

FINAL REPORT July 2018 to July 2022

” **MANITATRA 2 PROJECT**  
Ecosystem based adaptation to Climate  
Change and food security SUBMITTED TO

**COMMON MARKET FOR EASTERN  
AND SOUTHERN AFRICA BY**





## TABLE OF CONTENTS

TABLE OF CONTENTS .....	3
ACRONYMS AND ABBREVIATIONS.....	6
LIST OF TABLE .....	9
LIST OF GRAPH .....	10
LIST OF MAP .....	11
LIST OF PICTURE .....	11
LIST OF FRAMED.....	15
<b>I. Executive summary.....</b>	<b>17</b>
<b>II. Project Financial performance .....</b>	<b>24</b>
<b>III. Detailed Progress on Project Implementation.....</b>	<b>26</b>
III.1. Result 1 : CSA and Best practices are up scaled in two ecosystems of the Vakinankaratra region - Highland and Middle West regions in Madagascar.....	26
III.1.1. Conduct awareness raising, exchanges visits and field days to facilitate experiences sharing and learning between beneficiaries .....	26
III.1.1.1 Awareness, information and communication .....	27
III.1.1.2 Exchange visits inside communes .....	28
III.1.1.3 Exchange visits between communes.....	30
III.1.2. Upscale Conservation Agriculture to support the growing of upland rice and other crops.....	33
III.1.2.1 Provides seeds of cover crops .....	33
III.1.2.2 Conservation Agricultural (CA) practice .....	35
III.1.2.3 Support for the acquisition of Stylosanthes rollers.....	49
III.1.3. Upscale agroforestry and forestation.....	49
III.1.3.1 Support to nurserymen.....	50
III.1.3.2 Support adopting farmers in tree plantlets for reforestation.....	53
III.1.3.3 Support adopting farmers in fruit tree plantlets.....	59
III.1.3.4 Support adopting farmers in seeds of hedgerows .....	60
III.1.4. Promote other best practices .....	64
III.1.4.1 Provide seeds of plants used as bio-pesticides and repellent plants .....	66
III.1.4.2 Organic matters management.....	67
III.1.4.3 Participate to improve cowsheds for quality manure and composting.....	80
III.1.4.4 Provide seeds of forage and food safety crop .....	82
III.1.4.5 Provide fry and other equipment for farmers for fish raising in the paddy field or in ponds .....	84
III.1.5. Collect data on CSA in some strategic area at National level in a view to update data on upscaling of CSA and best practices in the Country .....	86
III.1.5.1 Contrate with a firm to conduct National survey in some strategic agro-écological areas .....	86
III.1.5.2 Integrate data in MANAMORA database - and include database improvement by contracting with CIRAD.....	87
III.1.5.3 Train regional directorates of MAEP (DRAEP) in the use of the data base MANAMORA.....	87





