,894 Showtimes 43.424 377 22.350 489 20.208 participants (B) Men 201 12,580 292 11.410 24.483 Women 176 9,770 197 8,798 18.941

5. Impacts of training

4. Training Results

(1) Activities carried out by villagers after training

#### Production plant s

cash	For 3 years before P R OD	s AIRE	2012/2013	2013	3/2014	2014/2015	2015/2016
	<u>MNG TP (%)</u>	MNG TP (%)	MNG TP (%	<u>) MNG TP (%) I</u>	<u>MNG TP (%)</u>		
eucalyptus robusta	3,607	28.0 3,053	2	23.7 3,891	30.2 5,888	45.7 3,710	28.8
eucalyptus citriodora	-	-	-	- 1,752	13.6 1.275	9.9 747	5.8
Grevillea	219	1.7 760		5.9 1.378	10.7 876	6.8 399	3.1
Moringa	52	0.4 2.087		16.2 3,878	30.1 2.087	16.2 670	5.2
Pine	-	-	-	- 580	4.5 64	0.5 52	0.4

\* MNG: Housekeeping, TP: Practical rates for 12.883 target households

#### Reforestation

cash	For 3 yea <u>before P</u> R <u>O</u>	rs <u>DAIRE</u>	2012/2013	3 2013	/2014	2014/2015	2015/2016
	MNG TP (%	) MNG TP (%) N	ING TP (	%) MNG TP (%) N	<u>MNG TP (%)</u>		
eucalyptus robusta	4,831	37.5 3,607		28.0 4,058	31.5 5,772	44.8 3,68	35 28.6
eucalyptus citriodora	-	-	-	- 1,701	13.2 1,134	8.8 786	6.1
Grevillea	335	2.6 734		5.7 1.314	10.2 786	6.1 374	2.9
Moringa	0	0.0 2,448		19.0 4,251	33.0 1,945	15.1 438	3.4
Pine	-	-	-	- 515	4.0 26	0.2 26	0.2

\* MNG: Housekeeping, TP: Practical rates for 12.883 target households

## feet map t ed / open replanted by ménag e s participants in the was training

	2012/20	)13	13 2013/2014		2014/20	2014/2015 2015/2		16	Total	
cash	BORN	SE	NE	SE	NE	SE	NE	SE	NE	SE
	(foot)	(ha)	(foot)	(ha)	(foot)	(ha)	(foot)	(ha)	(foot)	(ha)
eucalyptus robusta	354.895	177.45 43	88.501 219.2	5 501.582 2	50.79 440.97	3 220.49			1735951	867.98
eucalyptus citriodora	0	0.00	30.807	15.40	112.532	56.27	80.867	40.43	224.206	112.10
Grevillea	18.515	7.41	27.653	11.06	13,993	5.60	18.601	7.44	78.762	31.51
Moringa	7.209	4.81	3,604	2.40	8,450	5.63	5.422	3.61	24.685	16.45
Pine	0	0.00	4,674	3.12	463	0.23	0	0.00	5,137	3.35
Total	380.619	189.67 50	5.239 251.23	3 637.020 3	18.52 545.86	3 271.97			2068741 (C)	1031.39 (D)

i) DO: Estimated number, SE: Surface reforested estimated ii) The number of households participating in the training is estimated at

9.616 12.883 among target households, iii) conversion of the number of feet planted in replanted surface is calculated based on the following rate: 2,000 ft / ha for Eucalyptus robusta, Eucalyptus citriodora, and Pin; 2,500 vines / ha for Grevillea; and 1,500 feet / ha for Moringa.

	6. Cost-effec	tiveness		
Description	Qty	Unit		Calculation
Total cost per foot planted by households who participated in the training	114	MGA / walk		Total Cost (A) / Total feet planted by households who participated in training (C)
				MGA = 235,761,340 / 2,068,741 feet
Total cost per area reforested by households who participated in the training	228.585 N	IGA hectare	/	Total Cost (A) / total area reforested by households who participated in training (D) = 235,761,340 MGA / 1031.39 ha
Total cost per participant in training	5.429 M	GA participant	/	Total Cost (A) / Total participants (B) MGA = 235761340 / 43.424 participants

		• = • • • • • • • • •	Luvuku			
		1. Summ	ary			
Contributions by sea	sion fo rmation	Training		Impacts form at tion		
Category contribut	ions (MGA)	Description	Qty Unit	Description	Qty	Unit
Sensitization	740	Training of trainers	4 sessions	Lavaka continually maintained by the loca	al 36	lavakas
Training	21.934	Training of the local population	122 sessions	population or already stabilized		
Followed	7,589	Total	126 sessions			
Manager area	18.228	Participants (Total)	1,535 people	(* On 37 lavakas objec 2016 impacts)	cts of stud	dy of
Management and implen	nentation of the 4,390			(* 49 lavakas were trea	ated durin	ig the
TOTAL	52.881					
	Cost-effectiveness					
		Description	Qty	Unit		
	Total cost per lav	aka continually				
	maintained by the I	ocal population or already stabil	ized_138.815 MGA / lava	ka		
		2. Training Overv	iew			
1	Training period	November 2012 - Ja	anuary 2016			
	duration	1 day x 4 sessions				
	Training content i) lava	aka Targeting		ii) Preparatory meeting		
		iii) On-site training	and practice	iv) Monitoring		
	3	. Project Contributions by tra	aining session			
Catagory	entrikutione	Description	Amount	Coloulet	lee	
		Beschiption	<u>(MGA)</u>			
Sensitization			740	MGA 93.225	<u>/ 120</u>	5 sessions
Honorary traine	ər	Technical Trainer (for training of resource	100,050			
		personsy		MGA 400.199	1	4 sessions
		Contact person	12.412	MGA 400.199 MGA 1,514,286	/	4 sessions 2 sessions
		Contact person Average	12.412 15.194	MGA 400.199 MGA 1,514,286 MGA 1,914,484	/ / 12: / 126	4 sessions 2 sessions 6 sessions
Materials for tra	aining	Contact person Average	12.412 15.194 6,740	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200	/ / 122 / 120 / 120	4 sessions 2 sessions 5 sessions 6 sessions
Materials for tra Subtotal	aining	Contact person Average	12.412 15.194 6,740 <b>21.934</b>	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 MGA 2,763,684	/ / 12: / 120 / 120 <u>/ 120</u>	4 sessions 2 sessions 5 sessions 6 sessions 6 sessions
Materials for tra Subtotal Followed Honorary of the	aining e contact person_	Contact person Average	12.412 15.194 6,740 <b>21.934</b> <b>7,589</b>	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 <u>MGA 2,763,684</u> MGA 956.169	/ 12: / 12: / 12: / 12: / 12: / 12:	4 sessions 2 sessions 5 sessions 6 sessions 6 sessions 6 sessions
Materials for tra Subtotal Followed Honorary of the Manager area	aining	Contact person Average	12.412 15.194 6,740 21.934 7,589	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 <i>MGA 2,763,684</i> MGA 956.169	/ 12: / 12: / 12: / 12: / <u>12:</u> / <u>12:</u>	4 sessions 2 sessions 5 sessions 5 sessions 6 sessions 6 sessions
Materials for tra Subtotal Followed Honorary of the Manager area the Manager S	aining e contact person_ alary area	Contact person Average	12.412 15.194 6,740 <b>21.934</b> <b>7,589</b> 5.823	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 <i>MGA 2,763,684</i> MGA 956.169 MGA 733.684	/ 12: / 12: / 12: / 12: / 12: / 12: / 12: / 12:	4 sessions 2 sessions 5 sessions 6 sessions 6 sessions 6 sessions 6 sessions
Materials for tra Subtotal Followed Manager area the Manager S Fuel Managers Area	aining e contact person alary area Motorcycle of t	Contact person Average	12.412 15.194 6,740 <b>21.934</b> <b>7,589</b> 5.823 12.405	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 <i>MGA 2,763,684</i> MGA 956.169 MGA 733.684 MGA 1,563,088	/ 12: / 12: / 12: / 12: / 12: / 12: / 12: / 12: / 12:	4 sessions 2 sessions 5 sessions 5 sessions 6 sessions 6 sessions 6 sessions 6 sessions
Materials for tra Subtotal Gollowed Honorary of the Manager area the Manager S Fuel Managers Area Subtotal	aining e contact person alary area Motorcycle of t	Contact person Average	12.412 15.194 6,740 21.934 7,589 5.823 12.405 18.228	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 <i>MGA 2,763,684</i> MGA 956.169 MGA 733.684 MGA 1,563,088 <i>MGA 2,296,772</i>	/ 12: / 12:	4 sessions 2 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions
Materials for tra Subtotal Followed Manager area the Manager S Fuel Managers Area Subtotal Management and implem	aining a contact person alary area Motorcycle of the a mentation of the Model	Contact person Average	12.412 15.194 6,740 21.934 7,589 5.823 12.405 18.228	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 <i>MGA 2,763,684</i> MGA 956.169 MGA 733.684 MGA 1,563,088 <i>MGA 2,296,772</i>	/ 12: / 12:	4 sessions 2 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions 3 sessions
Materials for tra Subtotal Followed Manager area the Manager S Fuel Managers Area Subtotal Management and impler the Principal Ma	aining a contact person alary area Motorcycle of the mentation of the Model mager Salary	Contact person Average	12.412 15.194 6,740 <b>21.934</b> <b>7,589</b> 5.823 12.405 <b>18.228</b> 1,707	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 <u>MGA 2,763,684</u> MGA 956.169 MGA 733.684 MGA 1,563,088 <u>MGA 2,296,772</u> MGA 215.113	/ 12: / 12:	4 sessions 2 sessions 5 sessions 5 sessions 5 sessions 6 sessions 6 sessions 6 sessions 6 sessions 6 sessions 7 sessions
Materials for tra Subtotal Followed Manager area the Manager S Fuel Managers Area Subtotal Management and impler the Principal Ma Executive Man	aining <u>e contact person</u> alary area Motorcycle of the mentation of the Model mager Salary ager Salary	Contact person Average	12.412 15.194 6,740 <b>21.934</b> <b>7,589</b> 5.823 12.405 <b>18.228</b> 1,707 1,620	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 <u>MGA 2,763,684</u> MGA 956.169 MGA 733.684 MGA 1,563,088 <u>MGA 2,296,772</u> MGA 215.113 MGA 204.159	/ 122 / 124 / 124	4 sessions 2 sessions 5 sessions 5 sessions 5 sessions 5 sessions 5 sessions 5 sessions 5 sessions 6 sessions 5 sessions 6 sessions 6 sessions 6 sessions
Materials for tra Subtotal Followed Manager area the Manager S Fuel Managers Area Subtotal Management and impler the Principal Man Executive Man Financial Mana	aining e contact person alary area Motorcycle of ti a nentation of the Model nager Salary ager Salary ager Salary	Contact person Average	12.412 15.194 6,740 21.934 7,589 5.823 12.405 18.228 1,707 1,620 1,063	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849,200 <u>MGA 2,763,684</u> MGA 956.169 MGA 733.684 MGA 1,563,088 <u>MGA 2,296,772</u> MGA 215.113 MGA 204.159 MGA 133.981	/ 122 / 122 / 124 / 124	4 sessions 2 sessions 5 sessions 5 sessions 6 sessions 5 sessions 6 sessions 6 sessions 6 sessions 6 sessions 6 sessions 6 sessions 6 sessions 6 sessions 6 sessions 7 sessions
Materials for tra Subtotal Followed Manager area the Manager S Fuel Managerent and impler the Principal Man Executive Man Financial Mana Subtotal	aining e contact person alary area Motorcycle of t a nentation of the Model nager Salary ager Salary ger Salary	Contact person Average	12.412 15.194 6,740 <b>21.934</b> <b>7,589</b> 5.823 12.405 <b>18.228</b> 1,707 1,620 1,063 <b>4,390</b>	MGA 400.199 MGA 1,514,286 MGA 1,914,484 MGA 849.200 <u>MGA 2,763,684</u> MGA 956.169 MGA 733.684 MGA 1,563,088 <u>MGA 2,296,772</u> MGA 215.113 MGA 204.159 MGA 133.981 <u>MGA 553.253</u>	/ 12: /	4 sessions 2 sessions 5 sessions

