Programme on Climate Change Adaptation and Mitigation in COMESA-EAC-SADC Region

UP SCALING CSA IN FARMING'S SYSTEMSTO MITIGATE CLIMATE CHANGE AND TO IMPROVE FOOD SECURITY IN THE MID WEST AND SOUTH EAST OF MADAGASCAR

MANITATRA PROJECT

Final Project Report

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Table of content

EXECUTIVE SUMMARY **4**

INTRODUCTION **6**

IMPLEMENTATION ARRANGEMENTS **7**

PROGRESS TOWARDS RESULTS **7**

DETAILED REPORT PER RESULT AREA / ACTIVITY **10**

Output 1: CA and CSA up scaled by 80% in the Midwest of Madagascartargeting1000 small and medium farmers *12*

Output 2: CSA up scaled by 50% in the South East of Madagascar (region Atsimo Atsinanana) targeting 1400 food insecure and small scale farmers *21*

Output 3: Farmers organizations and other local stakeholders trained in CA/CSA and new farmers supported for seeds and specific equipment *30*

Output 4: CA and CSA is advocated for Government and stakeholders at both local and regional level *33*

Output 5: Monitoring and evaluation *37*

Output 6: Project management *40*

OBSERVED AND EXPECTED IMPACT **41**

ANNEXES **44**

3.1. Detailed Financial Report *44*

List of table

Table 1: Implementation arrangements 7

Table 2 : Project activity performance 8

Table 3: Progress towards results, MANITATRA PROJECT 10

Table 4: CA implementation in the Midwest 13

Table 5: Global achievements on Legume trees and hedgerows for Agroforestry in the Midwest 14

Table 6: Afforestation per commune and part of legume trees (Acacias) 15

Table 7 : Achievements on hedgerow per commune 15

Table 8: Seeds production by farmers in each Commune 16

Table 9: Achievements in irrigated rice (SRA and SRI) during the 4th quarter in the Mid-West 16

Table 10: Lead farmers training sessions in the Midwest 17

Table 11: Training achieved by lead farmers in Midwest 17

Table 12: Achievements on farm manure development including quality compost 19

Table 13: Achievements on vegetable crops (market gardening) 20

Table 14: Achievements on Conservation Agriculture in the Southeast 22

Table 15: Achievements on Basket compost 23

Table 16: Achievements on orange flesh sweet potatoes 24

Table 17: Achievements on forestation 24

Table 18: Achievements on Hedgerows and contour plantings 25

Table 19: Achievements on Agroforestry system 26

Table 20: Achievements on vegetable crop development 27

Table 21: Achievements in SRI and SRA in the South East during the 4th quarter 28

Table 22: Achievements on cow shed improvement 28

Table 23: Achievements on composting process 29

Table 24: Lead farmers and project staff training sessions in the Southeast 29

Table 25: SRI and SRA demonstration plots in the South East Region 30
Table 26: Exchange visits in the Ivory site in the Midwest 31
Table 27: Exchange visits in the Southeast 32
Table 28 : Training materials printed on tarpaulin for lead farmers use 32
Table 29: Sensitizing sessions in the South East 33
Table 30: Achievements in news media 35
Table 31 : Samples for baseline study in the two region of Manitatra Project 38
Table 32: Baseline study key elements 38
Table 33: GSDM backstopping staff 40
Table 34: Observed and expected impact 41

Figure

Figure 1: Adopters of CSA systems in the Middle West and in the South East 9

EXECUTIVE SUMMARY

This final report covers the period from October 2015 to the end of the MANITATRA project in March 30, 2016.

The main objective of the MANITATRA project is to support up scaling of CSA in Madagascar in order to mitigate climate change and to improved food security. It is implemented in two regions of the Country with two different challenges: *(i)*the Mid-West of the Vakinankaratra area from 800 to 1100 m above sea level, having limited paddy fields, but high potential for upland crop productions although being subject to erratic rainfall and Striga prone areas; *(ii)* the South East of Madagascar, one of the most vulnerable region to climate change (floods, erosion, but also drought from time to time) and used to be one of the most populated area of Madagascar and where population are the most vulnerable to food insecurity. In the two regions and in the Mid-West in particular, recurrent bush firings and cattle free grazing are among the sources of land degradation causing spectacular gulley erosion and siltation in the lowlands. Also, uncontrolled cattle grazing are not in favor of biomass conservation and crop residues for good CA. Target beneficiaries in the Mid-West are estimated in the project document to 1000 small scale and medium farmers of which 200 are women.

By the end of the Manitatra project, beneficiaries in the Mid-West is 3355 farmers (335% of the target) of which 20% are women. Target beneficiaries in the South East are estimated to 1400 food insecure small scale farmers of which 900 are women. In the Southeast, total beneficiaries is 3138 farmers (224% of the target) of which 42% are women. The trainings on vegetable crops and on orange flesh sweet potatoes increased significantly the number of women reached by the MANITATRA project in the South East.
In the two regions confounded, total number of direct beneficiaries of the Manitatra project is 6.493 farmers of which 30% are women. Taking in account the number of persons per family (5.6 persons per family in the Mid-West and 9.0 persons per family in the South East, Baseline data), total number of project beneficiaries is about 47.030 of which 50.9% are women.

The project is adopting a holistic vision of land degradation addressing erosions and siltation in the lowlands, bush firings, sources of energy for cooking, agroforestry, forestry, livestock, and livelihood of the rural population and in particular children and gender issues. The main project components are therefore, (i) up scaling CSA[1,] (ii) training of farmers' organizations and lead farmers, (iii) study on sources of incomes, sources of energy and impact on deforestation and gender issues, (iv) advocacy of CSA at national, regional and local levels.

The most adopted CSA systems in the Middle West based on number of adopters are *(i)* the forestation using the legume tree *Acacia mangium*, *(ii)* Conservation Agriculture using Stylosanthes based system in this Striga prone area, *(iii)* organic matter management, especially composting and *(iv)* and market gardening. In the South East, CSA systems the

[1] CSA is defined as CA + Best Practices

most adopted are those responding to food security: *(i)* the orange flesh sweet potatoes which is highly demanded for its short cycle but also for its ability to be grown anytime as long as water is available, *(ii)* basket compost for the good yield in cassava, *(iii)* forestation using *Acacia mangium* mainly for bee-keeping and *(iv)* market gardening interesting mainly for women. CA and Agroforestry are less demanded by farmers because they will not give impact in the short term.

Most of project targets were achieved but the most outstanding results data concerns the achievements on some best practices like lombricompost and use of bio-pesticides added to compost which innovations were brought by the Manitatra project. Also, the high dissemination of yellow flesh sweet potatoes among women farmers in the food insecure region of the South East is worth noting as well as the use of farm manure which is a breakthrough in extension work because farm manure still remains a taboo among some tribes of this region (the Zafisoro tribes).

The Ivory site in the Middle West which has been under CA for 15 years having side by side CA and conventional tillage has been visited by 480 persons during the year of which 52% were farmers, 25% students, 17% technicians, 0.6% researchers and 5% policy makers. This site, laid out in a striga infested plot, was a very good demonstration for the efficiency of the Stylosanthes CA based system to combat *Striga asiatica*. More research work by FOFIFA, CIRAD and Africa rice are underway in the same site which collaborate with GSDM in the development of new CA system and mainly performing up land rice varieties.

The Vohimasy site at Iandraina in the Southeast which is a Farmer's Fields School (FFS) having a panel of CSA agro-systems has been also fully used for all types of trainings but also for advocacy for CSA for policy makers at regional level, especially during the field days organized in this region.

In the Sub grant Agreement between GSDM and COMESA, the project was supposed to be completed by October 31, 2015. In a letter dated July 16, 2015 addressed to the Minister of Agriculture of Madagascar, the acting Secretary General of COMESA, Ambassador Dr Kipyeo CHELUGET, acknowledge the good work undertaken by GSDM and offer GSDM a no cost extension up to March 30, 2016 to implement the remaining activities under the project. Indeed, the evaluation of the project by IDACC Consulting was undertaken during January and February 1016 and delivery of the draft report was discussed on April 26 with members and partners of GSDM and representatives of the Ministry of Agriculture.

INTRODUCTION

As per Agreement signed between COMESA and GSDM on the 15th September 2014 on the MANITATRA project, GSDM should report quarterly. During project review on February 2015, it was agreed that a 6 months report will be due as of March 31st 2015 for the first 6 months and after, a quarter report will be done. Therefore, the following reports have been submitted to COMESA:

- Six months technical and financial report as of March 31, 2015;
- Quarterly technical and financial report as of June 30, 2015;
- Quarterly technical and financial report as of September 30, 2015.

In the Sub grant Agreement between GSDM and COMESA, the project was supposed to be completed by October 31, 2015. In a letter dated July 16, 2015 addressed to the Minister of Agriculture of Madagascar, the acting Secretary General of COMESA, Ambassador Dr Kipyeo CHELUGET, acknowledge the good work undertaken by GSDM and offer GSDM a no cost extension up to March 30, 2016 to implement the remaining activities under the project.

This final report covers the period from October 2015 to the end of the project in March 30, 2016.

TITLE OF PROJECT: **Up Scaling CSA in Farming's Systems to Mitigate Climate Change and to Improve Food Security in the Mid-West and South East of Madagascar**

COUNTRY/IES**: MADAGASCAR**
SECTOR/S**: AGRICULTURE**
CLIMATE CHANGE ISSUE ADDRESSED (PLS CIRCLE): **ADAPTATION**, **MITIGATION,**
IMPLEMENTING ENTITY**: GSDM, *PROFESSIONNELS DE L'AGROECOLOGIE***
TYPE OF IMPLEMENTING ENTITY: **NGO**
FINANCING REQUESTED (IN U.S. DOLLARS)**:250 000**

Main objective:

T**o support the up scaling of CSA in Madagascar in order to mitigate climate change and to improve food security**

Project development goal and Outcome

CSA and CA techniques and approaches are up scaled as a sustainable way for the agriculture development, in the Midwest and South East of Madagascar

Outputs and activities

5 main outputs are expected from this project:

- CA and CSA up scaled by 80% in the Mid-West Madagascar
- CA and CSA up scaled by 50% in the South East of Madagascar
- Farmers sensitized and trained in CSA and CA and small scale farmers supported for seeds
- CA and CSA is advocated for Government and stakeholders at both local and regional level
- Monitoring and Evaluation

IMPLEMENTATION ARRANGEMENTS

The implementation arrangements are as follows in terms of human resources and equipments in the project areas. One sub office was rented in the Middle West (Ankazomiriotra) and another one in the South East (Farafangana).

Table 1: Implementation arrangements

Item	M.W.	S.E.	Comments
Area supervisor	1	1	Project offices in Ankazomiriotra and Farafangana
Technicians	3	2	An average of one technician per commune
Motorbikes	4	3	Area supervisors and technicians are equipped with off road motorbikes
Lead Farmers	12	10	One lead farmer trains from 5 to 10 farmers in their neighborhood of his farm (5 to 10km); MW 4 women, SE 2 women
Bicycles	12	10	Lead farmers are equipped with bicycles
Nurserymen/women	19	6	They are all nurserymen/women who have been trained by BVPI-SEHP project
Stylosanthes biomass rollers	10		Built by private firm in Antsirabe and provided to group of farmers based on payment of 25% of the cost.
CDR (within the communes, not paid by the project)	4	1	In many cases, CDRs are retired civil servants hard to mobilize

PROGRESS TOWARDS RESULTS

The following activities were undertaken during the period October 2014 to 31st of March 2016:

- Recruitment of the staff and team building
- Invitation to tender for the purchase of equipments
- Contracting with professionals for manufacturing Stylosanthes rollers (for Stylosanthes biomass control)
- Office rent in Ankazomiriotra (Middle West) and in Farafangana (South East)
- Contracting with the best lead farmers from previous project BVPI-SEHP to act as Trainers
- Contracting with the professionals in tree nursery from previous project BVPI-SEHP to provide legumes trees for forestationand agroforestry
- Sensitizing Authorities and Starting Workshops in the Middle West and the South East Region
- Purchase of cover crop seeds from local seed producers and from Research (FOFIFA) for basic seeds
- Conception and impression of training tools and materials for lead farmers
- Conception and impression of vouchers for the payment of seeds and plantlets
- Awareness rising and recruitment of new adopters by the lead farmers
- Team building and training of staff and lead farmers (Training of Trainers)
- Baseline study partly by the staff and partly by consultants
- Contracting with senior CA consultants to backstop and to implement the long term demonstration plot at Ivory (Middle West) and FFS at Iandraina (South East)