III.1.5.4 National database transfert to DRAE (Ministry regional branch) .....	87
III.1.6. Purchase principal mean for upscaling activity .....	87
III.2. Result 2 : Capacity on various stakeholders is built in Climate Smart Agriculture.....	88
III.2.1. Train nurserymen in the technology of tree nurseries and in the choice of the appropriate tree species .....	88
III.2.2. Train lead farmers and farmers in CSA .....	89
III.2.3. Train secondary school students in CSA .....	94
III.2.3.1 Make Diagnosis to select beneficiary schools .....	95
III.2.3.2 Organize Events (Commitment charte event, Tools delivery) .....	98
III.2.3.3 Organize Training for Ministry Branch (OEMC/DREMC/BEMC).....	99
III.2.3.4 Organize Training for teachers (3 sessions of training in Vakinankaratra).....	99
III.2.3.5 Training Tools (tarpauling, booklet, teacher guideline, langage-photo) - 6 new schools .....	99
III.2.3.6 Produce and edit Communication tools (tarpaulin, Roll up) .....	100
III.2.3.7 Produce Cartoon strips for school children .....	100
III.2.3.8 Provide some kits and inputs for demonstration plot (Materials and tools, Teaching Tools, inputs) for 6 new school.....	101
III.2.3.9 Accompany students in the implementation .....	101
III.2.3.10 Organise competition of best school.....	104
III.2.3.11 Exchange visits between School.....	105
III.2.3.12 Organize annual workshop (capitalisation, experiences exchange) .....	105
III.2.4. Organize training sessions targeting development actors such as farmer’s organizations, NGO and services providers .....	111
III.2.4.1 Organize training sessions targeting development actors as farmers organizations, NGO, local service provider .....	111
III.2.4.2 Organize exchange visit in the training sites of GSDM .....	111
III.2.5. Involve regional Directorate of Meteorology in Climate Smart Agriculture Conservation Agriculture and Agroforestry.....	112
III.2.5.1 Organize Information/sensitization of local stakeholders .....	113
III.2.5.2 Organize Training workshop for local stakeholders.....	114
III.2.5.3 Provide regional Meteorological information bulletins (quarterly) .....	114
III.2.6. Involve the Ministry of Agriculture and livestock (MAEP) and Ministry of Environment and Forestry (MEDD) or regional directorates .....	114
III.2.6.1 Organize field collaboration and exchange by MinAE+ MEED.....	114
III.2.6.2 Organize field collaboration and exchange by regional directorates (DRAEP + DREDD) .....	114
III.2.7. Participate to CSA integration into public policies.....	115
III.2.7.1 Participate to workshops or meeting to advocate CSA (no cost) .....	117
III.2.7.2 Participate to workshops or meeting on climate change to advocate CSA (no cost) .....	117
III.3. Result 3 : <b>Farmer organizations are supported and linked to various stakeholders in Agriculture .....</b>	<b>118</b>

III.3.1. Participate to sharing experiences at the regional level (COMESA and other regions) integrating political actors and development actors .....	118
III.3.2. Support FOs to maintain continuous exchange with FDA and FDAR in order to make a link between farmers and agricultural services .....	118
III.3.3. Ensure that the FOs obtain permanent utilization of the Agricultural Service Provider to make a link between the farmers and the agricultural services .....	121
III.3.4. Support FOs on their collaborative contracting with various partners .....	122
III.3.4.1 Built capacity of FOs on rice/fish ecosystem by contracting with APDRA .....	122
III.3.4.2 Built capacity of FOs on dairy cattle and forages by contracting with FIFAMANOR .....	123
III.3.4.3 Built capacity of FOs on Best practices, bio-pesticides and fruit trees by contracting with CEFFEL .....	124
<b>III.4. Communication and visibility .....</b>	<b>125</b>
III.4.1. Organization of regional field days targeting government authorities and development actors.....	125
III.4.2. Publications and broadcasting .....	126
III.4.3. Documentaries conception and edition .....	128
III.4.3.1 Edition documents and tools for technicians and farmers.....	128
III.4.3.2 Editing of films for each project events.....	129
III.4.3.3 Capitalization leaflets .....	131
<b>III.5. Project administration (human and equipment).....</b>	<b>133</b>
III.5.1. PMU officials recruited.....	133
III.5.2. GSDM Backstopping fully implemented by his key staff .....	134
III.5.3. Local missions.....	134
III.5.4. Mean and equipment implementation .....	135
<b>III.6. Project oversight .....</b>	<b>135</b>
III.6.1. Steering committee .....	135
III.6.2. Monitoring and Evaluation of the project .....	136
III.6.2.1 Establishment of the project baseline.....	136
III.6.2.2 Technical and financial monitoring of the project by COMESA and the European Union.....	137
III.6.2.3 Mandated external experts for the mid-term evaluation and the final evaluation of the project..	144
<b>IV. Lessons and Challenges.....</b>	<b>146</b>
IV.1. Lessons learned .....	146
IV.2. Challenges .....	151
IV.3. Recommendations.....	152
<b>V. Conclusions and discussions .....</b>	<b>155</b>
<b>VI. Appendix.....</b>	<b>157</b>