Training	4 sessions (Training of Trainers) 122 sessions (training
	of the local population) 49 lavakas treated during training
participants 1	1,535 people
	(1,219 men, 316 women)

(1) Activities carried out by villagers after training

## The entry vaka e held by the local population e

Lavakas Visits (B)	Lavakas maintained by the local population or already stabilized (C)	Proportion of lavakas maintained by the local population (D = C / B)	Estimated lavakas maintained by the local population or already stabilized on 49 lavakas treated during training (E = D x 49 lavaka)
37	36	97.3%	48

#### qualitative training Impacts

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The training impacts below have been investigated mainly through the case study in which the Project has conducted site visits and interviews with area managers, local trainers and residents.

- Voluntary Care lavakas by locals after participating in a training session
  - additional planting of trees around lavakas
  - Reconstruction of physical devices for the prevention of soil erosion
  - Regular monitoring of lavakas meeting and before the rainy season
  - Mitigating the impact of the sedimentation of the eroded soils on the area downstream
- lavaka stabilization concept recognized by locals
- Transfer of technology through a cascade training of the populations of neighboring villages by participants in previous training

		6. Cost-effectiveness	
Description	Qty	Unit	Calculation
Total cost per lavaka continually maintained by the local population or already stabilized	138.815	MGA / lavaka	Total cost (A) / lavakas continually maintained by the local population or already stabilized (E) = 6,663,103 MGA / 48 lavakas

## improvement of living conditions Activities 29 ( If Mangoro Alaotra)

3-3. Home improvement (Kamado)

			1. Si	ummary				
Contributions by tr session	raining	Training			Impacts of trainin	g		
Category contributions	Montan t <u>(MGA)</u>	Description	Qty	Unit	Description	(	Qty	Unit
Sensitization	1,033	Training of trainers	81 s	essions	Households that ma least one kamado	ade at 6	5.648 51.6% of hous targ	seholds 12.883 et households
Training	10.235	Training of the local population	1,151 se	essions	Number kamado produced by households participating in trair	15 ning	i.362 30 rooms	
Followed	10.596	Total	1,232 se	essions	Number kamado ca used by household participated in the t	urrently s who training	5.677 31 rooms	
Manager zor	ne 25.453	participants	20.957 pe	ople	* The number of hous estimated at 9.224 am	eholds particip ong the 12.883	ating in the tra target househ	ining is Iolds.
Management and implementation of the Model	6,131				-			
TOTAL	53.448							
Cost-effective	eness							_
<b>.</b>	Description				Qty		Unit	
l otal cost pe	er manutactured by	/ kamado he training	(95% con	4 fidence interva	1: 3 685 to 5 121)	MGA	/ kamado	
	Tra	2. aining period	Training O Apri	verview I 2013 - Novem	ber 2014		]	
	tra	ining content kamad	lo making d	emonstration				

<sup>&</sup>lt;sup>29</sup> Activities to improve the standard of living should be selected based on the objective of the implementation of the model and the target area. This collection of data shows the case of the Alaotra Mangoro region where the project has selected improved stove, production of lychees and fish farming.

<sup>30 95%</sup> confidence interval: 12.858 to 17.867

<sup>31 95%</sup> confidence interval: 4.954 to 6.400

	3. Project Contributions by the	raining session				
Category	Description	Amount (MGA)	Calculation			
Sensitization		1,033	MGA 1,272,775	/	1,232 sessions	
Training						
	Trainer (for training					
Honorary trainer	of local trainers)	37.626	MGA 3,047,683	1	81 sessions	
	local trainer	8.308	MGA 9,562,343 /		1,151 sessions	
	Average	10.235	MGA 12,610,026 /		1,232 sessions	
Training Materials		0	MGA 0 /	••••••	1,232 sessions	
Subtotal		10.235	<u>MGA 12,610,026 /</u>		1,232 sessions	
Followed				_		
Honorary local trainer		10.596	MGA 13,054,353 /		1,232 sessions	
Manager area				_		
Salary Manager area		8,131	MGA 10,016,822 /		1,232 sessions	
Fuel motorcycles Managers Area	of the	17.322	MGA 21,340,485	/	1,232 sessions	
Subtotal		25.453	<u>MGA 31,357,307_</u> /		1,232 sessions	
Management and implementation of the Model				_		
the Principal Manager Salary		2,384	MGA 2,936,887 /		1,232 sessions	
Executive Manager Salary		2,262	MGA 2,787,339 /	••••••	1,232 sessions	
Financial Manager Salary		1,485	MGA 1,829,206 /		1,232 sessions	
Subtotal		6,131	MGA 7,553,432 /		1,232 sessions	
TOTAL		53.448	MGA 65,847,893	1	1,232 sessions	

4. Training Results						
	Training of trainers	Training of the local population	Total			
howtimes		1,151	1,232			
participants	396	20.561	20.957			
Men	176	9.188	9.364			
Nomen	220	11.373	11.593			

## 5. Impacts of training

## (1) Activities carried out by villagers after training

## Preparing the kamado

	Before the	start of	After the start of		
Description	PRODA	RE	PRODAIRE		
Description	Qty of 12.883% target	households	Qty	12.883% of target households	
Households with at least one manufactured kamado	245	1.9	6.648	51.6	

## Confection and use by households kamado at aving party pated in the formation

Description	Qty	95% confidence interval	
Number kamado made by households who	15 262	10 959 to 17 967	
participated in the training (B)	15.502	12.636 10 17.607	
Number of active kamado use by households who participated	F 677		
in the training	5.677	4.954 to 6.400	

\* The number of households that participated in the training is estimated at 9.224 12.883 on target households.

#### (2) Advantages of kamado recognized by the local population

#### The quantitative benefits of kamado

Experiments on the effectiveness of kamado made September 18, 2015 revealed that the Kamado can earn a savings of almost 60% in terms of weight of firewood compared to traditional homes. The results of the study of impacts 2016, 36.3% of households, or 4,681 households in the initial target cities use the kamado at present. At the same time, the same study shows that 57.9% of households, or 7,461 households in the same common plan to continue using it.

Therefore, 11.384 tonnes of firewood were saved during the previous year amounting to MGA 1,137,904,290 for 4,681 households, and 18.145 tons of firewood are expected to be saved for the year to follow MGA 1,813,694,490 equivalent to 7,461 households in the communes initial targets.





Figure 2: saving on the consumption of fuel wood using kamado in terms of weight (Local initial targets)



#### qualitative training Impacts

The following benefits have been identified through the case study during which the project has descended on the site and interviewed Zone Managers, local trainers and villagers.