- Exchange visits in the Ivory demonstration plots and the Iandraina FFS
- Contracting with one professional for the training of lead farmers on lombricompost
- Contracting with FIFAMANOR for the training of staff and lead farmers on orange flesh sweet-potatoes in the South East
- Field Days for Authorities and donors in the Middle West and the South East Regions
- Monitoring and evaluation mission by COMESA delegation
- Financial audit by auditor commissioned by COMESA (period October to December 2014)
- Final evaluation of the project by the IDACC Consulting

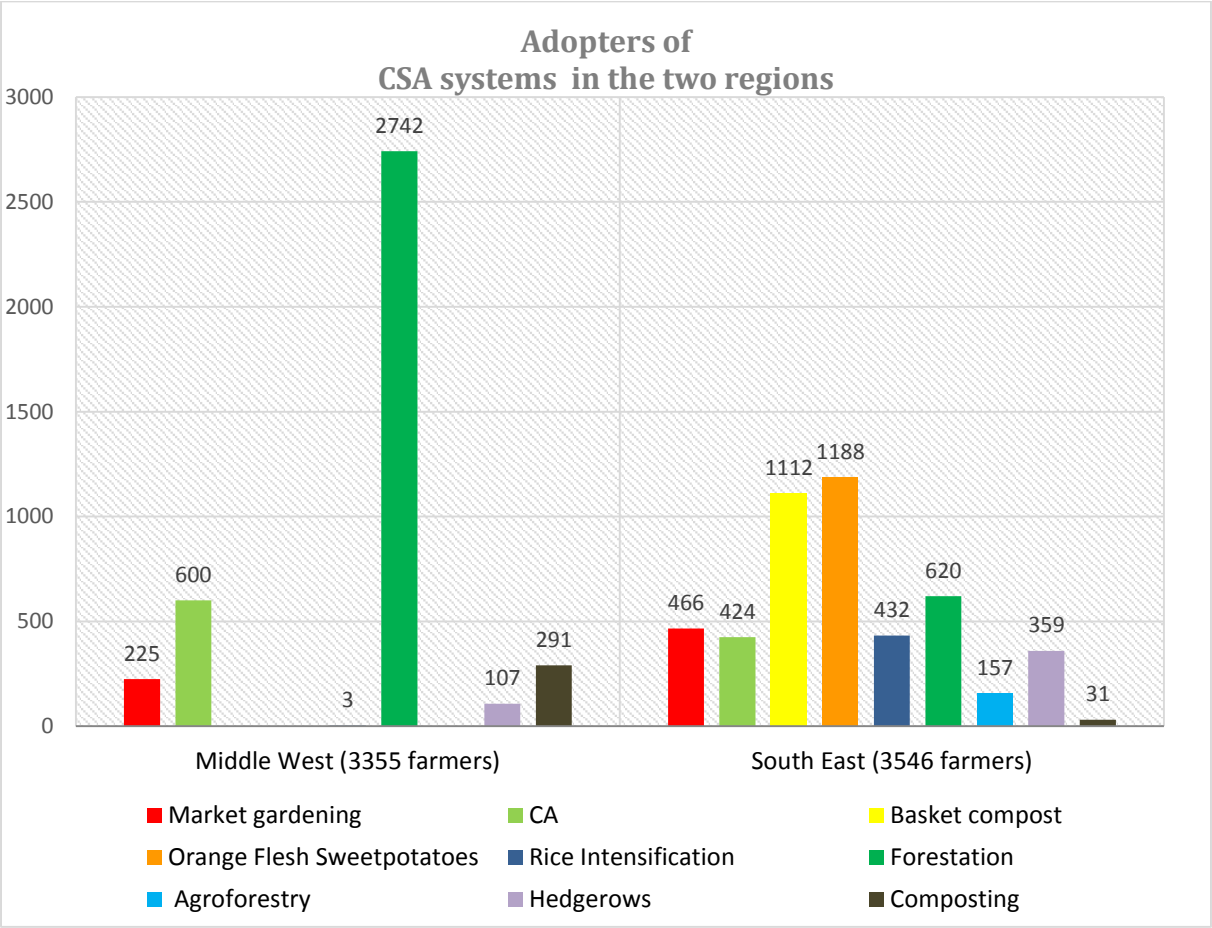
The following summary tables (corresponding to the Project monitoring/evaluation and performance framework) give achievements as of end of March 31 (table 1) and the progress towards results (table 2):

Table 2 : Project activity performance

Performance Area	Monitoring areas	Targets	Achievement	Unit
Adoption of Climate Smart Agriculture (Conservation Agriculture)	**M1:**Number of farmers practicing CSA	**2400** MW: 1000 SE: 1400	**6 493** **(30% women)** MW: 3355 (20% W) SE : 3138 (42% W)	Farmers
	M2: Number of total project beneficiaries (by gender)	**14 400**	**47 030** (50,9% women)	Person
	M3: Acreage under CA	**600**	**420**	ha
	M4: Total yield (per crop cultivated)	60% increase to conventional system **MW : Rice (1.76), Maize (1.28), Groundnut (1.6) and Cassava (4.8)** **SE : Sweet potato (8) Rice (1.5)**	**MW : Rice (2.6), Maize (2.0), Groundnut (n.a) and Cassava (n.a)** **SE : Orange flesh Sweet potato (12) Rice (3.46 for SRA system and 4.06 for SRI system)**	T/ha
	M5: Number of trees planted	**900,000**	**632 245** Midwest: 514 968 Southeast: 117 277	trees
	M6: Acreage underagro-forestry and hedgerows	**500**	**151**	ha

Figure 1: Adopters of CSA systems in the Middle West and in the South East

The following figure summarizes the CSA systems adopters in the two regions of the project.



In the Middle West the main CSA systems adopted by the farmers are:

- Forestation using *Acacia mangium*: for firewood and wood for construction which are lacking in this region (baseline study) and for agroforestry system
- Conservation Agriculture using Stylosanthes based systems in this Striga prone area.
- Compost, especially lombricompost which was an innovative system introduced in the region for the first time
- Market gardening (vegetables grown in the lowlands or as off season crops)

In the South East, the main CSA systems adopted by farmers are:

- Orange flesh Sweet potatoes: non photoperiodic sweet potatoes, rich in beta-carotene (a precursor of A vitamin), well suited for undernourished children in the poor region
- Basket compost for food security
- Forestation (*Acacia mangium*): well suited for this area, used also for bee-keeping
- Market gardening
- CA
- Hedgerows and Agroforestry

DETAILED REPORT PER RESULT AREA / ACTIVITY

Progress towards results is summarized in the following table:

Table 3: Progress towards results, MANITATRA PROJECT

Project Development Goal : **The main objective is to strengthen the up scaling of CA and CSA in Madagascar in order to mitigate change and food security in**						***Impact indicators :*** **Livelihoods improuved ; Sustainable and resilient agrosystems adopted**				
Project Outcome : **Upscaling of CSA techniques and approaches as a sustainable way for the agriculture development, soil and forest smart conservation in**						**by farmers (area under CA and CSA increased) ; Better access to fast growing trees**				
Verifiable indicators	**Unit**	**Target for 12 months**	**Achieved END OF PROJECT ON MARCH 2016**	**Performance %**	**Remark / Comments on targets vs achievements**	**Budget 12 months US $**	**Total end of September**	**Total oct 2015 to march 2016**	**Total end of Project on March 2016**	**Achievement end of Project %**
1/2. CA and CSA up scaled in the Mid West and South East of Madagascar										
Number of farmers practicing CA/CSA	Farmers	2 400	**6 493**	270,5	30% of Women and 70% of Men (3355 farmers with 20% of women in the Mid West and 3138 farmers with 42% of women in the Southeast)					
Number of beneficiaries	Person	14 400	**47 030**	326,6	Beneficiaries are composed of all person touched by the project impact (so all the family member). The average of family size in the MW is 5,6 and in the SE is 9 (source: baseline data).					
Area under CA	ha	600	**420**	69,9	It is only CA systems (Minimum of soil disturbance+crop rotation/association+permanent organic soil cover)					
Small scale farmers practicing basket compost	unit	80	**1 099**	1 373,8	A lot of sensitizing and implementation was done during the project					
Number of farmers (especially women) practicing vegetable crops	unit	150	**678**	452,0	678 farmers with 75% of women. This activity is still running during the dry season on july and august in the two regions					
Number of farmers (especially women) practicing yelow flesh sweet potatoes	unit	250	**1 099**	439,6	Specific sensitizing was done with women about this activity. With 1312 farmers, 98,7% are concerned by yellow flesh sweet potatoes					
Number of farmers practising SRI	unit	100	**457**	457,0	Activity mainly planed during the dry season in the SE (hosy season) on August	172 246,37	155 983,34	24 042,44	180 025,78	104,5%
Number of trees	unit	900 000	**632 245**	70,2	514 968 trees (70% *Acacia mangium*) in the Mid West. 117 277 trees (99% *Acacia mangium*) in the Southeast. In the Southeast, 450 000 trees was planed but 80% of plants was destroyed by floods during the cyclone on february					
Surface of Agroforestry (hedgerows)	ha	500	**151**	30,2	Acacias plantation (afforestation in the top or on the side of watershed) is also considered as Agroforestry but not considered in this data					
New rice varieties	kg	600	**10**	1,7	Activity organized during the *Hosy* season in the South East and for the next season preparation in the Midwest					
Number of long term demonstration plots	unit	2	**2**	100,0	One per region (Mid West and South East)					
Number of lead farmers	unit	22	**22**	100,0	12 Lead farmers in the Mid West and 10 in the South east					
Lombricompost training session	unit	1	**1**	100,0	Held in the Mid West, this session was organised with expert. However, many other sessions were organised with lead farmers					
7 days Compost training session	unit	1	**1**	100,0	Organised with DRDA (Agriculture Development Regional Direction)					

Verifiable indicators	Unit	Target for 12 months	Achieved END OF PROJECT ON MARCH 2016	Performance %	Remark / Comments on targets vs achievements	Budget 12 months US $	Total end of September	Total oct 2015 to march 2016	Total end of Project on March 2016	Achievement end of Project %
3. Farmers and farmers' organizations trained in CSA and CA										
Number of local exchage visits	Unit	14	67	478,6	Exhange visits are a continued activities	7 224,19	4 553,75	106,31	4 660,06	64,5%
Number of brochures and IEC	Unit	2	2	100,0	Target not specified in the initial project document					
Number of training tools	Unit	10	11	110,0	Target not specified in the initial project document					
Number of films on CSA produced	Unit	2	10	500,0	It is planed to produce 2 films of 26 mn. At the end of the project, 2 films of 26 mn + 1 film on climate change + 7 video sequences of 4 mn have been produced					
4. CSA is advocated for Government and stakeholders at both local and regional level										
Number of field days with regional and Governement authorities	Unit	2	2	100,0	One held in the Mid West. The other fields days in the Southeast is planed on August or September	15 972,81	12 726,15	2 371,82	15 097,97	94,5%
Number of broadcasting on local radio	Unit	2	7	350,0	The number of broadcasting is much more but we just consider the event broadcasted whatever the number of TV or Radio					
Number films and broadcasting on national radio and television	Unit	2	7	350,0						
5. Monitoring and evaluation										
Base line study documents number	Unit	2	2	100,0	Base line study about household and socio-economic data	29 800,00	13 403,47	11 534,68	24 938,16	83,7%
Number of financial auditing	Unit	1	2	200,0	End of 2014 by GSDM and two financial auditing organised by COMESA (end or déc 2015 and end of project on march 2016)					
Final evaluation number	Unit	1	1	100,0	Organised from January (survey) to april (national presentation)					
6. Project managment										
Director backstopping days number	days	60	60	100,0	This support remains theoretical duration (for 6 months) following the project document because the backstopping of GSDM is more than this duration	18 000,00	11 862,83	4 500,00	16 362,83	90,9%
CA agronomist backstopping days number	days	120	120	100,0						
CA economist : M&E backstopping days number	days	60	60	100,0						
Project management fee (3%)						6 757,00	4 500,39	1 069,88	5 570,27	82,4%
Bank charge + VAT						70 997,00	4 708,43	603,84	5 312,27	
INDICATIVE PROJECT PERFORMANCE				**238,6%**		**250 000,37**	**207 738,35**	**44 228,98**	**251 967,33**	**100,8%**

Targets fixed for this project are mostly achieved. The number of farmers adopting CSA with the support of Manitatra project is 6493 farmers with 30% of women directly concerned (the target is 2400 farmers) with 3355 farmers in the Midwest (20% of women) and 3138 farmers in the Southeast (42% of women). The total of the project beneficiaries is 47 030 (composed by the family member).