## ACRONYMS AND ABBREVIATIONS

ABC	Programme de Master en Agroécologie, Biodiversité et Changement Climatique
ACP	Africa, Caribbean and Pacific countries
AF	Agroforestry
AFD	Agence Française de Développement (French Agency For Development)
AWPB	Annual Work Plan and Budget
AFRICA Rice	Africa Rice Center
AGRISUD	French NGO
AGRIVET	Entreprise fournisseur d'intrants et matériels phyto et véto
AKF-OSDRM	Aga Khan Fondation - Organisation de Soutien pour Développement Rural à Madagascar -
AMPINA	Projet d'accompagnement des (rizi)piscicultures dans la Région d'Analamanga mis en œuvre par l'APDRA
APDRA	Born in 1996, APDRA Pisciculture Paysanne supports fish farming in southern countries and raises awareness among northern stakeholders of the challenges involved in this activity.
ATASEF	Appui à la Transition Agroécologique par la Sécurisation Economique et Foncière, OSDRM
ATDRM	Association des Techniciens pour le Développement Rural à Madagascar (en collaboration avec le projet sur le développement de la rézipisciculture dans la Région)
asl	above sea level
AU	African Union
AVSF	Agronomes et Vétérinaires sans Frontières (Agronomists and Veterinarians without borders)
AWPB	Annual Work plan and budgets
BEMC	Bureau de l'Education Environnemental et du Civisme (Environmental Education and Citizenship Office)
BEST	Bureau d'études en socio-économie
BNCC	Bureau National du Changement Climatique
BRL	Bas Rhone Languedoc, bureau d'études
BVPI	Bassin Versant Périmètre Irrigué
CA	Conservation Agriculture
CASEF	Appui aux chaînes de valeur et à la sécurisation foncière (Support to value chains and land security)
CC	Climate Change
CD	Compact Disc
CEFFEL	Conseil Expérimentation Formation en Fruit et Légume (Experiment Council Training in Fruit and Vegetables) (association)
CEG	Collège d'Enseignement Général
CEP	Champs Ecoles Paysans
CFFAMMA	Centre de Fabrication, de Formation et d'Application du Machinisme et de la Mécanisation Agricole à Antsirabe
CIRAD	Centre de Recherche Agronomique pour le Développement (Center for Agronomic Research for Development)
CISCO	Circonscription Scolaire
CNEAGR	Centre National de l'Eau de l'Assainissement et du Génie Rural
COMESA	Common Market for East and Southern Africa
CR	Commune Rurale
CSA	Climate Smart Agriculture
CSA	Centre de Service Agricole
CTAS	Centre Technique Agroécologiques du Sud
CTD	Collectivité Territoriale Décentralisée