Reduced consumption of firewood

- heat retention effect
- Improving the living environment
- Improved security
- Improved manageability
- Improvement of living conditions

	6. Cost-effectiveness		
Description	Qty	Unit	Calculation
Total cost per kamado crafted by households who participated in the training	4,286 (95% confidence interval: 3.685 to 5.121)	MGA / kamado	Total cost (A) / Number of kamado made by households who participated in the training (B) = 65,847,893 MGA / 15.362 kamado

## 3-4. litchi production by layering

			1. Su	Immary			
Contribution per t session	raining	Training			Impacts of training		
Category contributions	Amount (MGA)	Description	Qty	Unit	Description	Qty Unit	
Sensitization	0	Training of trainers	101 se	essions	Households that have produced at least one	6,970 households	
Training	18,289	Training of the local population	646 se	essions	young lychee plant by layering	54.1% of target house	eholds
Followed	9,204	Total	747 se	essions	Number of seedlings produced by households participated in training	51.810 32 rooms	
Manager ZO	ne 22,107	participants	11.037 Pe	rson- nes	Number of seedlings planted by households participated in training	17.077 33 rooms	
Management and implementation of the Model	5,326				* The number of households the setimated at 7.433 12.883 or	nat participated in the training n target households.	
IUIAL	54.926						

Cost-effectiveness

Description	Qty	Unit
Total cost per young lychee plant produced by layering by households	2,403	MGA / seedling
who participated in the training	(95% confidence interval	
	2 150 to 2 724)	

2. Training Overview				
Training period	June 2013 - December 2014			
duration	1 day x 2 sessions			

Training content i) Preparation of layering, ii) Weaning and potting

## 3. Contribution of the Project training session

Category contributions	Description	Amount (MGA)	Calculation	
Sensitization		0	N/A	
Training				
Honorary trainer	Trainer (training of local trainers)	14.293	MGA 1,443,571 /	101 sessions
	local trainer	9.930	MGA 6,414,614 /	646 sessions
	Average	10,520	MGA 7,858,185 /	747 sessions
Materials for training		7,769	MGA 5,803,542 /	747 sessions
Subtotal		18,289	MGA 13,661,727 /	747 sessions
Followed		_		
Honorary local trainer		9,204	MGA 6,875,072 /	747 sessions
Manager area				
Salary Manager area		7,062	MGA 5,275,357 /	747 sessions
Fuel for motorcycles Area Managers		15,045	MGA 11,238,963 /	747 sessions
Subtotal		22,107	MGA 16,514,320 <u>/</u>	747 sessions

32 95% confidence interval: 8.774 to 94.846

33 95% confidence interval: 15.064 to 19.087

-

TOTAL	54.926	MGA 41,029,133 (AT)	1	747 sessions
Subtotal	5,326	MGA 3,978,014 /	_	747 sessions
Financial Manager Salary	1,290	MGA 963.351 /		747 sessions
Executive Manager Salary	1,965	MGA 1,467,952 /		747 sessions
the Principal Manager Salary	2,071	MGA 1,546,711 /		747 sessions
Management and implementation of the Model				

		4. Training R	Results			
	Preparation and	d Company o <u>n marcotte</u>	Pott	ing		Total
	Training of trainers	Training the local	Training of trainers	Training of the	Training of trainers	Training of the
Showtimes	67	306	34	340	101	646
participants	298	5,385	152	5,202	450	10.587
Men	156	2,843	94	2,823	250	5,666
Women	142	2,542	58	2,379	200	4,921

5. Impacts of training	
(1) Activities carried out by villagers after training	

## Practice <u>p</u>roduction seedlings litchi by my <u>r</u> Cottag e

Description	Qty	12.883% of target households
Households having produced at least one young lychee plant by layering	6,970	54.1

## Production and m etting layering of land by households partici p ed training

		95% of range
Description	Qty	
		trust
Number of seedlings produced by layering by households who participated in the training	51.810	8.774 to 94.846
Number of seedlings planted marcotte by households who participated in the training (B)	17.077	15.064 to 19.087

\* The number of households that participated in the training is estimated at about 7.433

12.883 target households.

<b>•</b> • • •	<b>a</b> i	11.24	
Description	Qty	Unit	Calculation
Total cost per seedling produced by layering by households who participated in the training	2,403 (95% confidence interval 2,150 - 2,724)	MGA / seedling	Total cost (A) / Seedlings of layering planted by households who participated in the training (B) = 41,029,133 MGA / 17.077 seedlings

							7	
			1.	Summary				
Contributions by training session		Training	Training					
Category contributio	ons	Amount (MGA)	Description Qty	Unit	Description		Qty	Unit
Sensitization		0	Training of trainers	0 sessions	Households produced in 2014/2015 and 2015/2016 fry		9 hc	useholds
Training		297.176	Training of the local population	42 sessions	Number of fry sold		105.920 fry	
Followed		7.905	Total	42 sessions		Ν	MGA 27,150,0	00
Manager area	1	18.989	participants	533 people				
Management and Model work	implementation	4,574						
TOTAL		328.644						
			2. Training	Overview			]	
	Training p	eriod	October 2013 - A	ugust 2015				
	duration		1 day x 4 sessior	าร				
	Training c	ontent i) Prepa	ration basins	ii	) Storage and breeding broodst	ock		
	Ū	, ,	iii) Reproduction	n i	v) Breeding fry			
		3	. Project Contributions	s by training session	I		]	
Cateo	ory contributio	ons	Description	Amount	Calculati	on		
0 111 11			•	(MGA)				_
Sensitization				0	N/A			
Iraining			toobnigel					
Honorary	trainer		trainer	167.940	MGA 7,053,500	/	42 sessions	
Training I	Materials		trainer	129 236	MGA 5 427 900 /		42 sessions	
Subtotal				297.176	MGA 12,481,400 /		42 sessions	
Followed					<b>_</b>			
Honorary	trainer			7.905	MGA 332.012 /_		42 sessions	
Manager area	a							
Salary Ma	anager area			6,066	MGA 254.758 /		42 sessions	
Fuel Managers	for mot s Area	orcycles		12.923	MGA 542.753	/	42 sessions	
Subtotal				18.989	MGA 797.511 /		42 sessions	
Management and	implementation o	of the Model			<b>_</b>			
the Princip	al Manager S	alary		1,778	MGA 74.694 /		42 sessions	
Executive	e Manager Sa	lary		1,688	MGA 70.890 /		42 sessions	
Financial	Manager Sa	lary		1,108	MGA 46.522 /		42 sessions	
Subtotal				4,574	MGA 192.106 /	_	42 sessions	
TOTAL				328.644	MGA 13,803,029 /		42 sessions	_

## 3-5. Fry production Carpe Royale

4. Training Results

Training 42 sessions

participants 533 (361 men, 172 women)

5. Impacts of training

(1) Activities carried out by villagers after training

#### practiced <u>e fish farming (fry</u> age)

· · · · · · · · · · · ·	2.0.				
fry Producer	town	Countryside Numb	per of fry oducts (parts)	Number of fry <u>sold (parts)</u>	I otal sale of fry (MGA)
	Ammanilanka	2014/15	100,000	31,300	9260000
AI	Ampasikely	2015/16	N / A	50,000	12,500,000 34
В	Morarano Chrome	2014/15	2,000	0	0
С	Morarano Chrome	2014/15	320	220	290,000
D	Morarano Chrome	2014/15	0	0	0
E	Morarano Chrome	2014/15	20,000	20,000	4,000,000
F	Morarano Chrome	2015/16	N / A	600	500,000
G	Morarano Chrome	2015/16	N / A	1,000	250,000
I	Morarano Chrome	2015/16	N / A	800	200,000
Н	Ambodirano	2015/16	N / A	2,000	150,000
	Total		122.320	105.920	27150000

<sup>&</sup>lt;sup>34</sup> The total revenue from the sale of fry MGA is estimated based on the unit cost of MGA 250 per fry in the 2015/16 campaign as the exact amount is not available at the time of study final impacts.

## 4. Inputs and results for the new Commons

#### Table 5: Summary table of project inputs by training theme (New Towns)

		Soil Conservat	tion Activities	Activities for gol o ration of living conditions		
	Category contributions	I-1	I-2	I-3 improved	I-4 Layering	
		Reforestation	Stabilization lavaka	Fireplace	lychee	
Sensitization		_	-			
	Public Relations & DVD Projection	0	1,162	2,677	0	
Training						
	Honorary trainer	11,993	13.739	11.938	11.973	
	Training Materials (Including transport training materials)	19.304	9,373	0	1,953	
	Subtotal	31.297	23.112	11.938	13.926	
Followed						
	Honorary trainer	11.017	5,095	11.743	9,228	
Manager area						
	Salary Manager area	9.761	4,514	10.403	8,175	
	Fuel motorcycles zone Managers	27.925	12.914	29.763	23.389	
	Subtotal	37.686	17.428	40.166	31.564	
Management and imple	nentation of the Model					
	the Principal Manager Salary	4,893	2,263	5,215	4,098	
	Executive Manager Salary	5.367	2,482	5,720	4,495	
	Financial Manager Salary	3,824	1,768	4,076	3,203	
	Subtotal	14.084	6.513	15.011	11,796	
TOTAL		94.084	53.310	81.535	66.514	

Unit: MGA / training session

## Soil Conservation Activities (Key activities in the model)

# 4-1. Reforestation

Contributions by training session		Training		
Category contributions	Amount (MGA)	Des	scription	Qty Unit
Sensitization	0	Training of trainers		89 sessions
Training	31.297	Training of the	local population	777 sessions
Followed	11.017	Total		866 sessions
Manager area	37.686	participants		13.256 people
Management and implementation of the Model	14.084			
TOTAL	94.084			
Description	before <u>PRODAIRE</u>	Qty (2014/2015)	Qty (2015/2016)	Unit
Description Households that produces seedlings of	before PRODAIRE 901	Qty (2014/2015) 1,025	Qty (2015/2016) 1,585 house	Unit
Description Households that produces seedlings of Eucalyptus robusta	before <u>PRODAIRE</u> 901 24.8	Qty (2014/2015) 1,025 28.2	Qty (2015/2016) 1,585 househ 43.6 <u>3,635</u> 9	Unit nolds 6 of target households
Description Households that produces seedlings of Eucalyptus robusta Households reforested Eucalyptus robusta	Prof 3 years before <u>PRODAIRE</u> 901 24.8 1,080	Qty (2014/2015) 1,025 28.2 1,225	Qty (2015/2016) 1,585 househ 43.6 <u>3,6359</u> 1,708 househ	Unit nolds 6 of target households nolds
Description Households that produces seedlings of Eucalyptus robusta Households reforested Eucalyptus robusta	PRODAIRE 901 24.8 1,080 29.7	Qty (2014/2015) 1,025 28.2 1,225 33.7	Qty (2015/2016) 1,585 housef 43.6 <u>3,6359</u> 1,708 housef 47.0 <u>3,6359</u>	Unit nolds 6 of target households nolds 6 of target households
Description Households that produces seedlings of Eucalyptus robusta Households reforested Eucalyptus robusta Feet planted / replanted area by households	PRODAIRE 901 24.8 1,080 29.7 N/A	Qty (2014/2015) 1,025 28.2 1,225 33.7 92.785	Qty (2015/2016) 1,585 housef 43.6 <u>3,6359</u> 1,708 housef 47.0 <u>3,6359</u> 93.923 plants	Unit olds 6 of target households olds 6 of target households 5

\* The number of households participating in the training is estimated at 2,753 among 3,635 targeted households.