The percentage of the financial achievement is 83% of total budget. Some big expenses like final evaluation (13.000 US $) still has to be done by the end of 2015.

Output 1: CA and CSA up scaled by 80% in the Midwest of Madagascartargeting1000 small and medium farmers

The Mid West of Madagascar, between 800 and 1100 m asl, has high potential for crop production in terms of available land. However, a strong threat for *Striga asiatica* impact cereals crops in the region due to the decline of soil organic matter and as a result a decline of soil fertility, which impact the cereal crop

Picture 1 : Impact of *Striga asiatica* on cereal crops

Due to recurrent bush burning and mining agriculture practices there is a lot of erosion accelerating this decline of fertility and also almost no more trees for fuel in most of households leading to high use of crop residues for fuel and for livestock.

Picture 2: Gulley erosion after high intensity rainfall (feb. 2015) in the project area

According to the baseline study, the average family size in the Middle West of Vakinankaratra is 5 persons per family, of which 2.8 of are working. Farm size is 4.9 ha including 3.4 ha hillsides (tanety) and 1.7 ha of paddy field. Irrigated rice, rained crops, poultry, pig and cattle farming are the main sources of income and food. As a matter of fact, each household enjoys an average agricultural income of Ar 6,468,970 ($ 2507.35) per year, resulting in Ar 17,723 ($ 6.87) per day per household, e.g. US $ 2.2 per active person in the family. The majority (91%) of the farmers declare that it is hard to find firewood. The first recourses when firewood is insufficient are using grasses and crop residues. The most used crop residues are maize residues (34% of the farmers use them).

This region may be affected by climate change especially in terms of rainfall pattern (short rain, intensive erosion...).Agroforestry using fast growing legume trees like *Acacia mangium*, *Cajanus cajan*, *Crotalaria sp* has been widely adopted by farmers but need to be up scaled. Rainfall may be erratic in this area and that is the reason why CA can contribute to buffer this erratic rainfall. CA based system using *Stylosanthes guianensis* has given a good biomass to inject carbon in the soil and therefore to improve soil fertility and to mitigate the negative effect of *Striga asiatica*.

By the end of the project (March 2016), total CSA beneficiaries of the Manitatra (CA, Agroforestry and hedgerow, organic manure, other best practices…) in the Midwest is3355 farmers, which represent **335%** of the targeted 1000 farmers. Among these farmers, 20% are women.

Activity 1.1 Management of Stylosanthes based CA improved

Stylosanthes based CA system has been used in the Midwest during previous project BVPI-SEHP[2].This system constitutes the most important system in the Midwest. In fact, this system has proven to be efficient in increasing soil fertility in the highly degraded soil and Striga prone area of the Mid West. **The project document has mentioned 600 ha of Stylosanthes based CA in the project area (BVPI-SEHP report) but the baseline study showed only 121 ha, therefore, this figure will be used as the reference data for the project.**

After sensitization by lead farmers, exchange visits and farmers' testimonies, the situation of CA implementation as of end of September 2015 is as follows:

Table 4: CA implementation in the Midwest

CSA system	Target	Reference data before project		Achievement during the project (end of march 2016)		Remarks
		Acreage	Farmer	Acreage	Farmer	
Conservation Agriculture	CA upscaled by 80%	121 Ha	210	344 Ha	576	158% of target on acreage 152% of target on farmer number

There is no new implementation during the dry season, since March 2015. The period of July-August 2015 was devoted to the cover crop (Stylosanthes) preparation in order to have a mulching for the next season sowing.

[2]BVPI-SEHP: Project on watershed and CA under French Grant

Picture 3: Stylosanthes CA based system

Total area under CA has increased by 300% compared with the beginning of the project.

Activity 1.2. Legume trees for agroforestry or hedgerows available

Agroforestry using legume shrubs (Cajanus, Crotalaria, Tephrosia...) is highly supported by the MANITATRA project not only for soil fertility but also as repellents against insects like the cutworms (*Heteronicus plebejus*) very common in most soils.

Apart from Agroforestry, the MANITATRA project is also engaged in forestation using the widely adapted legume tree *Acacia mangium*, which has been tried successfully in the project areas and in many parts of the Country.

Achievements for agroforestry and hedgerows as of end of September 2015 are as follows:

Table 5: Global achievements on Legume trees and hedgerows for Agroforestry in the Midwest

CSA system	Target	Reference data before project		Achievement during the project (end of march 2016)		Remarks
		Achievement	Farmer	Acreage	Farmer	
Legume trees	CSA upscaled by 80%	650 000 plants in 3 years by BVPI	2000	514 968 trees	2685	The one year of Manitatra project has done almost the same afforestation as the 3 years of BVPI
Hedgerow, contour plants	CSA upscaled by 80%	n.a	n.a	78 ha	107	

Table 6: Afforestation per commune and part of legume trees (Acacias)

Commune	Nb of Farmers	Number of trees	% per Commune	Acacia		Eucalyptus	
				Number	%	Number	%
Ankazomiriotra	868	145 676	28.3%	104 087	71%	41 589	29%
Fidirana	647	112 597	21.9%	69 180	61%	43 417	39%
Inanantonana	579	151 820	29.5%	109 955	72%	41 865	28%
Vinany	591	104 875	20.4%	77 368	74%	27 407	26%
TOTAL	**2685**	**514 968**	**100%**	**360 590**	**70%**	**154 378**	**30%**
***Average per farmer* : 191 young plants**							

The number of trees planted as forestation achieved by the Manitatra project is 514 968 plants with 2685 farmers. The Inanantonana Commune has planted the most important quantity (29, 5%). 70% of trees planted are composed by the legume and rapid growth trees (Acacia). Eucalyptus (30% of quantity) was requested by farmers especially for wood construction.

Picture 4 : Acacia tree well developed for about one year in Manitatra area

During the dry season, no new implementation was done. Farmers have as activities the tree plants maintenance.

Table 7 : Achievements on hedgerow per commune

Commune	Nb of Farmers	Linear meter	Species used
Ankazomiriotra	22	12425	Leguminous trees : crotalaria, Tephrosia, Cajanus cajan Grasses: Brachiaria, Penissetum cv Relaza, Penissetum cv Kizozi
Fidirana	30	9230	
Inanantonana	39	15380	
Vinany	16	2680	
TOTAL	**107**	**39715**	
***Average per farmer* : 350 linear meters (and about 0,72 ha of concerned area per farmer)**			

Some farmers have also harvested cover crops and hedgerow seeds to meet their own need and also in order to sell for other farmers or for the project need.

Harvesting of Stylosanthes and Mucuna seed is much easier compared with other legumes such as Cajanus and Crotalaria due to the insect attack.

The following table provides informations about the quantities of seeds collected by farmers in each Commune.

Table 8: Seeds production by farmers in each Commune

Type of legume seeds	Ankazomiriotra (Kg)	Fidirana (Kg)	Inanantonana (Kg)	Vinany (Kg)	Total	Number of Seed growers
Stylosanthes	310	145	110	475	1040	23
Cajanus (Kg)		5	5	30	40	3
Mucuna (Kg)	5	20	52	80	157	13
Tephrosia (Kg)	-	-	40	6	46	3

Activity 1.3. New rice varieties from research available

For irrigated rice, farmers have already the latest varieties. The MANITATRA project has supervised some pilot irrigated rice plots as SRI[3] or SRA[4] after the training of the lead farmers by the DRDA.

Table 9: Achievements in irrigated rice (SRA and SRI) during the 4th quarter in the Mid-West

Communes	Achievements during the Project (end of March 2016)	
	Number of farmers	Areas (ha)
Ankazomiriotra	6	0,99
Fidirana	10	2,19
Inanantonana	16	3,84
Vinany	3	0,19
TOTAL	**35**	**7,21**

For upland rice, farmers have already all of the new varieties from the Ivory site (Nerica's, SEBOTA's, FOFIFA's…). For this reason, the project did not provide new varieties in the Middle West.

The promising activity as far as rice is concerned by the use of the lombricompost in the nursery (see activity 1.5), one activity which is new for the farmers and introduced by the project. Farmers realized that lombricompost is very efficient in seedling development as compared

[3]SRI : System of Rice Intensification : young seedlings (8 days at transplantation), good system of irrigation allowing weekly succession of irrigation and drainage to allow a good soil oxidation

[4]SRA is the same principle as SRI but the seedlings are older (20 days): the younger the seedlings, the more tillers at transplanting.

with manure or even with N fertilizer. This was an outbreak in rice cultivation. They discovered the same effect in vegetable crops during the counter season cropping season.

Activity 1.4. Training of lead farmers and training of farmers

The MANITATRA project uses for extension the "farmer to farmer approach" which consistsin training the lead farmers who will train their peer farmers. It is therefore a Training of Trainers (ToT).Experiences from another GSDM project partner show that it is effective and efficient. It is also more sustainable than "technician to farmer approach". Lead farmers are experienced farmers who have practiced CSA for many years and who have a good CSA plot to be used as a Farmer's Field Schools (FFS).

The following trainings have been achieved from the beginning of the project:

Table 10: Lead farmers training sessions in the Midwest

Session	Thematic of training	Trainers
November 2014	Presentation of the project / Roles of lead farmers / Use of training tools and materials (bâches) / Use of the vouchers	GSDM Director
February 2015	Training of lead farmers lombricompost production / Installing 2 pilots training site (Ankazomiriotra and Vinany)	Ferme Farihitsara Vinaninkarena
March 2015	Training of lead farmers on the use of pesticides and veterinary medecines	Agricom Point vert
May 2015	7 days compost / Vegetable crops	DRDA
4 sessions during the first 9 months		

All trainings are supposed to begiven during the first 9 monthsforlead farmers in order to allow themto run their training activities. The following table shows the number of trainings achieved by the lead farmers in group sessions training during the 12 months of the Project.

Table 11: Training achieved by lead farmers in Midwest

Communes	Achievement during the first 9 months			
	Lead farmers number	Group session number	Participants	% women
Ankazomiriotra	3	48	1253	33,5%
Fidirana	3	34	1173	33,0%
Inanantonana	3	37	1030	26,2%
Vinany	3	27	564	22,2%
TOTAL	**12**	**146**	**4020**	**29,9%**

During the 12 months from the beginning of the Project to September 2015, 4020 farmers have been trained by lead farmers of which 30% were women. No new training was organized since July 2015 (the project is supposed to finish on September 2015). Lead farmers have done some monitoring and discussions with other farmers.

The role of GSDM is to promote the "farmer to farmer" extension approach. For the sustainability of this approach, GSDM has registered 10 lead farmers at the Service Center[5] of the Vakinankaratra Middle West. If they are accepted as service provider, they may be able to respond to a call for proposals from this Service Center on a competition basis. GSDM may support them in responding to such calls.

Activity 1.5. Livestock and farm manure management

Survey in 2014 (T. Raharison) has shown that the average quantity of the organic matter per farm (especially manure) is less than 2T/ha whereas, the minimum required for ferralsoils isabout 5T/ha (FAO, 2005).Moreover, the quality of farm manure has been always a problem in rural areas.

In order to help farmers in this problematic, the project sensitizes the farmers to keep the cattle in a good cowshed and to use litters. A training material has been prepared for this purpose for each lead farmer. Besides that, composting is also supported in order to have quality compost.

In order to develop organic manure, the project try to improve the quality of cow shed. In the Midwest, 14 cow sheds were built/improved (Vinany: 4, Ankazomiriotra: 5, Fidirana: 1, Inanantonana: 4) following the standards prescribed by the project. For each farmer, building materials may change (depending on their availability) but the construction plan and standards follow generally the Project recommendations. The aim is to keep the animals in a better condition but also to produce quality manure by using litter. Quality manure is also required to start lombricompost, a new initiative brought by the Manitatra project.

The compost process is also developed to increase the quality of organic manure. 3 types of composts are currently valued by the Manitatra project in the Midwest of Vakinankaratra:

- Classic compost
- 7 days compost obtained by the use of special ferment derived from rumen liquid of ruminants: this is a good technique to get compost ready for use or for further incorporation in lombricompost within 7 days. Some farmers were able to manage this technique including the storage and maintenance of the ferment.
- Lombricompost which uses lombric (special earth worm called *Eusenia foetida*) to boost the quality of organic manure. This technique gives quality compost and many farmers have now the skill to handle this technique.