DCI	Direction des Curricula et des Intrants
DDES	Direction de développement Economique et Social au niveau de la Région Vakinankaratra
DDR	Direction de Développement Régional (l'actuel DDES)
DREMC	Direction Régionale de l'Environnement et du Civisme (Regional Directorate of Environment and Citizenship)
DGE	Directorate General of Environment
DGM	Directorate General of Meteorology
DIRTTM	Direction Inter-Régionale de Tourisme, transport et Météorologie
dP SPAD	Dispositif en Partenariat Systèmes de Production d'Altitude et Durabilité à Madagascar
DRAE	Regional Directorate for Agriculture and Livestock
DREDD	Regional Directorate for Sustainable Development (new name of DREEF)
DREN	Direction Régionale de l'Education Nationale
EAF	Exploitation Agricole Familiale
EBa	Ecosystem based Adaptation
ECOAfrica	Ecological intensification pathways for the future of crop-livestock integration in African agriculture project
EU	European Union
FAO	Food and Agricultural Organization
FAW	Fall Army Worm (chenilles légionnaires)
FDA	Fond de Développement Agricole (Agricultural Development Fund)
FDAR	Fond de Développement Agricole Régional (Regional Agricultural Development Fund)
FFS	Farmers Field School
FIA	Foire Internationale de l'Agriculture (International Agriculture Fair)
FIERMADA	Foire internationale de l'économie rurale de Madagascar
FIFAMANOR	Centre de recherche et de développement rural en agriculture et en élevage est basé à Antsirabe (The Agricultural Research and Development Center for Agriculture and Livestock)
FIFATA	Association pour le Développement des Paysans (Association for the Development of Farmers)
FK	Fokontany
FLA	Fall Armyworms (Chenilles légionnaires)
FOFIFA	FOFIFA - CENRADERU - Centre national de Recherche appliquée au développement rural (FOFIFA - CENRADERU - National Center for Research in Rural Development)
FO	Farmers organization
GCCA +	Global Climate Change Alliance plus
GEOSYSTEMS	Nom d'un bureau d'études
GIZ	Deutsche Gesellschaft Für Internationale Zusammenarbeit gmbH
GRET	ONG GRET, Professionnels du Développement Solidaire
GSDM	Formerly "Groupement Semis Direct of Madagascar", changed to "GSDM, Professionnels de l'Agro-écologie" (without development of the acronym GSDM)
GTCC	Climate Change Thematic Group
IFM	Institut Franco-Malgache à Tananarive
IRD	French Institute of Research and Development
IVR	Individual Village Reforestation
JICA	Japan International Cooperation Agency
LF	Lead Farmer
LRI	Laboratoire de Radio Isotope (Radio Isotope Laboratory)
MAEP	Ministère de l'Agriculture de l'Elevage et de la Pêche (Ministry of Agriculture, Livestock and Fisheries)
MALTO	Usine de STAR oeuvrant dans la transformation de l'orge en malt pour la fabrication de bière



MANABOOST	Base de données des pratiques agroécologiques créée dans le cadre du projet Manitatra 2 en collaboration avec le CIRAD
MANAMORA	Base de données des pratiques agroécologiques (l'amélioration de cette version a donné naissance à MANABOOST)
M&E	Monitoring and Evaluation
MEDD	Ministère de l'Environnement et du Développement Durable (Ministry of Environment and sustainable Development)
MEEF	Ministère de l'Ecologie, de l'Environnement et des Forêts (Ministry of Ecology, Environment and Forests)
MEN	Ministère de l'Education Nationale (Ministry of Education)
MENETP	Ministère de l'Education Nationale, de l'Enseignement Technique et Professionnel
MS	Member State
NAP	National Adaptation Plan
NGO	Non-Government Organization
NTIC	Nouvelles technologies de l'Information et de la Communication
OEMC	Office de l'Education de Masse et du Civisme (Office of Environmental Education and Citizenship)
ORN	Office Régional de la Nutrition
PAPAM	Projet d'Appui à la Productivité Agricole à Madagascar (Support Project for Agricultural Productivity in Madagascar)
PAPRIZ	JICA project on Irrigated Rice in Madagascar
PC	Personal Computer
PLAE	Projet de lutte anti-érosive: GIZ Erosion project funded by KFW
PMU	Project Management Unit
PSASA	Projet de Sécurité alimentaire dans le Sud
SPAD	Système de Production d'Altitude Durable (Sustainable Production system in high altitude)
RNM	Radio Nationale Malagasy (National Malagasy Radio)
SANUVA	Projet de Sécurité Alimentaire et Nutritionnelle dans le Vakinankaratra
SAU	Surface Agricole Utile
BVPI SE/HP	Projet Bassin Versant et Périmètre Irriguée Sud-Est et Hautes Plateaux (Watershed and irrigated perimeter project in South East/Highlands of Madagascar)
SRM	Service Régional de la Météorologie
SRI/SRA	System of Rice Intensifications/System of Rice Improvement (Rice intensification using young plantlets (8 days for SRI and 10 – 15 days for SRA), good seedbed and alternating irrigation and drying of the soil, plus farm manure and fertilizer)
TAFA	ONG Tany sy FAMpandrosoana
TFNAC	Task Force National pour l'Agriculture de Conservation
TV	Television
TVM	Télévision Nationale Malagasy
WHH	ONG Welt Hunger Hilfe
WWF	World Wildlife Fund