Cost-effectiveness		
Description	Qty	Unit
Total cost per foot planted by households who	426 MC	λ / <del>Ω</del>
participated in the training	436 MGA / ft	
Total cost per area reforested by households	970 422 MC	A / hostoro
who participated in the training	072.433 100	A / Heclare
Total cost per participant in training	6,146 <u>MG</u>	A / participant

2. Training Overview

Training period	August 2014 - February 2016
duration	1 day x 2 sessions
Training content	i) Production of plants, ii) Dubbing

## 3. Project Contributions by training session

Category contributions	Description	Amount (MGA)	Calculation	1
Sensitization		0	N / A	
Training				
	Trainer (for training of			
Fee of trainer	local trainers)	13.739	MGA 1,222,743 /	89 sessions
	local trainer	11.793	MGA 9,163,418 /	777 sessions
	Average	11,993	MGA10,386,161	866 sessions
Materials for training		19.304	MGA 16,717,400 /	866 sessions
Subtotal		31.297	MGA 27,103,561 <u>/</u>	866 sessions
Followed				
Honorary local trainer		11.017	MGA 9,541,102 /	866 sessions
Manager area				
Salary Manager area		9.761	MGA 8,452,672 /	866 sessions
Fuel for motorcycles Area Managers		27.925	MGA 24,182,975 /	866 sessions
Subtotal		37.686	MGA 32,635,647 <u>/</u>	866 sessions

Manage	ment and im	nplementation of the Model				
S	alary Ianager	the Principal	4,893	MGA 4,236,923 /		866 sessions
E	xecutive I	Manager Salary	5.367	MGA 4,647,699 /		866 sessions
S	alary	Financial Manager	3,824	MGA 3,311,618 /		866 sessions
S	ubtotal		14.084	MGA 12,196,240 <u>/</u>		866 sessions
τοτα	а		94.084	MGA 81,476,549	1	866 sessions
1017				(AT)		

4. Training Results

	Productio	on plants	tra		
	Training <u>trainers</u>	Training the local population	Training of trainers	Training of the local population	Total
Showtimes	58	385	31	392	866
participants	559	6,643	237	5.817 <b>1</b>	3.256 (B)
Men	276	4,003	145	3,473	7,897
Women	283	2,640	92	2,344	5,359

5. Impacts of training

(1) Activities carried out by villagers after training

Production plants

cash	For 3 years be PRODAIR	fore 20 E	)14/15	2015/16			
MNG TP (%) MNG TP (%) MNG TP (%)							
eucalyptus robusta	901	24.8 1.025	28.2 1.585	43.6%			
Moringa	0	0.0 73	2.0 127	3.5%			
* MNG: households, TP: practical rate for 3.635 target households							

MNG: households, TP: practical rate for 3,635 target households

Reforestation

cash	For 3 years before PRODAIRE	e 20	014/15	2015/16		
MNG TP (%) MNG TP (%) MNG TP (%)						
eucalyptus robusta	1,080	29.7 1,225	33.7 1,708	47.0		
Moringa	0	0.0 55	1.5 91	2.5		

\* MNG: households, TP: practical rate for 3,635 target households

## feet planted / Open replanted by mé not ages having p at rticipé for the mation

	2014/20	15	2015/1	6	Total	
cash	BORN	SE	BORN	SE	BORN	SE
	(Feet)	<u>(Ha)</u>	(Feet)	<u>(Ha)</u>	(Feet)	<u>(Ha)</u>
eucalyptus robusta	92.785 4	6.4	93.809 4	6.9 186.5	94 93.3	
Moringa	0	0	114	0.1	114	0.1
Total	92.785	46.4 93	.923	47.0 18	86.708 (C)	93.4 (D)

i) The number of households participating in the training is estimated at 2,753 among

3,635 target households. ii) Conversion into replanted area follows the following rate: 2,000 ft / ha for Eucalyptus robusta and 1,500 feet / ha Moringa.

6 . Cost-effectiveness					
Description	Qty	Unit	Calculation		
Total cost per foot planted by households who participated in the training	436	MGA / walk	Total Cost (A) / Total feet planted by households who participated in training ( <b>C)</b> MGA = 81476549 / 186.708 feet		
Total cost per area reforested by households who participated in the training	872.433 N	/IGA / hectare	Total Cost (A) / total area reforested by households who participated in training ( <b>D</b> ) MGA = 81476549 / 93.4 ha		
Total costs per participant training	6.146 M	GA / participant	Total Cost (A) / Total participants ( <b>B)</b> MGA = 81476549 / 13.256 participants		