The lombricompost has been used already on vegetables and rice nursery with good results. The next step for the famers will be their use in upland rice.

One group of farmers have created one cooperative to produce and to market lombricompost. They have already started packaging the lombricompost in bags of 1, 5, 10 and 25 kg.

Samples of lombricompost have been sent for analysis in two sol laboratories to have data on their quality.

The following table shows the achievements on these compost types (on organic management) during the 4th quarter and until the end of September 2015.

[5]Service Center for Agriculture known also as CSA: Implemented by the Ministry of Agriculture, there is one CSA per district: this CSA lunch a call for proposals based on farmers request.

Table 12: Achievements on farm manure development including quality compost

Types	Number of Farmers	Number of compost ditches	Production in tons
Lombricompost	37	40	10
7-day compost	70	85	59
Classical compost	257	342	317
TOTAL	**291**	**467**	**386**

Picture 5 : Lombrics and Lead farmers lombricompost process training


To have a good reference for this activity, a survey was done by the Manitatra project.

It was measured that for each of these 467 composters installed, farmers can produce on average 800 kg of compost from two oxen driven truck[6] of manure.

It was also noted that about 40% of surveyed farmers buy manure at a rate of 5000 Ar/truck (1.53$/truck). In most cases, these farmers don't have cattle but they realize that compost process increase the quantity and quality of organic manure at the farm level.

There is also a small proportion of farmers, especially those who use lombricompost process, who prefer to buy good quality manure despite the fact that they have cattle, in order to have good quality manure for earthworm.

Green materials are used in composting and selected for their natural properties (insecticides like *Melia sp*, high N content like legumes).Surveys have shown that over 70% of farmers using compost process incorporate in their compost green materials with special properties: insect repellent property, rich in nutrients such as nitrogen and phosphorus. Among these green materials, they use,

- For nitrogen : Cajanus (Pigeon peas), Crotralaria, *Azolla asiatica*, Tephrosia, Stylosanthes and Acacia leaves,
- For plants repellent property : false Neem (*Melia azedarach*), Sisal and Tephrosia, Crotalaria
- For phosphorus: Tithonia.

[6]One oxen driven truck can hold 500 kg of manure

Activity 1.6. Vegetable crop development

This activity was not planned on the project document. It was developed as a cash crop to increase income but also, because this activity is mainly done by women. Lead farmers were trained on this topic with the support of DRDA during the previous quarter.

In the Midwest, the lowland are limited and mostly without irrigation network. The cultivation of these areas during the dry season is possible for only a few numbers of farmers.

This table summarizes achievements during the 4thquarter (situation at the end of September 2015).

Table 13: Achievements on vegetable crops (market gardening)

	Achievement during the project (end of march 2016)		
Commune	**Nb farmers**	**% Women**	**Acreage (Ha)**
Ankazomiriotra	65	45%	6
Fidirana	71	34%	13,8
Inanantonana	58	67%	1,7
Vinany	40	35%	2,6
TOTAL	**225**	**48%**	**24,1**

The most developed vegetable crops are: tomato (26%), Onion (19%), Potato (19%) and Petsay-green vegetables (17%).

Output 2: CSA up scaled by 50% in the South East of Madagascar (region Atsimo Atsinanana) targeting 1400 food insecure and small scale farmers

The South East is one of the most vulnerable region to climate change (floods, erosion, but also drought from time to time) and used to be one of the most populated area of Madagascar and where population are the most vulnerable to food insecurity. Crop production is not enough for the family all year around: the lean period may vary from 4 to 6 months. This is a high rainfall area (1500 to 2000 mm of rainfall) but due to environment degradation (bush firing, poor soil management) and the high density of population, some period of drought may occur from time to time.

Picture 6: Floods on rice field in the Southeast of Madagascar

According to the baseline study, the family size in the South East is large ones with an average of 9 persons per family living on 2.5 ha of land including 1 ha of paddy fields. Their major activities providing both their income and food are obtained from agriculture and livestock. Their main agriculture incomes are from rice and coffee. Each household's income is estimated at Ar 2,144,900/year or US$ 752.6/year per household, meaning 0. 35 US $ per day per active person. The energy sources for cooking are not a major problem for the time being, considering the vegetation density (woody) of the focus areas (4 communes).
The farmers in these 4 communes are regularly faced with climate disaster problems (recurrent cyclones and floods) and precarious human health conditions. Their recourse consists in selling poultry, decreasing the food intake at the same time and the number of meals/day and/or then borrowing money or food from farmers, which does not improve their situation.

Activity 2.1. CSA up scaled with 1400 farmers

Different components of CSA have been developed in this area during the Manitatra Project:

- Conservation Agriculture based on Stylosanthes and Brachiaria mostly for Cassava on the hillsides.
- Arachis under cash crop which is also considered as a CSA system
- Basket compost, a resilient agro-system for soil fertility using cassava as a first crop and was widely adopted by farmers in these highly degraded soils.
- Agroforestry and use of farm manure were also starting to be adopted as an impact of previous projects and up scaled by the Manitatra project.
- SRI (intensive rice system) has given good results in this region wherever water management is possible. This is possible only during the dry season crop because most of the paddy fields are flooded during the rainy season (January to April).

- In this region of recurrent food insecurity, dissemination of orange flesh sweet potatoes, rich in A vitamin, from research (FIFAMANOR) was also a success storyand up scaled by the Manitatra project.

The total number of CSA beneficiaries in the South East at the end of the project is therefore 3138 farmers which represent **224%** of the target (1400 small scale farmers). Thanks to project awareness rising and to some activities like vegetables crops and orange flesh sweetpotatoes, **42% of beneficiaries are women**.

Conservation Agriculture

In the Southeast, Conservation agriculture is essentially based on the use of Brachiaria and Stylosanthes as cover crops. They are mainly used with cassava (in conventional crop or basket compost), and also with peas. Improved fallows are added to these systems. These cover crops play several roles: Soil protection and improvement of soil fertility, weed control especially Imperata, biomass production for basket compost.

Picture 7: Cassava with Stylosanthes in CA system

Table 14: Achievements on Conservation Agriculture in the Southeast

Target	Reference data (Before project)		Achievement during the project (end of march 2016)		Remarks
	Acreage	Farmers	Acreage	Farmers	
Upscaling by 50%	53,6 ha	212	75,6 ha	413	• 94% of target • Limited available Stylosanthes seeds (210kg) • Reluctance of farmers on the use of Brachiaria (available 100kg of seed not totaly used)

Basket compost

Basket compost is a technique which can increase the production of cassava about 3 to 10 times compared with conventional system. This increase of yield is mainly due to the concentration of organic matter and potting soils in these heavily leached soils. It consists on planting cassava cuttings in holes (size: 60cm x 60cm x 40 cm) filled with organic matter (green materials including legumes or banana trunk…) dry materials, potting soils and manure if possible. It has been also used for yam before being used in the production of cassava.

Hole digging is labor intensive. However it can be started very early (from March taking advantage of soil moisture) and to avoid duplication of work (during the *vatomandry* rice harvest in June). For cassava, plantation is usually between August and September.

The main interest of basket compost is to install perennial crops, generally after cassava, benefiting from the after effect of organic matter.

Table 15: Achievements on Basket compost

Target	Reference data (Before project)		Achievement during the project (end of march 2016)		Remarks
	Acreage	Farmers	Acreage	Farmers	
Upscaling by 50%	48,3ha	392	63,8 ha	1099	• 88% of target on acreage • 189% of target on farmer number

Picture 8: Basket compost system

Orange flesh sweet potatoes

The South East Region is marked by the persistence of food insecurity. To contribute to the food security, the Manitatra project has introduced improved varieties of sweet potato.
These introduced sweet potatoes:

- are not photoperiodic, which allows beneficiaries to be able to produce during the lean period,
- are orange-fleshed (the "Bora and Mendrika" varieties) and can reduce vitamin A deficiency, which affects almost all children in the area.

With the collaboration of FIFAMANOR, 11.500kg of orange flesh sweet potato cuttings were distributed among 1154 women and two farmers' organization, supervised by the project. Technical trainings were provided by FIFAMANOR for Project staff, lead Farmers and farmers. Culinary processing trainings were also provided by FIFAMANOR.

The table below shows the achievement of the Project on Orange flesh sweet potatoes and results.

Table 16: Achievements on orange flesh sweet potatoes

Varieties	Target	Reference data (Before project)		Achievement during the project (end of march 2016)		Remarks
		Acreage	Farmers	Acreage	Farmers	
Bora	Upscaling by 50%	0,15ha	23	1,54	274	Short cycle : about 3,5 months Average Yield : 12,42T/ha
Mendrika				1,57	250	Short cycle : about 3,5 months Average Yield : 12T/ha
Naveto				4,15	693	Long cycle : about 5 mois Average Yield : 11,55T/ha
Mixed varieties				0,00	2	
TOTAL		**0,15ha**	**23**	**7,26**	**1099**	**3140% of target on Farmers number**

Forestation

Forestation was finished in mid-June 2015 (no new forestation during the 4th quarter, period of dry season). As a reminder, 117.277 plants was used, of which 99% of *Acacia mangium* and 1% of *Eucalyptus camaldiensis.*

Table 17: Achievements on forestation

Target	Reference date (before project)		Achievement during the project (end of march 2016)		Remarks
	Plants number	Farmer number	Plants number	Farmer number	
300.000 plants	9264 plants	68	117 277	578	• 39% of target • Flooding during the cyclone destroying 80% of young nursery plants

These forestation concern about 52, 59ha on acreage.

Picture 9: Acacia forestation in the Southeast

Hedgerows and contour planting

In the South East, rainfall is relatively high (1500 to 2000mm per year). This makes *Tanety* (upland) generally steep, subject to erosion. In this sense, the Manitatra project tries to develop with farmers the application of different methods of erosion control by the use of hedgerows and contour plantings.

Table 18: Achievements on Hedgerows and contour plantings

Type	Target	Reference data (Before project)		Achievement during the project (end of march 2016)		Remarks
		Acreage	Farmers	Acreage	Farmers	
Hedgerow	Upscaling by 50%	11,47ha	21	18,72 ha	123	385% of target on acreage
Contour planting				43,53 ha	246	
TOTAL		**11,47ha**	**21**	**62,24 ha**	**341**	

The hedgerows and contour plantings allows farmers to demarcate their plots, also to limit erosion, diversify crop production (pineapple), or having wind breaks (using trees or shrubs). Pineapple remains the species mostly used because:

- It is available locally;
- It can be more easily transplanted;
- Apart from the positive impact on the protection in the watershed, it also allows farmers to obtain various productions on the same plot.

Agroforestry system

The Southeast Region, like the entire east coast of Madagascar, is characterized by its high potential of cash crops (coffee, cloves, pepper, vanilla, litchi, banana ...). Almost all households have at least one plot of cash crop around their residential area. These perennials crops provide seasonal productions to farmers.

However, with population pressure there is less and less land for food crops. In addition, the new perennial crop will take some years (4 to 6 years) to give productions. Therefore agroforestry is important for farmers in the Region because this system combines perennial crops, food crops and cover crops. It allows farmers to diversify production in the same plot.

Table 19: Achievements on Agroforestry system

Target	Reference data (Before project)		Achievement during the project (end of march 2016)		Remarks
	Acreage	Farmers	Acreage	Farmers	
Upscaling by 50%	2,73ha	51	10,82	153	264% of target

Picture 10: Agroforestry system in the Southeast

Vegetable crops

In the South East, vegetable is part of women activities. Therefore, the Manitatra project decided to work especially with women on this topic. Following the request by farmers, the project has provided seeds of various vegetable species. The aim is to improve both quality but also to improve the family's income.

In May 2015, the project team was trained by the DRDA technicians on vegetable production techniques, composting and integrated pest management. Lead farmers organized in their turn training of farmers (especially women).

Table 20: Achievements on vegetable crop development

Target	Achievement during the project (end of march 2016)		Remarks
	Acreage	Farmer	
Upscaling by 50%	4,83ha	444	

Among the 444 adopters, **97.4% are women**. Petsai (1,88ha) and eggplant (1,62ha) are the most developed and chosen by adopters.

Picture 11: Vegetable crop in the Southeast

Rice intensification

In the Region, many hydro-agricultural infrastructures have been put in place (especially during the project BVPI SEHP). Rice intensification is already practiced by few farmers. The traditional practice is to install nurseries in upland and to make transplantation with very old plants (30 days old seedlings). With these practices, the yield is very low because tillering is very limited if any. In addition, the majority of farmers apply no fertilizer (organic or chemical). Weeding, part of women's occupations is undertaken manually.