## LIST OF TABLE

Table 1 : Project financial performance following the logical framework .....	25
Table 2 : Inception workshop and awareness raising .....	26
Table 3 : Awareness raising and exchange visits.....	27
Table 4 : Exchange visits inside communes .....	28
Table 5 : Participation aux visites échanges intercommunales organisées par l'équipe du projet .....	30
Table 6 : Summary table of exchange visits and awareness-raising meetings carried out .....	31
Table 7 : Conservation Agriculture upscaling.....	33
Table 8 : Achievement in conservation agriculture during the project.....	36
Table 9 : Evolution of the percentage of farms adopting CA .....	37
Table 10 : Achievements in Conservation Agriculture in project year 3.....	39
Table 11 : Performance comparison between conventional systems and CA systems.....	44
Table 12 : Comparison of crop yield in CA following previous crops.....	45
Table 13 : Distribution of CA achievements in the project intervention areas / communes.....	46
Table 14 : Share of CA areas in rainfed rice cultivation .....	48
Table 15 : Distribution of funding for the acquisition of the Stylosanthes rollers by the FOs supervised by the project.....	49
Table 16 : Agroforestry and forestation upscaling.....	49
Table 17 : List of nurserymen who have collaborated with the Manitatra 2 project.....	51
Table 18 : Distribution of subsidized seedlings in the project intervention communes.....	53
Table 19 : Forest species used during the project .....	55
Table 20 : Project support for fruit growing .....	59
Table 21 : support for the acquisition of young fruit plants.....	59
Table 22 : Anti-erosion devices installed as part of the project .....	60
Table 23 : Types of devices installed according to the areas of intervention .....	63
Table 24 : Best practices disseminated by the project .....	65
Table 25 : Pourcentage des agriculteurs adoptants des différents types de compost dans les deux zones.....	67
Table 26 : Practice of vermicompost .....	68
Table 27 : Knowledge of practices and adoption in the different areas surveyed.....	69
Table 28 : Vermicompost practices according to the supervision (or not) of the project .....	70
Table 29 : <i>Characteristics of EAs types in each zone</i> .....	71
Table 30 : Adoption suivant les types family farms (EAs) .....	72
Table 31 : Practice of compost 7 days .....	74
Table 32 : Practice of compost 45 days .....	75
Table 33 : Practice of classic compost .....	76
Table 34 : Practice of recycled manure.....	78
Table 35 : Practice of liquid compost.....	79
Table 36 : Support for the improvement of stables during the years of project implementation.....	80
Table 37 : Summary of diagnostic results carried out by FIFAMANOR.....	82
Table 38 : Rice-fish farmers supervised by the project.....	84
Table 39 : Collection and management of national data in agroecology .....	86
Table 40 : Principal mean purchased or repaired for upscaling activity .....	87
Table 41 : Trained nurserymen/women .....	88
Table 42 : Achievements on lead farmers and farmers training.....	89
Table 43 : List of lead farmers in the end of the project.....	91
Table 44 : Training of farmers carried out since the start of the project .....	93
Table 45 : Achievement on CSA training activity for secondary school students .....	94
Table 46 : Lists of the 12 schools in collaboration with the project on the introduction of agroecology in schools	95