## 4-2 Stabilization lavaka

		1.5	Summarv				
			,				
Contributions by traini	ng	Training			Impae	cts of training	
Category contributions	Amount (MGA)	Description	Qty	Unit		Description	Qty Unit
Sensitization	1,162	Training of trainers	0 sess	ions	Lavaka	s maintained by the loca tion already stabilized	ll 20 Javakas
Training	23.112	Formation local population	114 sessio	ons	gold		20 1878883
Followed	5,095	Total	114 sessi	ons	(* On impac	28 lavakas objects c ts)	of study of 2016
Manager area	17.428	participants	807 pec	ple	(* 38 l trainin	avakas are treated du g)	ring the
Management and implementation of the Model	6.513						
TOTAL	53.310						
C	ost-effectiveness						<u>.</u>
		Description			Qty	Unit	_
ד	otal cost per lavaka population or alread	continually maintained b v stabilized	by the local		225.083 MG	A / lavaka	-
Г		2 Training (	Overview				
duration	g period	1 day x 4 sess	- January 20	)16			
Training	g content i) lavaka	Targeting			ii) Pr	eparatory meeting	
		iii) On-site trai	ning and pra	actice_	iv) Mo	nitoring	
		3. Project Contributions	by training s	ession			
Category	contributions	3. Project Contributions descripti we	by training s An (N	ession nount IGA)		Calculation	
Category Sensitization	contributions	3. Project Contributions descripti we	by training s An (N	nount 1GA) 1,162		Calculation IGA 132.420 <u>/</u>	114 sessions
Category Sensitization Training Honorary trainer	contributions	3. Project Contributions descripti we Contact	by training s An (N	nount IGA) 1,162		Calculation IGA 132.420 <u>/</u> GA 1,566,210 /	114 sessions
Category Sensitization Training Honorary trainer Materials for train	contributions	3. Project Contributions descripti we Contact person	by training s	nount 1GA) 1,162 13.739 9.373	  	Calculation MGA 132.420 <u>/</u> GA 1,566,210 / GA 1,068.500 /	114 sessions 114 sessions
Category Sensitization Training Honorary trainer Materials for train <i>Subtotal</i>	contributions	3. Project Contributions descripti we Contact person	by training s	eession nount 1GA) 1,162 13.739 9,373 23.112	MC MC MC	Calculation IGA 132.420 <u>/</u> GA 1,566,210 / GA 1,068,500 / GA <i>2,634,710 <u>/</u></i>	114 sessions 114 sessions 114 sessions 114 sessions
Category Sensitization Training Honorary trainer Materials for train <i>Subtotal</i> Followed Honorary of the c	contributions ing contact person	3. Project Contributions descripti we Contact person	by training s	eession nount IGA) 1,162 13.739 9,373 23.112 5,095	MC 	Calculation IGA 132.420 / GA 1,566,210 / GA 1,068,500 / GA 2,634,710 / IGA 580.844 /	114 sessions 114 sessions 114 sessions 114 sessions 114 sessions 114 sessions
Category Sensitization Training Honorary trainer Materials for train Subtotal Followed Honorary of the of Manager area	contributions ing contact person	3. Project Contributions descripti we Contact person	by training s	eession hount 1GA) 1,162 13.739 9,373 23.112 5,095	MC 	Calculation MGA 132.420 / GA 1,566,210 / GA 1,068,500 / GA 2,634,710 / MGA 580.844 /	114 sessions 114 sessions 114 sessions 114 sessions 114 sessions
Category Sensitization Training Honorary trainer Materials for train Subtotal Followed Honorary of the c Manager area Salary Manager a Fuel motorcycles	contributions ing contact person area zone Managers	3. Project Contributions descripti we Contact person	An (N	eession nount <u>IGA)</u> 1.162 13.739 9.373 23.112 5,095 4,514 12.914		Calculation MGA 132.420 / GA 1,566,210 / GA 1,068,500 / GA 2,634,710 / MGA 580.844 / MGA 514.583 / GA 1,472,213 /	114 sessions
Category Sensitization Training Honorary trainer Materials for train Subtotal Followed Honorary of the c Manager area Salary Manager a Fuel motorcycles Subtotal	contributions ing contact person area zone Managers	3. Project Contributions descripti we Contact person	by training s	eession nount IGA) 1,162 13.739 9,373 23.112 5,095 4,514 12.914 17.428	MC MC 	Calculation MGA 132.420 / GA 1,566,210 / GA 1,068,500 / GA 2,634,710 / MGA 580.844 / MGA 514.583 / GA 1,472,213 / GA 1,986,796 /	114 sessions
Category Sensitization Training Honorary trainer Materials for train Subtotal Followed Honorary of the o Manager area Salary Manager a Fuel motorcycles Subtotal Management and implement the province Management	contributions	3. Project Contributions descripti we Contact person	by training s	eession hount IGA) 1,162 13.739 9,373 23.112 5,095 4,514 12.914 17.428 2,000	MC MC MC 	Calculation         MGA 132.420 /         GA 1,566,210 /         GA 1,068,500 /         GA 2,634,710 /         MGA 580.844 /         MGA 514.583 /         GA 1,472,213 /         GA 1,986,796 /	114 sessions
Category Sensitization Training Honorary trainer Materials for train Subtotal Followed Honorary of the c Manager area Salary Manager a Fuel motorcycles Subtotal Management and implement the Principal Mana Executive Masses	contributions	3. Project Contributions descripti we Contact person	by training s	eession nount IGA) 1,162 13.739 9,373 23.112 5,095 4,514 12.914 17.428 2,263 2,492	MC MC MC MC	Calculation         MGA 132.420 /         GA 1,566,210 /         GA 1,068,500 /         GA 2,634,710 /         MGA 580.844 /         MGA 514.583 /         GA 1,472,213 /         GA 1,986,796 /         MGA 257.936 /         MGA 257.936 /	114 sessions
Category Sensitization Training Honorary trainer Materials for train Subtotal Followed Honorary of the c Manager area Salary Manager a Fuel motorcycles Subtotal Management and implement the Principal Mana Executive Manag Financial Manager	contributions ing contact person area zone Managers ation of the Model ger Salary er Salary er Salary er Salary	3. Project Contributions descripti we Contact person	by training s	eession nount IGA) 1,162 13.739 9,373 23.112 5,095 4,514 12.914 17.428 2,263 2,482 1,768	MC MC MC MC MC	Calculation           IGA 132.420 /           GA 1,566,210 /           GA 1,068,500 /           GA 2,634,710 /           IGA 580.844 /           IGA 514.583 /           GA 1,472,213 /           GA 1,986,796 /           IGA 282.943 /           IGA 201 605 /	
Category Sensitization Training Honorary trainer Materials for train Subtotal Followed Honorary of the c Manager area Salary Manager a Fuel motorcycles Subtotal Management and implement the Principal Manage Financial Manage Subtotal	contributions	3. Project Contributions descripti we Contact person	by training s	eession nount IGA) 1,162 13.739 9,373 23.112 5,095 4,514 12.914 17.428 2,263 2,482 1,768 6,513	MC MC MC MC MC MC MC MC	Calculation           IGA 132.420 /           GA 1,566,210 /           GA 1,068,500 /           GA 2,634,710 /           IGA 580.844 /           MGA 514.583 /           GA 1,472,213 /           GA 1,986,796 /           MGA 282.943 /           MGA 201.605 /	114 sessions
Category Sensitization Training Honorary trainer Materials for train Subtotal Followed Honorary of the c Manager area Salary Manager a Fuel motorcycles Subtotal Management and implement the Principal Manag Financial Manage Subtotal TOTAL	contributions	3. Project Contributions descripti we Contact person	An (N	eession nount IGA) 1,162 13.739 9,373 23.112 5,095 4,514 12.914 17.428 2,263 2,482 1,768 6.513 53.310	MC MC MC MC MC MC MC MC MC MC MC MC	Calculation         IGA 132.420 /         GA 1,566,210 /         GA 1,068,500 /         GA 2,634,710 /         IGA 580.844 /         IGA 514.583 /         GA 1,472,213 /         GA 1,986,796 /         IGA 257.936 /         IGA 282.943 /         IGA 201.605 /         IGA 742.484 /         IGA 6,077,254 /	114 sessions         114 sessions

4. Training Results

Training

114 sessions

38 lavakas treated for training

participants 807 people (608 men, 199 women)

	5. Impacts of training						
(1) Activities carried out by villagers after training							
Lava <u>I</u>	k <u>as conti</u> not <u>i</u>	ually maintained p ar locals					
	Lavakas Visits (B)	Lavakas maintained by the local population already stabilized or (C)	Proportion of lavakas maintained by the local population (D = C / B)	Estimated lavakas maintained by the local population or already stabilized on 38 lavakas treated during training (E = D x 38 lavakas)			
	28	20	71 4%	27			

#### qualitative training Impacts

The training impacts below have been investigated mainly through the case study in which the Project has conducted site visits and interviews with area managers, local trainers and residents.

- Voluntary Care lavakas by locals after participating in a training session
  - additional planting of trees around lavakas
  - Reconstruction of physical devices for the prevention of soil erosion
  - Regular monitoring of lavakas meeting and before the rainy season
- Mitigating the impact of the sedimentation of the eroded soils on the area downstream
- lavaka stabilization concept recognized by locals
- Transfer of technology through a cascade training of the populations of neighboring villages by participants in previous courses.

		6. Cost-effectiveness	
Description	054	Unit	Ortendetter
Description	Qty	Unit	Calculation
Total cost per lavaka continually maintained by			Total cost (A) / Lavaka continually maintained by the local
the local population or already stabilized	225.083	MGA / lavaka	population or already stabilized (E) = 6,077,254 MGA / 27
			lavakas

## Activities for improvement of living standards 35 ( Cases Mangoro Alaotra)

4-3. Home improvement (Kamado)

			1. Summary			
Contribution per ti	raining	Training		Impacts of training		
Category contributions	Amount (MGA)	Description Qty	Unit	Description	Qty	Unit
Sensitization	2,677	Training of trainers	Training of 40 sessions trainers		Households that1,872made at least one51.5% of hour 3,62kamadohour	
Training	11.938	Training of the local population	ing of the produ population 497 sessions hous partic traini		3,563 36 rooms	
Followed	11.743	Total 5	Num curro hous 537 sessions parti train		1,388 37 rc	ooms
Manager ZO	ne 40.166	participants 8.7	61 people	* The number of househ training is estimated at 2, 3,635 target households.	olds that par 537 among	ticipated in the
Management and implementation of the Model	15.011					
TOTAL	81.535					
Cost-effective	eness					
	Description		Qty		Ur	nit
Total cost p households training	er kamado crafted b who participated in	by the (95% confide	12,288 nce interval: 10.503 to	14.806) MGA / kamado		
		2. Trainin	g Overview			
	Training no	ried A	lay 2014 December 1	2015		
	duration	1	day	2013		
	Training co	ntent Demonstration of the	e preparation of the ka	mado		
		2 Project Contribution	a by training coopien			
Category	y contributions	Description	Amount (MGA)	C	alculation	
Sensitization			2,677	MGA 1,437,580	<u> </u>	537 sessions
Training Honorary tra	iner Tra trai	iner (for training of local ners)	13.739	MGA 549.547	/	40 sessions
	loc Ave	al trainer erage	11.793 11.938	MGA 5,861,285 / MGA 6,410,833 /		497 sessions 537 sessions

<sup>35</sup> Activities to improve the standard of living should be selected based on the objective of the implementation of the model and the target area. This collection of data shows the case of the Alaotra Mangoro region where the project has selected improved stove, litchi production and fish farming.

<sup>36 95%</sup> confidence interval: 2.957 to 4.169

<sup>37 95%</sup> confidence interval: 1.133 to 1.602

Training				
Materials	0	MGA U	/	537 sessions
Subtotal	11.938	MGA 6,410,833 <u>/</u>	_	537 sessions
Followed				
Honorary local		MCA 6 205 702	,	507
trainer	11./43	MGA 6,305,793	/	537 sessions
Manager area				
the Manager Salary area	10.403	MGA 5,586,441	/	537 sessions
Fuel motorcycles zone				
Managers	29.763	MGA 15,982,728	/	537 sessions
Subtotal	40.166	MGA 21,569,169 <u>/</u>		537 sessions
Management and implementation of the Model			_	
the Principal Manager	E 045	MCA 2 800 247	,	507
Salary	5,215	MGA 2,800,217	/	537 sessions
Executive Manager	E 700	MCA 2 071 702	,	F07
Salary	5,720	MGA 3,071,703	/	537 Sessions
Financial Manager	4.070	NOA 0 400 070	,	·
Salary	4,076	MGA 2,188,676	/	537 sessions
Subtotal	15.011	MGA 8,060,596 /		537 sessions
TOTAL	81.535	MGA 43,783,971	/	537 sessions
IUIAL		(AT)		

	4. Training Res	ults	
	Training	training	Total
	trainers	the local popu	lation
Showtimes	4	0	four hundred <b>563</b> y se
participants	319	9	8.442 8.761
Men	17:	2	3,949 4,121
Women	14	7	4,493 4,640

```
5. Impacts of training
```

## (1) Activities carried out by villagers after training

## Preparing the kamado

	Before the start of		After the start of		
<b>B</b> assi di Kas	PR	PRODAIRE		RODAIRE	
Description	Qty of 3,6	635%	Qty	3,635% of target	
		target households		households	
Households with at least one manufactured	18	0.5	1 872	51 5	
kamado	10	0.0	1,072	51.5	

## Confection and use kamado by households with p articipé training

Description		95% confidence interval	
Number kamado made by households who participated in	2 562	2.057 to 4.160	
the training (B)	3,505	2.957 10 4.109	
Number kamado currently used by households who	1 200	1 122 - 1 602	
participated in the training	1,300	1.133 10 1.002	

\* The number of households that participated in the training is estimated at 2,537 among 3,635 targeted households.