Face to this reason, the Manitatra Project tries to develop rice intensification with two kind of techniques (SRA: Improved Rice System and SRI: Intensified Rice system). The challenge of SRI is to use young seedlings to boost tillering: young seedling gives more tillers than old ones: the target is to use 8 days seedlings at transplantation but this is labor intensive, therefore most farmers tend to use SRA (20 days seedlings).
Given the limited financial resources of most local households to purchase chemical fertilizers, composting and improving stables manure are recommended especially in nurseries to get good seedlings at transplanting.

Table 21: Achievements in SRI and SRA in the South East during the 4th quarter

Type	Target	Reference date (before project)		Achievement during the project (end of march 2016)		Remarks
		Acreage	Farmer	Acreage	Farmer	
SRA	Upscaling by 50%	nd	30%	68,97 ha	422	
SRI				0,28 ha	10	
TOTAL		**nd**	**30%**	**69,25 ha**	**422**	

Agriculture-livestock integration and farm manure management

Agriculture / Livestock integration plays an important role in order to harmonize activities and optimize production within a farm. Cattle breeding provide both labor and manure at a farm household. The biomass produced on Conservation Agriculture plots and Agroforestry System can partially be used for animal forage (Stylosanthes and Brachiaria are excellent forages for cattle)

The manure will be used to increase agricultural production. To develop the farm manure management, the Manitatra project try to improve in one side the cow shed and in the other side, promote the compost process which is quite new in the South East.

For the cow shed improvement, the project Manitatra advised farmers to cover at least part of the cow shed, so the cattle can take shelter when it rains and it protects the manure. The litter will be maintained by putting in straws and by replacing them when they get muddy. A manure hole located below the cow shed will be built for further decomposition of manure. The target is to take care of animal health while producing quantity and quality manure for agriculture.

Table 22: Achievements on cow shed improvement

Target	Reference date (before project)		Achievement during the 12 months (end of September)		Remarks
	Number	Farmer	Number	Farmer	
Upscaling by 50%	4	4	9	9	150% of the target

For the compost process, as part of the collaboration with DRDA, the Manitatra project staff received training on the compost process technique. The aim is to produce locally organic fertilizer and to address the lack of manure at the farm level. The compost process takes between 2.5 to 3 months, depending on the frequency of watering.

All composts in the South East are classical compost. No quality compost (7 days composts, lombricompost) was engaged in this area for lack of professionals to provide the training at the start of the project.

Table 23: Achievements on composting process

Target	Reference date (before project)		Achievement		Remarks
	Number	Farmer	Number	Farmer	
Upscaling by 50%	13	13	95,6m^3	31	33 place of compost produced 254% of target

Activity 2.2. Training of lead farmers, exchange visits

In order to develop the "farmer to farmer approach", trainings for lead farmers were also organized in the Southeast.

Three post trainings were organized during the fourth quarter with FIFAMANOR about orange flesh sweet potatoes and with the support of the DRDA Atsimo Atsinanana about composting techniques, vegetable crops and integrated pest management.

Table 24: Lead farmers and project staff training sessions in the Southeast

Session	Thematic of training	Trainers
November 2014	• Presentation of the project • Roles of lead farmers • Awareness rising • Climate smart agriculture and watersheed approach • Farm approach	Supervisor SE
January 2015	• Use of training tools • Lead farmers'roles in a meeting	GSDM Consultant
March 2015	• Orange flesh sweet potatoes technical production • Husbandry techniques for sweet potatoes	FIFAMANOR
May 2015	• Compost • Vegetable crops • Integrated pest management	DRDA Atsimo Atsinanana
May 2015	• 7 days compost • Vegetable crops	DRDA Atsimo Atsinanana
July 2015	Post training (orange flesh sweet potatoes)	FIMAMANOR
July 2015	Post training (Compost, Vegetable crops, IPM)	DRDA
August 2015	Post training (Compost, Vegetable crops, IPM)	DRDA

8 sessions of training sessions was organised for lead farmers during the project to develop their technical skills so they can manage their training actions for other farmers. Theses trainings were conducted by GSDM staff and consultant, by DRDA as part of collaboration with the Ministry of agriculture and with specialized institution (FIFAMANOR for orange flesh sweetpotatoes);

Activity 2.3. Seeds and tree plantlets available locally

All seeds used in the South East during this Project have been purchased from FOFIFA seed farm in Kianjasoa (Midwest) because there was no cover crop seed available in this region.

For plantlets, the Manitatra Project has contracted with local plantlets provider. In January and February 2015, most of the project area has been flooded due to heavy rainfall during the cyclone saison for this year. This has hampered the achievements in the South East in general and particularly destroyed the plantlets in nursery.

Activity 2.4. New rice varieties available for farmers

Ten demonstration plots were laid out on 10 lead farmers' plots using two rice varieties. Fertilizers (NPK, Nitrogen), seeds of two varieties (X265 and Mihary), and 10 rotating manual weeders were provided by the project for these demonstration plots.

Table 25: SRI and SRA demonstration plots in the South East Region

Number	Lead farmers	Commune	Fokontany	Sites	SRI			SRA		
					Varieties	Acreages (ha)	Yield (T/ha)	Varieties	Acreages (ha)	Yield (T/ha)
1	ERNEST	Vohimasy	Iandraina	Tsarasanandro	X265	0,025	3,9	Mihary	0,025	3,6
2	RAKOTOMALALA	Vohimasy	Vohimasy	Analavelo	Mihary	0,025	3,2	X265	0,025	2,9
3	RAVELOJAONA Philémon	Mahafasa	Mahafasa	Mahafasa Centre	Mihary	0,025	3,4	X265	0,025	3,0
4	ANDRIAMBOLOLOMANANA Justin	Mahafasa	Vohitromby	Ambinany	Mihary	0,025	5,4	X265	0,025	4,0
5	ROSIMANA	Evato	Mahazoarivo	Analakely	Mihary	0,025	3,6	X265	0,025	3,1
6	RAKOTOMALALA Filéson	Evato	Emena	Anosimbary	X265	0,025	3,8	Mihary	0,025	3,2
7	LEFATSY Nicolas	Evato	Samboritra	Tazomamiratra	X265	0,025	4,2	Mihary	0,025	3,0
8	SOAHERIVONY Victorine	Tangainony	Vohibitro	Vohibitro	Mihary	0,025	4,2	X265	0,025	3,9
9	RANDRIAMANDRESY Justor	Evato	Ambatomena	Ambatomena/ Vahadrakaka	Mihary	0,025	5,2	X265	0,025	4,5
10	FALINANDRASANA Marie Doline	Evato	Mahazoarivo	Mahazoarivo	X265	0,025	3,7	Mihary	0,025	3,2
TOTAL						**0,25**	**4,1**		**0,25**	**3,5**

Since the SRA and SRI plots are laid out almost side by side in the same lead farmer, farmers will realize the difference between the two techniques of rice intensification.

Output 3: Farmers organizations and other local stakeholders trained in CA/CSA and new farmers supported for seeds and specific equipment

Activity 3.1. Exchanges visits organized in the Midwest

The Ivory site, a long term demonstration plots (15 years under CA compared with tillage) is used as a site for exchanges visit in the Midwest. The following table shows that 56% of the visitors were farmers, 20% students, 18% technicians and 5% are policy makers and the rest are researchers

Table 26: Exchange visits in the Ivory site in the Midwest

Period	Farmers organisations, NGO, University	Policy makers	Researchers	Technicians	Farmers	Students	Total
First 6 months	CARITAS	3		16			**19**
	CARITAS	2			23		**25**
	Farmers from Manitatra				13		**13**
	AIM Ambositra	2		23			**25**
	ASJA	1		1		20	**22**
	VFTV Mandoto			1	8		**9**
	ASJA	1		1		15	**17**
	ANDRIKO - SDMAD	1		2	42		**45**
TOTAL for first 6 months		**10**		**44**	**86**	**35**	**175**
11 April 2015	EPSA Bevalala			1		12	**13**
16 April 2015	Socota		2				**2**
20 April 2015	CRFPA Antanetimbohangy			2	23		**25**
23 April 2015	ONC Mediascop			1			**1**
18 May 2015	CRFPA Antanetimbohangy	1		3	20		**24**
20 May 2015	ACAMECA	1					**1**
20 May 2015	CFAMA			2			**2**
TOTAL for 3rd Quarter		**2**	**2**	**9**	**43**	**12**	**68**
13 June 2015	Réseaux paysan (projet MANITATRA			2	18		**20**
14 June 2015	DAHARI			1			**1**
07 August 2015	CARE Internationnal	2		3	17		**22**
10 August 2015	IRAG Guinée	1					**1**
	Fédération des Paysans du Fouta Djallon en Guinée Conakry (FPFD)			1	1		**2**
02 September 2015	GATE Université Ambohidratrimo	1				18	**19**
TOTAL for 4rd Quarter		**4**	**0**	**7**	**36**	**18**	**65**
13 to 14 October 2015	PLAE UC	1					**1**
17 October 2015	Groupe Socota	2					**2**
	Paysans Pilotes GSDM (Manitatra)			2	22		**24**
11 November 2015	FAFAFI/SPAM	1		3	9		**13**
30 December 2015	GSDM	1		2			**3**
16 January 2016	IDACC CONSULTING			3			**3**
02 to 03 February 2016	FOFIFA - DRR		1			1	**2**
04 February 2016	LTP Mandoto			3		18	**21**
15 February 2016	GROUPE SOCOTA	2					**2**
16 February 2016	ASJA			1		22	**23**
26 February 2016	GROUPE SOCOTA	1		2			**3**
	Paysans Pilotes GSDM (Manitatra)			1	27		**28**
19 March 2016	GUA Ambohindratrimo			1		14	**15**
21 March 2016	DURRELL	1		3	28		**32**
TOTAL Oct 2015 to March 2016		**9**	**1**	**21**	**86**	**55**	**172**
TOTAL DURING THE PROJECT (END OF MARCH 2016)		**25**	**3**	**81**	**251**	**120**	**480**
%		**5%**	**1%**	**17%**	**52%**	**25%**	**100%**

Activity 3.2. 4 exchanges visits organized in the Southeast at the Vohimasy Iandraina site

The South East region has the FFS site in Iandraina to serve as a training and exchange of experiences on CSA. 94 persons visit the site during 06 visits exchanges for this quarter. During 05 exchange visits, the project invited local authorities and leaders in the intervention areas to raise awareness about the benefits and opportunities offered by the agro-ecological systems practice. The main purpose of this is mainly to involve them much more in the fight against cattle free grazing, very destructive for crop residues and biomass.

Furthermore, by implementing an approach "farmers - farmers," the Manitatra project works with 10 lead farmers including 2 women. They were trained to enhance their capabilities. They ensure the dissemination of different themes developed by the project. They organize and conduct awareness sessions, training and exchange visits in their own farmer. Thus, each of these lead farmers set up exchange visits so, during the project, 66 exchange visits were carried out at lead farmers FFS. 341 farmers, of which 38% women, were involved.

Table 27: Exchange visits in the Southeast

	Achievement during the project (end of march 2016)				Remarks
	Session number	Participant	Women	% Women	
Exchange visit in FFS Iandraina	13	185	25	14%	
Exchange visit in Lead farmers FFS	66	861	231	27%	
TOTAL	**79**	**1046**	**256**	**24%**	

Activity 3.3.Materials (documents, radio, film…) for training purposes

Training materials for lead farmers have been developed and printed on tarpaulin during the first six months to ensure a strong material to be used in the field. During this quarter, there is no more developing and printing of technical materials but the available ones were fully used by lead farmersfor training.

Table 28 : Training materials printed on tarpaulin for lead farmers use

Mid-West		South East	
Headings	Number of copies	Headings	Number of copies
Acacia mangium	20	*Acacia mangium*	15
Intercropping Stylosanthes with Rice	20	Intercropping Stylosanthes or Brachiaria with cassava	20
Intercropping Stylosanthes with cassava	20	Basket compost management	15
Intercropping other legumes (cowpea/crotalaria/mucuna) with maize	25	Intercropping Arachis with fruit trees	20
Intercropping maize with mucuna as weed control and as a repellent against cutworms	25	Improved cowshed for quality manure, immunization schedule and worm eradication for cattle	20
Improved cowshed for quality manure, immunization schedule and worm eradication for cattle (adult animal and calf)	25		

Output 4: CA and CSA is advocated for Government and stakeholders at both local and regional level

Activity 4.1. Sensitizing

The starting workshop, held in each of the two Regions, was organized at the beginning of the project.