Table 47 : list of materials delivered to each of the 06 new schools.....	98
Table 48 : List of educational supplies delivered to the 12 supervised schools .....	100
Table 49 : List of educational tools delivered to the 06 new schools .....	100
Table 50: Number of students trained .....	103
Table 51: Exchange visits between schools .....	105
Table 52: Achievement for training sessions on CSA for development actors .....	111
Table 53: Achievements for DGM involvement.....	112
Table 54: Achievements by involving MAEP and MEDD.....	114
Table 55: Achievements on advocacy through workshop participation.....	115
Table 56: Awareness raising realized at the regional level .....	118
Table 57: Activity for permanent link with FDA and FDAR .....	118
Table 58: Microprojects funded by the FDA Vakinankaratra .....	119
Table 59: Financing scheme included in the MANITATRA 2 project document.....	121
Table 60: Number of concertation with CSA Agricultural Service Center.....	121
Table 61: Activities for supporting collaborative contract with various partners.....	122
Table 62: FOs beneficiaries of FDA funding for the implementation of a rice-fish farming micro-project .....	123
Table 63: OP bénéficiaires du financement du FDA pour la mise en œuvre d'un microprojet de production laitière.....	123
Table 64: FOs beneficiaries of FDA funding for the implementation of a market gardening micro-project.....	124
Table 65: Achievements on visibility and communication events organization .....	125
Table 66: Communication activities related to publications and broadcasting .....	126
Table 67: Activities for documentaries conception and edition .....	128
Table 68: PMU staff recruited.....	133
Table 69: GSDM backstopping.....	134
Table 70: Per-diem for GSDM and project staff.....	134
Table 71: Mean and equipment .....	135
Table 72: Steering committee planning.....	135
Table 73: Monitoring and evaluation program.....	136
Table 74: Survival rates of reforested plants at the end of the project .....	149

## LIST OF GRAPH

Graph 1 : Participation à des sessions de sensibilisation dans les différentes communes d'intervention du projet .....	28
Graph 2 : Participation aux visites échanges intracommunales organisées par l'équipe du projet.....	29
Graph 3 : Participation in inter-communal exchange visits organized by the project team .....	30
Graph 4 : Summary of awareness meetings and exchange visits .....	31
Graph 5 : Achievement in conservation agriculture during the project .....	38
Graph 6 : Comparatid of CA achievements of the project in the middle west and in the highlands of Vakinankaratra .....	47
Graph 7 : Evolution of the practice of upland rice in the survey areas.....	48
Graph 8 : CA practice on rainfed rice.....	48
Graph 9 : Distribution of the project's service provider nurseries .....	53
Graph 10: Summary of reforestation actions carried out under the project.....	54
Graph 11: Summary of support for the acquisition of young plants during the project implementation period ....	60
Graph 12: Distribution of hedgerow seeds distributed by the project according to their species.....	62
Graph 13: Récapitulatif des accompagnements pour l'aménagement des tanety par l'équipe du projet .....	62
Graph 14: Distribution of farmers initiated by the project on vermicompost production .....	69
Graph 15: Distribution of farmers initiated by the project on compost production 7 days .....	75

Graph 16 : Distribution of farmers initiated by the project on compost production 45 days .....	76
Graph 17 : Distribution of farmers initiated by the project on the production of classic compost.....	77
Graph 18 : Distribution of farmers initiated by the project on the production of recycled manure .....	78
Graph 20 : Technical and financial support for the project to improve barns.....	81
Graph 21 : Rice-fish farmers supervised by the project .....	85
Graph 22 : Exchange visits between schools carried out during the project .....	105

## LIST OF MAP

Map 1 : Zones et communes d'intervention du projet Manitatra 2 .....	17
Map 2 : Location of the 12 schools supervised by the project as part of the introduction of agroecology in schools .....	96
Map 3 : Impacts of the actions carried out at the level of the 3 GSDM training sites on the dissemination of new varieties (seeds of service plants, seeds of upland rice, etc.).....	153