#### (2) Advantages of kamado recognized by the local population

#### quantitative advantage kamado

Experiments on the effectiveness of kamado made September 18, 2015 revealed that the Kamado can earn a savings of almost 60% in terms of weight of firewood compared to traditional homes. According to the results of the investigation of impacts conducted in 2016, 34.3% of 3,635 households, that is to say, 1,248 households in the cities use the new targets kamado currently. The same study also shows that 55.0% of households, or 1,997 households in the new common targets intend to continue to use the kamado. Thus, 3,035 tons of firewood were saved last year, equivalent to 303,376,320 for MGA

1,248 households, and an estimated 4,857 tons of firewood would be saved for the coming year, equivalent to MGA 485,450,730 for 1,997 households in the new target communes.





Figure 4: saving on the consumption of firewood in enhanced in terms home

Weight (New Towns)

Figure 5: saving on the consumption of firewood in enhanced in terms home

Money (New Towns)

#### qualitative training Impacts

The following benefits have been identified in the case study conducted by the project through on-site raids and interviews with area managers, local trainers and the local population.

- Reduced consumption of firewood
- heat retention effect
- Improving the living environment
- Improved security
- Improved manageability
- Improvement of living conditions

	6. Cost-effectiveness	S	
Description	Qty	Unit	Calculation
Total cost per Kamado produced by households participating in th training	12,288 (95% confidence interval: 10.503 to 14.806)	MGA / kamado	Cost total (AT) / Number of kamado fabricated by the households who participated in the training (B) <u>MGA = 43,783,971 / 3,563 kamado</u>

## 4-4. litchi production by layering

			1. Summary			
Contribution per train session	ing	Training		Impacts of training		
Category contributions	Amount (MGA)	Description Qty	Unit	Description	Qty	Unit
Sensitization	0	Training of trainers	16 sessions	Households with at least one product marcotte	1,349 I	nouseholds
Training	13.926	Training of the local population	157 sessions		37.1	% of 3.635 target households
Followed	9,228	Total	173 sessions	Number of marcots produced by households participating in training	13.694 38 r	ooms
Manager of zoned	31.564	participants 2	2,218 people	Number of marcots planted by households who participated in the training	55.42 <b>39</b> I	ooms
Management and implementation of the 11,796 Model				* The number of households estimated at 1,476 among 3	s that particip ,635 targete	pated in the training is d households.
TOTAL	66.514					
Cost-effectiveness						
	Descr	iption		Qty		Unit
Total cost per seedli participated in the tra	ing produced by aining	layering by household	s who (95%	2,076 confidence interval 1.243 to 6.284)	N r	/IGA / narcotte
Г		2. Tra	ining Overview			
L						
	Training pe	eriod	June 2015 - February 2	016		
	duration		1 day x 2 sessions			
	Training co	ontent i) Preparation of	f layering, ii) Potting			
		3. Contribution of	the Project training sessi	on		
Category contr	ibutions	Description	Amount (MGA)	Ca	lculation	
Sensitization			0	N / A	\	
Training			-			<u> </u>
Honorary trainer	r	Trainer (for train local trainers)	ning of 13.739	MGA 219.819	1	16 sessions
		local trainer	11.793	MGA 1,851,553 /		157 sessions
<b>T</b>		Average	11.973	MGA 2,0/1,372 /		173 sessions
I raining Materia	lis		1,953	MGA 337.800 / MGA 2409 172 /		173 sessions
Followed			13.320	mon 2,700,112/		110 363310113
Honorary local t	rainer		9,228	MGA 1,596,421 <u>/</u>		173 sessions
Manager area the Manager Sa	lary area		8,175	MGA 1,414,305 /		173 sessions
Fuel motorcycle	s zone Manager	rs	23.389	MGA 4,046,306	/	173 sessions
Subtotal			31.564	MGA 5,460,611 /		173 sessions

38 95% confidence interval: 3.730 to 23.658

39 95% confidence interval: 1.831 to 9.254

TOTAL	66.514	MGA 11,506,884 (AT) /	173 sessions
Subtotal	11,796	MGA 2,040,680 /	173 sessions
Financial Manager Salary	3,203	MGA 554.101 /	173 sessions
Executive Manager Salary	4,495	MGA 777.655 /	173 sessions
the Principal Manager Salary	4,098	MGA 708.924 /	173 sessions
Management and implementation of the Model			

4. Training Results	4	. Tr	ainin	a Re	sults
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	Preparation of layering		Potting		Total	
	Training Training Population trainers local		Training Training Population trainers local		Training trainers	Training Population
						local
Showtimes	4	84	12	73	16	157
participants	21	1,083	131	983	152	2,066
Men	14	696	79	573	93	1,269
Women	7	387	52	410	59	797

5. Impacts of training

(1) Activities carried out by villagers after training

Layering lychee

Description	Qty	3,635% of target households
Households with at least one product marcotte	1,349	37.1%

## Production and metting layering of land by households participed training

		95% of range
Description	Qty	
		trust
Number of seedlings produced by layering by households who participated in the training	13.694	3.730 to 23.658
Number of seedlings planted marcotte by households who participated in the training (B)	5.542	1.831 to 9.254

\* The number of households that participated in the training is estimated at 1,476 among 3,635 target households.

Description	Qty	Unit	Calculation
Total cost per seedling produced by layering by households who participated in the training	2,076 (95% confidence interval 1,243 - 6,284)	MGA / seedling	Total cost (A) / Seedlings of layering planted by households who participated in the training (B) = 11,506,884 MGA / 5.542 seedlings marcotte

## 5. Inputs and outputs for common Bongolava

		soil conservation act	ivities	improvement activities living standards
	Category	I-1 reforestation	I-2 Action against Iavaka	I-3 improved Fireplace
Sensitization				
	Public Relations & DVD Projection	0	248	491
Training				
	Honorary trainer	3,091	28.130	3,038
	Training Materials (Including transport training materials)	22.867	0	0
	Subtotal	25.958	28.130	3,038
Followed				
	Honorary trainer	320	118	233
Manager area				
	Allowances for CDR	6,359	2,341	4,632
	Fuel motorcycles CDR and staff DREEF / DRAE	3,543	1,305	2,581
	Subtotal	9.902	3,646	7,213
Management and implem	entation of the model			
	Allowances staff DRAE & DREEF	7,504	2,763	5,466
TOTAL		43.684	34.905	16.441

#### Table 6: Summary of the contributions of the Project Training category (Bo Commons ngolava)

## soil conservation activities (core activities in the model)

## 5-1. Reforestation

1.	Summary

Contributions by training session		Training			
Category	Amount (MGA)	Amount (MGA) Description		Unit	
Sensitization	0	Training of trainers	23 sessions		
Training	25.958	Training of the local population	184 sessions		
Followed	320	Total	207 sessions		
Manager area	9.902	participants	6,399 people		
Implementation and Management Model	7,504				
TOTAL	43.684				
Description	3 years bef	fore 2015/2016	Unit		

	PRUDAIRE	
Households that produces young plants (all	1,103	1,484 households
species)	50.0	67.3 2.205% of target households
Households that practiced reforestation (all	1,824	1,887 households
species)	82.7	85.6 2.205% of target households
Feet planted / replanted area by households	N / A	129.658 plants
who participated in the training (all species)	N / A	64.83 ha

\* The number of households participating in the training is estimated at 1,431 among 2,205 targeted households.

		Cost-effectiveness				
		De	escription	Qty	Unit	
		Total cost per foot plan	nted by households who	70		
		participated in the train	ning	70	J WGA / Walk	
		Total cost per area re	orested by households	139 480	MGA / hectare	
		who participated in the	e training	1001100		
	-	Total cost per partic	ipant in training	1,413	MGA / participant	
			2 With regard to	training		
_			2. With regard to	, talling		
	Training peri	od	August 2015 - Februa	ary 2016		
	duration		1 day x 3 sessions			
	Training con	tent_	i) Production of pla	nts, ii) Dubbing pot, i	iii) Plantation	
		2 0	antribution of the Brois	t training consign		
		3. 00		ct training session		
	Cotogony		Description	Amount	0-1	
Calegory		Description	<u>(MGA)</u>	(MGA)		
Sensitizatio	on			0	N / A	
Training		_				
		Т	rainer (for training of	4 707	MOA 400 047 /	
Honor	ary trainer	lc	cal trainers)	4,737	MGA 108.947 /	23 sessions
		lc	cal trainer	2 886	MGA 530 945 /	184 sessions
		A	verage	3.091	MGA 639.893	207 sessions
Trainir	ng Materials			22.867	MGA 4,733,380 /	207 sessions
Subto	otal			25.958	MGA 5,373,273 /	207 sessions
Followed					· · · •	. <u></u>
Honor	ary local train	er		320	MGA 66.159 /_	207 sessions
Manager a	irea					
Allowa	nces for CDR			6,359	MGA 1,316,274 /	207 sessions
Fuel m	notorcycles Cl	OR and staff		3 5/3	MGA 733 500 /	207 cossions
DREE	F / DRAE			0,040	MOA 7 00.000 7	207 365510115
Subto	otal			9.902	MGA 2,049,774 <u>/</u>	207 sessions
Implementati	on and Manager	nent Model				
Allowa	ances staff DF	AE & DREEF		7,504	MGA 1,553,295 /	207 sessions
TOTAL				43.684	MGA 9,042,501 (AT)	207 sessions