During this Project, for policy maker and development stakeholders, GSDM has presented two thematic during a sensitizing event called "Sustainable agriculture policy by implementing Agroecology/CSA". This event was organized by PADR (Rural Development Action Plan) on May 28 of 2015. The two presentations were focusing on the Midwest potential development based on lessons learned and research data on this important area of Madagascar and also the lessons learned during the Manitatra Projects:

1. The potentiality of Agroecology (CSA) to develop upland rice in the Midwest – by RAKOTONDRAMANANA.
2. Agriculture-Livestock-Agroforestry integration for the Midwest development by Tahina RAHARISON

During the project, continuous sessions of sensitizing were also organized in order to promote CSA techniques in the South East in the 4th quarter targeting mayors and traditional chiefs.

Table 29: Sensitizing sessions in the South East

	Achievement during the project (end of march 2016)				Remarks
	Session number	Participant	Women	% Women	
Info/Comm. About Manitatra Project	1	21	**3**	**14%**	
Sensitizing on CSA	64	1332	**778**	**58%**	
Training	124	1950	**1152**	**59%**	
TOTAL	**189**	**3303**	**1933**	**59%**	

Activity 4.2. Fields days organized for authorities

One field day was organized in the Mid-West on the 26th of March, 2015 attended by 220 participants and honoured by H.E. the Minister of Agriculture, M. RAVATOMANGA Rolland and one adviser of the President of Republic, Dr François RASOLO. The field day was followed by a workshop on the 27th of March in Antsirabe attended by 130 participants. The other field day planned for the Southeast was organised on the 17 and 18 of September 2015. GSDM, focal point of the NCATF (National Conservation Agriculture Task Force) has also participated on the field days for Policy makers organized by FAO in the Bongolava region which is also part of the Mid West.Minute of the field days in the Middle West could be accessed by these links https://www.youtube.com/watch?v=Pn8fn_M7RIcfor the first day one and https://www.youtube.com/watch?v=AjEr4GEQwa0 for the second day.

One field day in the South East was organized on the 17th of September in Farafangana and honoured for many local authorities, the local development actors, the lead farmers, nurserymen and the local press.The field day was followed by a workshop on the 18th of September in

ImpitinyFarafangana. The main objective was to sensitize the policy makers and local development actors on the effectiveness of CSA techniques in the vision of sustainable agriculture to combat climate change and food insecurity. The field days were a real success, participants were able to express themselves and have discussions by sharing of experiences and exchanges. Minute of the field days may be accessed by this link**http://gsdm-mg.org/climate-smart-agriculture-for-food-self-sufficiency-and-protection-of-natural-resources-in-the-south-east-region-of-madagascar/**

Activity 4.3.Training intended to environmental and food security stake holders

In May 2015, a training session and exchange visit about basket compost was organized for DRR/DRM (Disaster and Risk Reduction and Disaster Risk Management) and food security stakeholders in the Southeast region of Madagascar. The objective of this session is the upscaling with stakeholders, knowing that basket compost is one of CSA systems that meet short-term food security problems in the region with success on extension.

The participant number for 2 days sessions are 44 stakeholders from Atsimo Atsinanana Region: e.g. DRDA, ORN (Regional Nutrition Office), FAO, SAF/FJKM and Diakonia (Confessional Development Organisms), UNDP, REEL Project.

Activity 4.4.IEC Materials (brochures, radio, film…) for advocacy

All achievements on TV and radio broadcastings, press release, online publications, links to access to Facebook and YouTube for films and articles are summarized on table 26.

Table 30: Achievements in news media

	Achievement during the 1st 6 months		Achievement during the 3rdQUARTER		Achievement during the 4thQUARTER	
Type	**Type of Events**	**Details**	**Type of events**	**Details**	**Type of events**	**Details**
TV broadcasting	2 Starting workshops in Antsirabe and in Farafangana Field days in Vakinankaratra	TVM (national, public TV station), RTA (private station, capital city), TVPLUS (private station, national), MATV (private station, capital city), DREAM'IN (private station, capital city), RECORD (private station, capital city), KOLO TV (private station, capital city)	Basket compost training and exchange in the Southeast (07 et 08/05/15)	RTFA (Branch of National TV in the Southeast)	Field days in Farafangana	RTFA (national, public TV station)
	NDAO HIASA	26 min broadcasted on national TV (TVM)				
Radio	2 Starting workshops in Antsirabe and in Farafangana Field days in Vakinankaratra	RNM (national, public radio station), RDB (national), ACEEM radio (capital city, private), RTA (national, private), Radio Plus (capital city, private), MaFM (capital city, private), Radio Haja (local Antsirabe, private), Radio Record (capital city, private), Radio Fanambarana (capital city, private). South East: Radio Rakama (local radio)	Basket compost training and exchange in the Southeast (07 and 08/05/15)	Radio RAKAMA (local radio) - Radio SOANALA (local radio) – RNM(National radio)	Field days in Farafangana	RTFA radio (national, public radio station), RAKAMA (private local radio), SOANALA (private local radio)
Emission live radio	Project opening workshop in the South East	Radio Soanala	Basket compost training and exchange in the Southeast (07 et 08/05/15)	Radio Soanala (local radio)		
News papers	2 Starting workshops in Antsirabe and in Farafangana Field days in Vakinankaratra	Pressrelease:MidiMadagasikara and l'Express de Madagascar		La Gazette de la grande ile	Field days in Farafangana	Press release : La Gazette de la Grande Ile
		Midi de Madagascar, L'Express de Madagascar, Malaza, Taratra, La Gazette, Gazetiko…	Field days in the Midwest	L'Express de Madagascar (01/04/15) - L'Express de Madagascar (03/06/15)		
On line WEB	Publications	www.gsdm-mg.org	Développentday of PADR	http://gsdm-mg.org/le-gsdm-a-participe-a-la-matinee-padr-du-29-mai/2015/	http://gsdm-mg.org/echanges-2/	All online publications are available at this site

Type	Achievement during the 1st 6 months		Achievement during the 3rdQUARTER		Achievement during the 4thQUARTER and by March 31, 2016	
	Type of Events	Link	Type of events	Link	Type of events	Link
Facebook	Field days in the Mid West	https://www.facebook.com/profile.php?id=100008271524042	Basket compost training and exchange in the South east (07 et 08/05/15)	https://www.facebook.com/profile.php?id=100008271524042		
	Training on lombricompost	https://www.facebook.com/profile.php?id=100008271524042	Developmentday of PADR	https://www.facebook.com/profile.php?id=100008271524042		
	Training materials on tarpaulin	https://www.facebook.com/profile.php?id=100008271524042				
Film on Youtube	Training of lead farmers in the Mid West	https://www.youtube.com/watch?v=2t_dYWKBoyY	Basket compost training and exchange in the Southeast (07 et 08/05/15)			
	Project Starting Workshop in the Mid West	https://www.youtube.com/watch?v=Qd0lg4hxvOA	Agroecology for the Midwest development			
	COMESA visit in the Mid West	https://www.youtube.com/watch?v=JgeoFLR9PZE				
	Film on MANITATRA Project in the Mid West				26 mn film on the activities in the Mid West 30 copies on DVD	https://www.youtube.com/watch?v=5iLFRpmvWYg
	Film on MANITATRA Project in the South East				26 mn film on the activities in the South East 30 copies on DVD	https://www.youtube.com/watch?v=UtGB-7G1aiM

Output 5: Monitoring and evaluation

Activity 5.2. Support in Monitoring & Evaluation process by COMESA

One field review by M. CHIKAKULA Miti and Julien RAZAFINTSALAMA was done in the Middle West from 16 to 19th of December 2014 in conjunction with the elaboration of the Investment Framework in Climate Smart Agriculture. In that occasion, the COMESA delegation met with H.E. the Minister of Agriculture and with the Director General of Agriculture. The field review was done on 5 sites (Belanitra, Ambilobe, Andratsay, Mazoto and Ivory). Discussions in the GSDM offices in Ankazomiriotra and in Antananarivo were also held.

One technical and financial review was done by another COMESA Delegation from 16 to 19th of February 2015. This Delegation was composed of:

- Dr Mclay KANYANGARARA, climate change advisor, Head of Delegation;
- Mrs Edith TIBAHWA: Programmatic expert Manitatra ;
- M. Sonnyboy SHONGWE, climate change expert ;
- M.Julien RAZAFINTSALAMA, Country programme ;
- Mrs Lynette MUSUNDA, Finance reviewer ;
- Mr Joseph KWENYI, M & E expert

One field visit was done on the 17th of February 2015 in the Mid-West and the technical and financial review on the 18th of February in Antananarivo. Budget line reallocation was discussed during this review. The Workplan aligned with logframe taking into account the reallocation of budget lines have been sent to COMESA and formally approved by mail by Dr Mclay KANYANGARA on the 20th march 2015.

One review by Mr Miti CHIKAKULA was done in May 2015 in the GSDM Office in conjunction with the COMESA mission on CAADP and government Agriculture investment with the Ministry of Agriculture. It was a way to share the Manitatra project achievement at the time and to discuss about the next step after the pilot phase of the Project.

During this quarter, a permanent mail exchange was done between the COMESA M&E Expert - Mr Joseph KAMWENYI and the Manitatra Project M&E Responsible – Mr Tahina RAHARISON to establish the Project monitoring / evaluation and performance framework. It is done now as an official use. It will be also used in each progress report.

One M&E review was done by another COMESA Delegation from 08 to 10th of June 2015 in a workshop in Antsirabe. GSDM staff and the two supervisors (Mid-West and South East attended this workshop. The Project monitoring / evaluation and performance framework was presented and discussed during this review. This Delegation was composed of:

- Dr Alicia HAYMAN : M&E Consultant
- Mrs Edith TIBAHWA: Programmatic expert Manitatra ;
- Mr Joseph KAMWENYI, M & E expert

Activity 5.2. Baseline study

Base line data collection on CA was done by the GSDM field staff (Supervisor and technicians) on November 2014.

Two baseline studies were established by an external consultant (SDMad) for the two regions of the project. These baseline studieswere aimed at establishing the Manitatra project baseline

reference in the Middle West and the Southeast. These studies are mainly based on the stocktaking carried out by the Manitatra project's staff at the implementation of the project in November 2014 and on the information from farmers' surveys concerning the cropping season 2013-2014 during which there was no CSA supporting project. However, important data could also be recovered from the former project's data base and their capitalization reports dating back to 2012.

The issue was to complete and analyze the stocktaking carried out by the GSDM field staff at the start of the project while drawing up the inventory of the difficulties the farmers came across and the factors causing them to shift away from CSA techniques and also to establish by survey the households' current agricultural income, sources of energy for cooking and lastly to make recommendations to increase the adoption of CSA techniques…

In the Middle West, 351 farmers were sampled: 181 in the Middle West from the communes of Ankazomiriotra, Vinany, Inanantonana and Fidirana; and 170in the Southeast from the communes of Evato, Vohimasy, Mahafasa and Tangainony.

Table 31 : Samples for baseline study in the two region of Manitatra Project

	Middle West	Southeast	Total
Farmers who have never practiced CSA techniques	39	43	82
Farmers who dropped out	47	33	80
Farmers who kept at least one CSA component	95	94	189
Total per region	**181**	**170**	**351**

These baseline studies have emerged the next few elements.