		4. Training Results						
	Production	Production plants		nting	Planti	Planting		
	Training of <u>trainers</u>	Training of the population	Training of trainers	Training of the population	Training of <u>trainers</u>	Training of the population	Total	
Showtimes		5 69	4	76	. 14	39	207	
participants	25	2,862	18	2,419	52	1,023	6.399 (B)	
Men	19	1,828	16	1,514	31	690	4,098	
Women	6	6 1,034	2	905	21	333	2,301	

## 5. Impacts of training

## (1) Activities carried out by villagers after training

Production plants

cash	For 3 years PROD/	before AIRE	2015/16				
	MNG	TP (%)	<u>MNG TP (%</u>	<u>6)</u>			
eucalyptus robusta	829	37.6	1,343	60.9			
Acacia	273	12.4	1,136	51.5			
* MNG: Households, TP: practical rate for 2 205 target households							

MNG: Households, TP: practical rate for 2,205 target households

Reforestation

cash	For 3 years PROD/	before AIRE	2015/16	
	MNG	TP (%)	<u>MNG TP (%)</u>	
eucalyptus robusta	1,222	55.4	1,213	55.0
Acacia	459	20.8 97	2	44.1

\* MNG: Households, TP: practical rate for 2,205 target households

## Feet planted / open reboized by households who participated in the formation

	201	5/16
cash	DO	SE
	(Feet)	(ha)
eucalyptus robusta	95.983	47.99
Acacia	33.675	16.84
Total	129.658 (C)	64.83
TOLAT		(D)

i) The number of households participating in the training is estimated at

1,431 among 2,205 targeted households. ii) Conversion into replanted

surface is made on the basis of 2,000 feet / ha for Eucalyptus robusta

and Acacia.

6 . Cost-effectiveness						
Description	Qty	Unit	Calculation			
Total cost per foot planted by households who participated in the training	70 MG	A / walk	Total Cost (A) / Total feet planted by households who participated in training (C) = 9,042,501 MGA / 129.658 feet			
Total cost per area reforested by households who participated in the training	139.480 MGA / hectare		Total Cost (A) / total area reforested by households who participated in training (D) = 9,042,501 MGA / 64.83 ha			
Total cost per participant training	1.413 MG/	A participant	<ul> <li>/ Total Cost (A) / Total participants (B) = MGA</li> <li>9,042,501 / 6,399 participants</li> </ul>			

## 5-2. Stabilization lavaka

Г		1. Su	ummary				
L Contributions by trai	ining	Training			Impacts of training		
Category	Amount (MGA)	Description	Qty	Unit	Description		Qty Unit
Sensitization	248	Training of trainers	4 se	ssions	Lavakas maintained by	he	10 lavakas
Training	28.130	Formation local population	51 ses	sions	stabilized		io la fallac
Followed	118	Total	55 ses	sions	(* 12 lavakas objects study in 2016)	of the ir	mpact
Manager area	3,646	Participants (Total)	626 pe	eople	(* 13 lavakas were tre -	ated du	uring training)
Implementation and Management Model	2,763						
TOTAL	34.905						
	Cost-effectiveness	Description		(	Qty Unit		
	Total cost per lavaka population or alread	a continually maintained b y stabilized	y the loca	al 174	I.524 MGA / lavaka	_	
[		2. Training O	verview				
Traini	ing period	October 2015 -	April 201	6			
duratio	n	1 day x 4 sessio	ons				
Traini	ing content i) lavaka 1	Fargeting	ing and p	ractico	ii) Preparatory meetin	ıg	
			ing and p	lactice_	IV) Monitoring		
	3	8. Contribution of the Proj	ect traini	ng session			
Cate	egory	Description		Amount (MGA)	Cal	culation	
Sensitization				248	MGA 13.649 /		55 sessions
Training Honorary traine	er	Technical Trainer (fo training of resource persons)	or	330,000	MGA 1,320,000	1	4 sessions
		Contact person		4,454 28 130	MGA 227.164 / MGA 1 547 164 /		51 sessions
Materials for for	rmatiom			20.100	MGA 0 /		55 sessions
Subtotal				28.130	MGA 1,547,164 /		55 sessions
Followed							
Honorary resource	of the no one			118	MGA 6,472	/	55 sessions
Manager area					101 100 700 1		
Allowances for C	DR es CDR and staff			2,341	MGA 128.7687		55 sessions
DREEF / DRAE				1,305	MGA 71.757	/	55 sessions
Subtotal				3,646	MGA 200.525 /		55 sessions
Implementation and mar	nagement model			-			
Compensation fo	r DRAE & DREEF			2,763	MGA 151.955 /		55 sessions
TOTAL				34.905	MGA 1,919,765 (AT)	1	55 sessions

			4. Training Results	
		Training participants 626	55 sessions <u>13 Lavakas treated during training</u> people (600 men, 26 women)	
		(1) Activities carri	5. Impacts of training ed out by villagers after training	
Lava <u>k</u>	as conti not u	ually maintained by locals		
	Lavakas Visits (B)	Lavakas maintained by the local or previously stabilized population (C)	Lavakas rate maintained by the local population (D = C / B)	Estimated lavakas maintained by the local population or already stabilized on 13 lavakas treated during training (E = D x 13 lavakas)
	12	10	83.3%	11

qualitative training Impacts

•

The training impacts below have been investigated mainly through the case study in which the Project has conducted site visits and interviews with area managers, local trainers and residents.

Voluntary Care lavakas by locals after participating in a training session

- additional planting of trees around lavakas
- Reconstruction of physical devices for the prevention of soil erosion
- Regular monitoring of lavakas meeting and before the rainy season
- Mitigating the impact of the sedimentation of the eroded soils on the area downstream
- lavaka stabilization concept recognized by locals

• Transfer of technology through a cascade training of the populations of neighboring villages by participants in previous training

Description	Qty	Unit	Calculation	
Total cost per lavaka continually maintained by			Total cost (A) / lavakas continually maintained by the local	
the local population or already stabilized	174.524 MGA / lavaka		population or already stabilized (E) = 1,919,766 MGA / 11	
			lavakas	

## Activities for improvement of living standards 40 ( Cases Bongolava)

5-3. Home improvement (Kamado)

			1	1 Summary			
				r. Ourninary			
Contributions by session	training	Training			Impacts of training		
Category contributions	Amount (MGA)	Description Qty		Unit	Description	Qty	Unit
Sensitization	491	Training of trainers	15	sessions	Households that made at least one kamado	1,583 71.8%	of households 2,205 target households
Training	3,038	training the local population	167	sessions	Number kamado produced by households participating in training	2,074 41	rooms
Followed	233	Total	182	sessions	Number kamado currently used by households	<b>947</b> 42	rooms
Manager Zo	one 7,213	participants	4,098 p	ersonalize es	* The number of households the estimated at 1,202 among 2,205	at participate targeted ho	ed in the training is useholds.
Implementation and management mode	d el 5,466						
TOTAL	16.441						
Cost-effec	ctiveness						
Tatal as	Description	de huileeele		Qt	ty	Unit	4-
Total cos	Description st per kamado ma	de by locals	confic	Qt 1,44	<b>ty</b> 43 Mi 33 to 2 709)	<b>Unit</b> GA / kama	do
Total cos	Description st per kamado ma	de by locals (95%	confic	Qt 1,44 dence interval: 98	ty 43 M 33 to 2.709)	<b>Unit</b> GA / kama	do
Total cos	Description st per kamado ma	de by locals (95% 2. T	<u>confic</u> raining	Qt 1,44 dence interval: 98 g Overview	ty 43 Mi 33 to 2.709)	Unit GA / kama	do
Total co	Description st per kamado ma	de by locals (95% 2. T	confic	Qt 1,44 dence interval: 98 g Overview	ty	Unit GA / kama	do
Total co:	Description st per kamado ma Training	de by locals (95%) 2. T period	confic raining	Qt 1,4- dence interval: 98 g Overview June 2015 - April 1 day	ty 43 M( 33 to 2.709)	Unit GA / kama	do
Total co	Description st per kamado ma Training duration Training	de by locals (95%) 2. T period content kamado mak	raining	Qt 1,4- dence interval: 98 g Overview June 2015 - April 1 day monstration	ty	Unit GA / kama	do
Total co	Description st per kamado ma Training duration Training	de by locals (95% 2. T period content kamado mak 3. Contribution o	ing de	Qt 1,4/ dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training St	ty	Unit GA / kama	do
Total co	Description st per kamado ma Training duration Training	de by locals (95% 2. T period  content kamado mak 3. Contribution o	ing de	Qt 1,4- dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training Sc	ty	Unit GA / kama	do
Total co:	Description st per kamado ma Training duration Training	de by locals (95% 2. T period Content kamado mak 3. Contribution o Description	ing de	Qt 1,4- dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training Sc Amount (MGA)	ty	Unit GA / kama	do
Total cost Category c Sensitization	Description st per kamado ma Training duration Training ontributions	de by locals (95% 2. T period 3. Contribution o Description	raining ing de	Qt 1,4/ dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training Sc Amount (MGA) 49	ty 43 Mi 33 to 2.709) 1 2016 Lession Calco 1 MGA 89.351	Unit GA / kama	do 182 sessions
Category c Sensitization Training	Description st per kamado ma Training duration Training ontributions	de by locals (95% 2. T period 3. Contribution o Description	raining ing de	Qt 1,4- dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training S Amount (MGA) 49	ty 43 M4 33 to 2.709)	Unit GA / kama	do 182 sessions
Category c Sensitization Training Honorary tra	Description st per kamado ma Training duration Training ontributions	de by locals (95%) (95%) 2. T period  content kamado mak 3. Contribution o  Description  Trainer (for trai local trainers)	raining de	Qt 1,4- dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training Sc Amount (MGA) 49 of 4,737	ty 43 M( 33 to 2.709) 1 2016 tession Calce 1 MGA 89.351 7 MGA 71.053	Unit GA / kama	do 182 sessions
Category c Sensitization Training Honorary tra	Description St per kamado ma Training duration Training ontributions	de by locals (95% 2. T period 3. Contribution o Description Trainer (for trai local trainers) local trainer	iraining ing de	Qt 1,4- dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training So Amount (MGA) 49 f 4,737	ty 43 M( 33 to 2.709) 1 2016 ression 1	Unit GA / kama	do 182 sessions 15 sessions
Category c Sensitization Training Honorary tra	Description st per kamado ma Training duration Training ontributions	de by locals (95% 2. T period 3. Contribution o Description Trainer (for trai local trainer Average	iraining ing de	Qt 1,4- dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training Sr Amount (MGA) 49 of 4,737 2,886 3,038	ty 43 M( 33 to 2.709) 1 2016 lession 1 MGA 89.351 7 MGA 71.053 5 MGA 481.891 / 3 MGA 552.943	Unit GA / kama	do 182 sessions 15 sessions 167 sessions 182 sessions
Total cost Category c Sensitization Training Honorary tra	Description st per kamado ma Training duration Training ontributions ainer terials	de by locals (95% 2. T period 3. Contribution o Description Trainer (for trai local trainers) local trainer Average	iraining iraining ing de if the F	Qt 1,4- dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training S Amount (MGA) 49 of 4,737 2,886 3,038	ty 43 M( 33 to 2.709) 1 2016 iession tession 7 MGA 89.351 7 MGA 71.053 6 MGA 481.891 / 3 MGA 552.943 0 MGA 0 /	Unit GA / kama	do 182 sessions 15 sessions 167 sessions 182 sessions 182 sessions
Category c Sensitization Training Honorary tra Training Mat Subtotal	Description st per kamado ma Training duration Training ontributions ainer terials	de by locals (95% 2. T period 3. Contribution o Description Trainer (for trai local trainers) local trainer Average	ining o	Qt 1,4- Jence interval: 98 g Overview June 2015 - April 1 day monstration Project Training Sc Amount (MGA) 49 of 4,737 2,886 3,038 3,038	ty 43 M( 33 to 2.709) 1 2016 1 3 3 5 1 1 3 5 1 5 1 1 3 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1	Unit GA / kama	do 182 sessions 15 sessions 167 sessions 182 sessions 182 sessions 182 sessions 182 sessions
Category c         Sensitization         Training         Honorary training         Training Mail         Subtotal         Followed	Description st per kamado ma Training duration Training ontributions ainer terials	de by locals (95%) (95%) 2. T period  content kamado mak 3. Contribution o  Description  Trainer (for trai local trainer Average	iraining ing de of the F	Qt 1,4- 1,4- dence interval: 98 g Overview June 2015 - April 1 day monstration Project Training Sc Amount (MGA) 49 f 4,737 2,886 3,038 3,038	ty 43 M( 33 to 2.709) 1 2016 Session Calce 1 2016 T MGA 89.351 7 MGA 71.053 6 MGA 481.891 / 8 MGA 552.943 <u>/</u> 8 MGA 552.943 <u>/</u>	Unit GA / kama	do 182 sessions 15 sessions 167 sessions 182 sessions 182 sessions 182 sessions

40 Activities to improve the standard of living should be selected based on the objective of the implementation of the model and the target area. This collection of data shows the case of Bongolava region where the project has selected the home kamado improved.

41 95 percent confidence interval: 1.105 to 3.044

<sup>42 95</sup> percent confidence interval: 739 to 1.116

Area Manager				
Allowances for CDR		4,632	MGA 842.958 /	182 sessions
Fuel motorcycles and	CDR	2,581	MGA 469.743 /	182 sessions
of staff	of			
DREEF / DRAE				
Subtotal		7,213	MGA 1,312,701 /	182 sessions
Implementation and manageme	ent model			
allowances	for	5,466	MGA 994.750 /	182 sessions
DREEF / DRAE				
ΤΟΤΑΙ		16.441	MGA 2,992,114 /	182 sessions
IUIAL			( <b>A</b> T)	

4. Training Results					
	Training	training			
	trainers_	the local popu	ulation Total		
Showtimes		15	167	182	
participants	2	41	4,057 4,0	98	
Men	2	29	1,801 1,8	30	
Women		12	2,256 2,2	68	

5		Impacts	of	training
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## (1) Activities carried out by villagers after training

#### Preparing the kamado

	Before the st PRODAIF	tart of RE	After the start of PRODAIRE	
Description	Households of 2.205% target households		Households of 2.205% target households	
Households that made at least one kamado	278	12.6	950	43.1

## Confection and use kamado by participants in the formation

Description	Qty	95% confidence interval	
Number kamado made by households who participated in	0.074	4.405 to 0.044	
the training (B)	2,074	1.105 to 3.044	
Number kamado currently used by households who	047	739 to 1.116	
participated in the training	947		

\* The number of households that participated in the training is estimated at 1,202 among 2,205 targeted households.

#### (2) Advantages of kamado recognized by the local population

#### quantitative advantage kamado

Experiments on the effectiveness of kamado made September 18, 2015 in the region of Alaotra Mangoro revealed that the Kamado can save almost 60% saving of firewood in terms of weight compared to traditional homes. According to the results of the investigation of impacts conducted in 2016, 43.6% of 2,205 households or 961 households in Bongolava cities use the kamado currently. At the same time, the same study shows that 52.0% of households or 1,146 households in Bongolava common plan to continue using the kamado.

#### Therefore, 2,337 tons of firewood were saved last year, equivalent to MGA

233 609 490 to 961 households, and 2,787 tons of firewood are supposed to be saved for the coming year, equivalent to MGA 278,581,140 for 1,146 households in the communes of Bongolava.





Figure 5: Economy on wood consumption heating using the improved focus in terms of weight (Local Bongolava)

Γ



	6. Cost-effectiveness			
Description	ı	Qty	Qty Unit Calculation	
Total cost per Kamado     1,443       made by locals     (95% confidence interval: 983 to 2.709)		1,443 (95% confidence interval: 983 to 2.709)	MGA / kamado	Total cost (A) / Number of kamado made by households who participated in the training (B) = MGA 2,992,114 / 2,074 kamado

## 6. Table unit cost of inputs Project

The table below shows the unit cost of Project inputs for each targeted region. It should be noted that the unit costs shown below do not always correspond to the actual amount that the project paid off. Indeed, although unit costs include two days of payment, the project has not paid the full amount when preparation and training are carried out in a day.

## Amount Remarks Category (MGA) Local Trainer (Training) 10,000 By training session MGA = 5.000 x 2 days (Preparation and training) Local Trainer (Monitoring) By monitoring 5,000 Resource Person (TOT for reforestation, 14,000 By training session MGA = 7.000 x 2 days (preparation and improved stove, layering lychee and lychee training) plantation) **Technical Trainer** 120,000 For training session (Production of fingerlings) MGA = 60,000 x 2 days (Preparation and training) 15,000 Cost of fuel for Technical Trainer training session by MGA = 15,000 140,000 For training session Technical Trainer (Stabilization Lavaka) MGA = 70,000 x 2 days (Preparation and training) Fris 20,000 for moving the Technical Trainer training session by MGA = 20,000 Resource Person (Stabilization Lavaka) 14,000 By training session MGA = 7.000 x 2 days Area Manager 183.366 Monthly = (Amount spent to the Commons initial targets + Amount spent on new targets Commons) / (Total Man-Month for the Commons initial targets + Total Man-Month for new targets Commons) = 80% x (+ MGA53,501,000 MG19, 960,000) / (238 + Man-Month 83-Month Male) 321.643 Monthly Executive Manager = (Amount spent to the Commons initial targets + Amount spent on new targets Commons) / (Total Man-Month for the Commons initial targets + Total Man-Month for new targets Commons) = 30% x (+ MGA41,830,000 MGA26 , 680,000) / (40.7 + 23.2 Man-Month Man-Month) Senior Manager 323.787 Monthly = (Amount spent for the initial target Commons + Amount spent on new targets Commons) / (Total Man-Month for the Commons initial targets + Total Man-Month for new targets Commons) = 50% x (MGA23,820,000 MGA17,560,000 +) / (40.7 + 23.2 Man-Month Man-Month) financial Manager 266.011 Monthly = (Amount spent to the Commons initial targets + Amount spent on new targets Commons) / (Total Man-Month for the Commons initial targets + Total Man-Month for new targets Commons) = 80% x (+ MGA9,770,000 MGA7, 820,000) / (20.7 + 23.2 Man-Month Man-Month)

## 1. Alaotra Mangoro Region

## 2. Region Bongolava

Category	Amount (MGA)	Remarks	
Local Trainer (Training)	5,000 per training session		
	MGA = 2.500 x 2 days (Preparation and training)		
Local Trainer (Monitoring)	Followed by 2,500		
Contact person	10,000 per tra	ining session	
(Teacher training for reforestation and improved stove)	Μ	GA = 5.000 x 2 days (Preparation and training)	
external technical trainer	140,000 per training session MGA = 70,000		
(Stabilization Lavaka)	x	2 days	
	25,000 Allow	ances for external Technical Trainer Per day = 20,000 MGA	
	Accommodat	on 50,000 for external Technical Trainer MGA 50,000 per night =	
Contact (Stabilization Lavaka)	10,000 per tra	ining session	
	Ν	GA = 5.000 x 2 days (Preparation and training)	
Allowances for DREEF / DRAE staff	36,000 By de	scent to land	
Compensation for CDR	8000 By de	scent to land	