Table 32: Baseline study key elements

	Middle West	Southeast
Average family size	5 persons (2.8 assets)	9 persons
Average area	4.9 ha including 3.4 ha hillsides (tanety) and 1.7 ha of rice field (lowland)	2.5 ha including 1.5 ha hillsides (tanety) and 1 ha of rice field (lowland)
Main sources of income and food	Irrigated rice, rainfed crops, poultry, pig and catlle farming	Agriculture: Rice, coffee Livestock: poultry
Average agricultural income / household (but not per person)	Ar 6,468,970 (US$ 2507.35) / year, Ar 17,723 ($ 6.87) / day	Ar 2,144,900 (US$ 17,723 ($ 6.87) / day752.6) /year; Ar 5,876 ($ 2.06) / day
CSA systems practiced	Rainfed rice under CA (cover crops : mainly Stylosanthes) and also legumes under crop residues	Basket compost (cassava) Cassava under CA, Arachis under coffee trees
Dropping out	Pure stand cover crops (51%) and mulched food crops	26% of the farmers and 74% of area (based on 2012-2013 reference)
Reasons for dropping out	Inability to master the technique when the project is completed, the labour overlapping and the material problem in the technique implementation	8 reasons : i)difficult crop maintenance operations under CSA ii) Difficult to practice, ii) problem of labour time management (labour peaks and overlapping), iv) inability to master CSA technique (poor development of cover crops, non-emergence of cover crops, invasive cover crops , …), v) low production, vi) problem of use of fertilizer and manure vii) problem of cover crop seed supply and viii) devastation by cattle free grazing

	Middle West	Southeast
Reasons for never practicing CA/CSA	Unsatisfactory and worried about an eventual poor production with these techniques	Land availability, lack of labour force and inadequate functioning of irrigation infrastructures
Zebus free grazing problem (due to local customs allowing free grazing pasture)	41% of the farmers declare cattle damages: rainfed rice (29%), cover crops in pure stand (24%) and cassava (22%).	62% of the farmers declare cattle damages: Rice field, cassava plots
Bush fires damages	Declared by 81% of the surveyed farmers: stylosanthes biomass (26%), groundnut (18%), bambara beans (17%), rainfed rice (15%), and cassava (12%).	Bush fires are insignificant in the 4 communes concerned by Manitatra project
Firewood problems	91% of farmers declared that it is hard to find firewood (with the use of various species' wood First recourses when firewood is insufficient → Grasses and crop residues: 34% of farmers use maize residues	Not a major problem for the time being, considering the vegetation density (woody) of the focus areas (4 communes). However, in the commune of Vohimasy, firewood might be lacking in a short term The wood species mostly used are eucalyptus, mango trees and jackfruit trees. When firewood is insufficient → Use of Cassava residues
Use of crop residues	Animal feed (30%), left in the fields as grazing pasture (20%), energy for cooking (15%), making organic fertilizer (14%), and biomass (11%), litter (10%)	Data n.a.
Use of manure	Average 1.5 t/ha/farmer 70% of farmers improve their manure (25% make compost)	The farmers are aware of the importance of organic fertilizers to improve soil fertility
Improved rice cultivation (SRA)	13% of farmers	Well spread in Vohimasy but lower rate in the 3 other communes
Other Problems		Farmers in these 4 communes are regularly faced with climate disaster problems and precarious human health conditions

Activity 5.1. Financial auditing

Financial auditing of the FY 2014 (Manitatra accounts October, November and December 2014)by external auditors commissioned by COMESA was done from April 7 to 10, 2015 at GSDM office Antananarivo. The Audit report is not yet received by GSDM.
A final financial auditing commissioned by COMESA is also planned on April 2016.

Also financial auditing for the FY 2014 of the whole GSDM accounts by external auditor commissioned by GSDM was completed in July and the report was approved by the GSDM general Assembly of October 6, 2015.

Activity 5.3. Final Evaluation

Final evaluation was organised from December 2015 to April 2016 by an external Consultant.

The evaluation has 3 main objectives:

- Assess the implementation of activities by the project and the achievement of objectives in the basic document of the project, and thus the development of CA/CSA by Manitatra

project to serve reference on future actions in the Middle West and in the Southeast of Madagascar.
- Assess the extent of the extension approach and means implemented, the achievement compared to the objectives.
- Evaluate the impact of the project and in particular the impact of CA/CSA extension in the project concerned area.

This evaluation was conducted in 3 phases:

- Phase 1: Preparation including the development of the methodology document (exchanged with GSDM staff)
- Phase 2: Collection of information including the use of available library resources, the survey sampled with 688 beneficiaries (303 in the Midwest and 385 in the Southeast), field visits and interviews with key stakeholders
- Phase 3: data entry / clearance / analysis / reporting

Output 6: Project management

Activity 6.1. GSDM backstopping

GSDM backstopping is done either at the office for monitoring, administrative and financial activities, report, and data base processing… by the permanent staff of GSDM, or in field by permanent staff and Consultants.

Table 33: GSDM backstopping staff

Position	Names	Responsibility
Permanent staff	RAKOTONDRAMANANA	Director
	RAHARISON Tahina	M & E
	RASOLOMANJAKA Joachin	Agronomist
	RAKOTOMALALA Liva	Chiefaccountant
	RAZAKA Mireille	Communication specialist
	RANDRIANARIMANANA Ando	Accountant
	RAZAKAHERISOA Nivo	Secretary/Cashier
Consultants	MOUSSA Narcisse	CA specialistcharged on permanent demonstration plot and technical support
	ANDRIANASOLO Hasina	Trainer
	RANDRIAMITANTSOA Martin	Trainer
	RANDRIANASOLO Jean Louis	Tender Specialist

Activity 6.2. Project management

Project management is done by the staff in Antananarivo (Director, Chief accountant, M & E expert, Agronomist). Operational management is done by the two Supervisors in each region.

OBSERVED AND EXPECTED IMPACT

The final evaluation IDACC Consulting by gives details on Project impact. This part is done through the internal observation and surveyby the GSDM staff.

This pilot project is just for one year, so the expected impact is limited especially for these CSA systems in which intended effects are seen in mid and long term. However, impacts can be observed through some Manitatra activities as a continuing activity for previous projects and initiatives. Impacts can be classified into 3 levels **(National level, regional level and on farm level)** as it is shown in the table below:

Table 34: Observed and expected impact

Impact level	Expected Outcome and impact	Impact indicator	Observed project impact	Remark
National level	Integration of CSA in Public policy	CSA integrated in policy plan, letter or documents	CSA are integrated as a priority in: - PND: Development National Plan - LPA: Agriculture Policy Letter - PSAEP/CAADP: Agriculture, Livestock and Fisheries sector policy - PAN/CLD: National Action Plan fighting on desertification and land degradation	Some sensitizing were already done before by the GSDM and the National Task force (NCATF) during the last 2-3 years but the contribution of the Manitatra project is to show the importance of CSA (through field days, presentation during specific events…) during the validation phase of these documents.
Regional level	Gender issue consideration	Increased role of women in farm level at the two region	30% of women implication during the project. Real increased role especially in the Southeast - Midwest : 20% of women and 80% of men - South East : 42% of women and 58% of men	Women were implicated on trainee and on some aspect of activities: cash crop (vegetable) and orange flesh sweet potatoes…
	Regional development	Upland rice developed in the Midwest	The impact of Manitatra is not yet observed. The Manitatra project is implemented to upscale agro ecological systems with a particular focus onupland rice systems and the impact will be noted in mid and long term from now.	According to the DRDA (Agriculture Development Regional Direction), the upland rice acreage in the MW of Vakinankaratra is about 15.000 ha (30% more than last year situation) due to the agro ecological practice especially by the use of adapted variety, using of compost with biological insecticide added-(Neem, Tephrosia, Consoude), but also by the CA practice developed during the previous projects (during the 10 last years)
	Natural resources management	Increased biomass production in the Middle West Increased cooking fuel production	In the Middle West, the project has planted 514 968 trees with 2685 farmers so about 191 trees per farmer.In the Southeast, the project has planted 117 277 trees with 578 farmers so about 202 trees per farmer. The impact on biomass production is not perceived just after one year of project. It will be at mid-terms. Apart the afforestation, 107 farmers are concerned by hedgerow implementation in the MW with 350 meters per farmer. It can produce in short term biomass for cooking fuel.	The impact of afforestation will be perceived in 5, 10 years (Trees, wood for energy, other biomass…).

Impact level	Expected Outcome and impact	Impact indicator	Observed project impact	Remark
Farm level	Better livelihood Better livelihood	Food security increased	Increased yield for food security crop (rice, maize in the MW, Cassava and yellow flesh sweet potatoes for SE) In the Midwest, for this year, the yield of rice conventional system is about 1T/ha. The yield under CA systems is about 2.6T/ha. The yield under green manure is about 2T/ha In the Southeast, the yield of cassava is increased 2 to 3 times more between conventional system (3-4T/ha) and basket compost system (10-12T/ha). Also, the working time to produce 1T of cassava is reduced from 32 M-d for conventional system to 12 M-d for basket compost. For sweet potatoes, traditional practice yield is about 4 to 6 T/ha (n.d in the baseline but this reference is taken in the agricultural statistic); the orange flesh sweet potatoes yield is about 12 T/ha (GSDM surveys). For this activities, 1188 farmers were concerned (97% women directly concerned) for about 7,25ha. According to the average yield and concerned acreage, each farmer produce 73kg of sweet potatoes (48kg more than with traditionalpractice) with good quality (rich on A vitamin). Considering all family members, 10692 persons were impacted by this rise of quantity and quality of sweet potatoes and it is a real impact for food security.	All the data are not available but it will be available at the end of the project (in September) We also plan to evaluate farmer perception (notation : 1 to 5 for farmer perception about food security project impact) during the project final evaluation For the sweet potatoes, the direct impact (48 kg per family and 10692 persons concerned) is just gotten through the first implementation and demonstration activity. The concerned area is yet small (average of 0.6 are per family). With the cutting plant management, the concerned area per family and number of farmer will increase. In addition, it is a non-photoperiodic and shortcycle variety (about 3,5 months to 5 months), so farmers can produce twice or three times a year (one time a year during the dry season for the local variety). So, the impact in short and middle term will be very high for food security.
		Increased income	Increased yield for food cash crop (rice, maize, cassava, groundnut in the MW, vegetable for SE) In the Midwest, for this year, the yield of rice conventional system is about 1T/ha. The yield under CA systems is about 2.6T/ha. The yield under green manure is about 2T/ha For maize, the yield of conventional system is about 0.8T/ha. The yield under CA systems is about 2T/ha In the Southeast, the increased yield is more spectacular for Cassava with 113 to 200% more than conventional system for basket compost. Based on calculation of IDDAC (external consultantcharged for the Manitatra projet final evaluation), and without considering the part self-consumed by farmers (all production is evaluated), income gains increase about US$ 780 / farmer/ yearwith basket compost systems, US$ 95 for Maize under CA and US$ 36 for Rice under CA (considering the area /farmer)	Some aspect of income will be more evaluated because farm income is complex and not restricted on increased yield According the baseline study: - For Midwest, each household enjoys an average agricultural income of US$ 2507.35 per year, resulting with an average of $ 6.87 per household per day. - For Southeast farmer, their main agriculture incomes are from rice and coffee. Each household's income is estimated at US$ 752.6/year, meaning 0.35 US $ par active person. The increased income calculation is just indicative because some part of production is self-consumed especially for the cassava in the Southeast which is at 90% for consumption. For cassava, it is more for food security than for income

Impact level	Expected Outcome and impact	Impact indicator	Observed project impact	Remark
	Natural resources management	Increased organic matter availability	No yet available *Try to give the comparison of the before project situation and after project evaluation.* 1ha of Stylosanthes gives 10T/ha of biomass Many farmer are concerned by the compost process (classic compost, lombricompost, 7 days compost). In the Mid-West, 291 farmers were concerned by composting process with 467 composters installed. Increased quantity is about 386 tons in the Middle West (10 tons of lombricompost, 59 tons of 7-days compost and 317 tons of classical compost). Each farmer produced the average quantity of 1.32 T/ha of compost. The quality of available organic manure (after composting) is largely ameliorated. It is also the impact of first year introduction and we observedduring some months of implementation an increasing number of concerned farmer and an increasing quantity per farmer. A big impact will be observed in the middle and long term.	For smallholder farmer situation, study in 2014 (T. Raharison), the average of the organic matter (especially manure) quantity per farm is less than 2T/ha. However, the minimum to insure the soil entertainment is about 5T/ha (FAO, 2005). To evaluate this indicator, the average of the organic matter per beneficiary is considered and compared with this before project situation. The quantity after composting process could be increased but not hugely because for each compost type, the compost yield is different using farm manure and other organic matter (survey done by GSDM staff) : - Classical compost : 500 kg of farm manure give 900 kg of compost - 7 days compost : 500 kg of farm manure give 800 kg of compost - Lombricompost : 500 kg of farm manure give 300kg of lombricompost (but with a high quality)
		Increased use of bio-pesticide to combat pest & diseases	Some impact were observed in field especially the reduced impact of pest and diseases (farmers testimonies). Legume shrubs (Cajanus, Crotalaria, Tephrosia...) are used as bio-pesticides (when added in compost materials) which are repellents against insects like the cutworms (*Heteronicus plebejus*) which are very common in most soils. The impact of cutworms reduction are clearly visible (farmers testimonies and field observation by GSDM)	All types of compost are bio-pesticides added The impact of compost with bio-pesticides on cutworms are not measured but just observed (by farmers and by GSDM staff). The research was challenged to implement measures for this observation.
	Resilience to climate change	Increased climate change resilience for smallholder farmer	About farmer testimonies, the climate change resilience was increased with conservation system with the mulching system.	This indicator is difficult to measure and based only on farmers testimonies

ANNEXES

3.1. Detailed Financial Report

Description	Initial Budget USD	Budget reallocations USD	Budget after reallocation USD	TOTAL END OF SEPTEMBER USD	Total oct to March USD	TOTAL END OF PROJECT ON MARCH 2016 USD	Balance USD	%
Main Outputs/Activies								
1. CA and CSA more widely upscaled in th Mid West of Madagascar								
1.1. Management of stylo based CA system	54 080,00	(365,56)	53 714,44	56 944,60	10 784,40	67 729,00	(14 014,57)	126
1.1.1. Supervisor (1)	11 400,00	(3 670,17)	7 729,83	7 244,03	3 311,04	10 555,07	(2 825,24)	137
1.1.2. Technicians (3)	11 880,00	1 440,83	13 320,83	12 143,51	3 921,03	16 064,55	(2 743,72)	121
1.1.3. Lead farmes (12)	3 840,00	1 225,67	5 065,67	3 940,53	1 375,81	5 316,35	(250,68)	105
1.1.4. Motorcycles (4)	12 000,00	(2 838,27)	9 161,73	9 161,73	-	9 161,73	-	100
1.1.5. Operational cost motorcycles	3 300,00	1 052,72	4 352,72	4 445,93	761,16	5 207,09	(854,37)	120
1.1.6. GPS (1)	830,00	(219,87)	610,13	610,13	-	610,13	-	100
1.1.7. Bicyclette (12)	1 200,00	861,93	2 061,93	2 061,93	-	2 061,93	-	100
1.1.8. Rollers for biomass of stylosanthes	3 300,00	1 200,00	4 500,00	11 099,26	-	11 099,26	(6 599,26)	247
1.1.9. Laptop (1) printer (1) stabilisateur de courant (1)	1 250,00	1 170,64	2 420,64	2 420,64	-	2 420,64	-	100
1.1.10. Videoprojector (1)	1 000,00	(73,01)	926,99	926,99	-	926,99	-	100
1.1.11. Office renting at Ankazomiriotra	1 440,00	(89,16)	1 350,84	1 329,21	581,40	1 910,61	(559,77)	141
1.1.12. Communication (internet, téléphone...)	1 440,00	(426,87)	1 013,13	784,35	407,83	1 192,18	(179,05)	118
1.1.13. Supervision by DRDR	1 200,00	-	1 200,00	776,36	426,11	1 202,47	(2,47)	100
1.2. Legume trees for agroforetry or hedgerows available	22 968,00	7 580,75	30 548,75	29 962,50	-	29 962,50	586,26	98
Support to local nurseries (trres, cover corps...)	-	-	-	-	-	-	-	
1.2.1. Provision of plastic bags, seeds, plantlets of Acacia, discount voucher	21 425,00	4 999,02	26 424,02	26 420,26	-	26 420,26	3,75	100
1.2.2. Provision for seeds of Stylosanthes	1 417,00	1 828,88	3 245,88	2 615,50	-	2 615,50	630,38	81
1.2.3. Provision for seeds of Tephrosia / Mucuna	42,00	568,86	610,86	641,63	-	641,63	(30,77)	105
1.2.4. Provision for seeds of Crotalaria	42,00	49,00	91,00	104,80	-	104,80	(13,80)	115
1.2.5. Provision for seeds of Cajanus	42,00	135,00	177,00	180,30	-	180,30	(3,30)	102
1.3 New rice varieties from research available	300,00	(150,00)	150,00	-	-	-	150,00	-
1.3.1. Provision for seeds of new varieties of upland rice	300,00	(150,00)	150,00	-	-	-	150,00	-

Description	Initial Budget USD	Budget reallocations USD	Budget after reallocation USD	TOTAL END OF SEPTEMBER USD	Total oct to March USD	TOTAL END OF PROJECT ON MARCH 2016 USD	Balance USD	%
1.4. Long term demonstration plot	15 000,00	(5 344,84)	9 655,16	9 347,68	-	9 347,68	307,48	97
1.4.1. Demonstration plot at Ivory (for exchange visit and training)	15 000,00	(5 344,84)	9 655,16	9 347,68	-	9 347,68	307,48	97
1.5. Livestock and farm manure management and use	4 040,00	-	4 040,00	2 389,61	901,28	3 290,88	749,12	81
1.5.1. Training (Forages vs biomass for CA, Farm manure management, Compost "7 days compos", Lombricompost)	4 040,00	-	4 040,00	2 389,61	901,28	3 290,88	749,12	81
Sub-total 1	96 388,00	1 720,35	98 108,35	98 644,38	11 685,68	110 330,06	(12 221,71)	112
2. CSA more widely upscaled in the South East of Madagascar (region Atsimo Atsinanana)					-	-		
2.1. CSA up scaled with 1400 farmers including	41 380,00	(810,07)	40 569,93	37 673,73	8 863,19	46 536,92	(5 966,99)	115
2.1.1. Supervisor (1)	11 400,00	(3 670,17)	7 729,83	7 226,80	4 205,33	11 432,13	(3 702,30)	148
2.1.2. Technicians (2)	7 920,00	710,39	8 630,39	8 416,93	2 273,70	10 690,63	(2 060,24)	124
2.1.3. Lead farmers (10)	2 400,00	2 177,86	4 577,86	3 459,77	764,12	4 223,89	353,97	92
2.1.4. Motorcycles (3)	9 000,00	(2 061,73)	6 938,27	6 937,71	-	6 937,71	0,56	100
2.1.5. Operational cost motorcycles	2 500,00	1 539,56	4 039,56	3 925,12	590,80	4 515,93	(476,37)	112
2.1.6. GPS (1)	830,00	(219,87)	610,13	610,13	-	610,13	-	100
2.1.7. Bicyclette (10)	1 000,00	758,91	1 758,91	1 758,91	-	1 758,91	-	100
2.1.8. Laptop (1) printer (1) stabilisateur de courant (1)	1 250,00	1 170,64	2 420,64	2 420,64	-	2 420,64	-	100
2.1.9. Videoprojector (1)	1 000,00	(73,01)	926,99	926,99	-	926,99	-	100
2.1.10. Office renting (1)	1 440,00	(126,68)	1 313,32	1 286,33	498,33	1 784,66	(471,34)	136
2.1.11. Communication (internet, téléphone...)	1 440,00	(1 015,98)	424,02	393,96	220,47	614,43	(190,42)	145
2.1.12. Supervision by DRDR	1 200,00	-	1 200,00	310,43	310,43	620,86	579,14	52
2.2 Training of farmers and exchange visits	1 980,00	958,84	2 938,84	3 549,11	-	3 549,11	(610,27)	121
2.2.1. FFS Vohimasy (1)	1 660,00	1 278,84	2 938,84	3 549,11	-	3 549,11	(610,27)	121
2.2.2. Hosting and training of farmers	320,00	(320,00)	-	-	-	-	-	
2.3. Seeds and tree plantlets available locally	21 718,00	(7 238,75)	14 479,25	6 660,88	-	6 660,88	7 818,37	46
Tree nursery (on per commune)	-	-	-	-	-	-	-	
2.3.1. Provision of plastic bags, seeds, plantlets of Acacia, discount voucher	21 265,00	(8 248,02)	13 016,98	5 942,65	-	5 942,65	7 074,34	46
2.3.2. Provision for seeds of Stylosanthes	167,00	691,12	858,12	192,90	-	192,90	665,22	22
2.3.3. Provision for seeds of Brachiaria	80,00	219,00	299,00	300,19	-	300,19	(1,19)	100
2.3.4. Provision for seeds of Arachis	80,00	-	80,00	-	-	-	80,00	-
2.3.5. Provision for seeds of Tephrosia / Mucuna	42,00	183,14	225,14	225,14	-	225,14	-	100
2.3.6. Provision for seeds of Crotalaria	42,00	(42,00)	-	-	-	-	-	
2.3.7. Provision for seeds of Cajanus	42,00	(42,00)	-	-	-	-	-	

Description	Initial Budget USD	Budget reallocations USD	Budget after reallocation USD	TOTAL END OF SEPTEMBER USD	Total oct to March USD	TOTAL END OF PROJECT ON MARCH 2016 USD	Balance USD	%
2.4. New rice varieties available for farmers	300,00	(150,00)	150,00	-	-	-	150,00	-
2.4.1. Provision for seeds of new irrigated rice varieties	300,00	(150,00)	150,00	-	-	-	150,00	-
2.5. Improvemen of food security and nutrition	16 000,00	0,00	16 000,00	9 455,23	3 493,57	12 948,81	3 051,19	81
2.5.1. Introduction of yellow flesh sweet potatoes from research (150 women farmers)	2 500,00	-	2 500,00	2 500,00	-	2 500,00	-	100
2.5.2. Training of yellow flesh sweet potatoes from research	12 500,00	-	12 500,00	6 802,94	3 493,57	10 296,52	2 203,48	82
2.5.3. Introduction of vegetable crops targetting women (250 women farmers)	1 000,00	-	1 000,00	152,29	-	152,29	847,71	15
Sub-total 2	81 378,00	-7 239,98	74 138,02	57 338,95	12 356,76	69 695,72	4 442,30	94
3. Farmers organizations and other local stake holders trained in CA and CSA and new farmers supported for seeds an					-	-		
3.1. Exchanges visits in the Mid West	2 520,00	(1 020,00)	1 500,00	376,43	106,31	482,74	1 017,26	32
3.2. Exchanges visits in th Souh East at the Vohimasy site	3 360,00	(1 360,00)	2 000,00	453,14	-	453,14	1 546,86	23
3.3. IEC Materials (documents, radio, film...) for training purposes	2 500,00	1 224,19	3 724,19	3 724,19	-	3 724,19	-	100
Sub-total 3	8 380,00	-1 155,81	7 224,19	4 553,75	106,31	4 660,06	2 564,12	65
4. CA and CSA is widely advocated for within Government and stake holders at both local and regional level					-	-		
4.1. Organize field daysz for authorities (1 per region)	8 300,00	1 960,00	10 260,00	8 886,60	147,45	9 034,05	1 225,95	88
4.2. Training intended to environnemental and food security stake holders	2 100,00	-	2 100,00	1 492,93	-	1 492,93	607,07	71
4.3. IEC Materials (brochures, radio, film...) for advocacy	3 100,00	512,81	3 612,81	2 346,62	2 224,37	4 570,99	(958,18)	127
Sub-total 4	13 500,00	2 472,81	15 972,81	12 726,15	2 371,82	15 097,97	874,85	95
5. Monitoring and evaluation					-	-		
5.1. Commissionning of consultant (base line study)	8 400,00	4 200,00	12 600,00	10 596,16	437,22	11 033,38	1 566,62	88
5.2. Financial auditing	4 200,00	-	4 200,00	2 807,31	-	2 807,31	1 392,69	67
5.3. Final Evaluation	13 000,00	-	13 000,00	-	11 097,46	11 097,46	1 902,54	85
Sub-total 5	25 600,00	4 200,00	29 800,00	13 403,47	11 534,68	24 938,16	4 861,84	84
Total Project Cost (Total 1-5)	**225 246,00**	**(2,63)**	**225 243,37**	**186 666,71**	**38 055,25**	**224 721,97**	**521,40**	100
6. Project Management					-	-		
6.1.1. Director (2 months)	3 600,00	-	3 600,00	2 168,29	900,00	3 068,29	531,71	85
6.1.2. CA economist (2 months)	1 800,00	-	1 800,00	1 083,58	450,00	1 533,58	266,42	85
6.1.3. CA agronomist (4 months)	3 600,00	-	3 600,00	2 405,47	900,00	3 305,47	294,53	92
6.1.4. Off-road vehicles (2)	9 000,00	-	9 000,00	6 205,48	2 250,00	8 455,48	544,52	94
6.2. Project Management Free by the Implementing Entity = 3%	6 757,00	-	6 757,00	4 500,39	1 069,88	5 570,27	1 186,73	82
Bank charges	-	-	-	4 708,43	603,84	5 312,27	(5 312,27)	
Sub-total 6	24 757,00	-	24 757,00	21 071,64	6 173,73	27 245,37	(2 488,37)	110
Total expenditure	**250 003,00**	**(2,63)**	**250 000,37**	**207 738,35**	**44 228,98**	**251 967,33**	**(1 966,96)**	**101**