## LIST OF PICTURE

Picture 1 : Exchange visit inside commune at level of FFS of RAKOTO Philippe (lead farmer), at Ampasanombalahy – Soavina. ....	32
Picture 2 : Exchange visit between communes on the application plots of CEG Tsaramasoandra, Antokofoana – Soavina.....	32
Picture 3 : Exchange visit of farmers supervised by AFDI in the FFS of DANIEL (lead farmer), at Antemotra – Antanifotsy. ....	32
Picture 4 : Exchange visit of NGO Vahatra team on the fry production demonstration site, at Ilempona - Antanifotsy. ....	32
Picture 5 : Mucuna grains must be harvested in time to avoid theft and losses in the fields. ....	34
Picture 6 : Good Mucuna biomass after maize harvest on the plot of RAZAFINDRATOKO Emilson (Dadakoto) in Antemotra (Antanifotsy).....	39
Picture 7 : Good production of rainfed rice on Mucuna mulch on the CEG Antsoatany student application plot... ..	39
Picture 8 : Very good coverage of Cajanus and Mucuna on Michel's FFS in Soamanandrany.....	40
Picture 9 : Total control of weeds by a good biomass of mucuna .....	40
Picture 10 : it takes a good post-harvest operation of mucuna seeds in order to have a high germination rate.....	40
Picture 11 : Excellent production of upland rice installed directly, without tillage, on mucuna residues.....	40
Picture 12 : After the harvest of rain-fed rice, the Cajanus grows very well (FFS of LF Modeste à Ambohibolakely - Fidirana) .....	41
Picture 13: Very clean plot under good biomass of Cajanus after harvest of rain-fed rice (FFS of LF Alfred in Fidirana).....	41
Picture 14 : Good biomass of Cajanus cajan after rainfed rice harvest .....	41
Picture 15: Despite rainfall constraints, upland rice and maize on mulch from Stylosanthes d'Ernest (member of the FANILO Cooperative in Vinany) still show good vegetation, as they do every year; contrary to the plots on plowing of the peasants around. ....	42
Picture 16 : Upland rice on Stylosanthes mulch in Amparihy .....	42
Picture 17 : Good vegetation of maize sown directly on Stylosanthes mulch in Mamoriomby - Fidirana .....	42
Picture 18 : Fallow of Stylosanthes, at level of farmer supervised by the project at Mazoto - Vinany.....	43
Picture 19 : Comparison of vegetation : Upland rice on plowing (in right) and on mulch of Stylosanthes (left), at level of farmers in Mazoto - Vinany. ....	43
Picture 20 : Harvest of Stylosanthes seeds (plot of a member of the FANILO Coopérative in Amparihy - Vinany) .	43
Picture 21: Good production of rain-fed rice on a Stylosanthes mulch (plot of a member of the FANILO Coopérative	



of the beneficiaries.....	83
Picture 62 : Handling of genitors to prepare for a break (Photo taken by ATDRM at a breeder supervised by the project in Soavina).....	85
Picture 63 : This year, the practice of rice-fish farming is made difficult by the random rainfall at the start of the year (LF RAKOTO Philipe in Tsinjoarivo-Soavina) .....	85
Picture 64 : Reseal of pots by members of the Fanilo Cooperative in Amparihy .....	89
Picture 65 : Nursery monitoring by the central GSDM team.....	89
Picture 66 : Training of lead farmers on the family budget (advice on family farming) by agents of the DRAEP Vakinankaratra.....	90
Picture 67 : Training of leading farmers on fruit and vegetable conservation and processing techniques by DRAEP Vakinankaratra agents.....	90
Picture 68 : Training of the lead farmers to use biocidal/repellent plants, with the CEFFEL center.....	90
Picture 69 : Capacity building of the lead farmers in agro-ecology by the GSDM trainers in Antsirabe.....	90
Picture 70 : Training of the lead farmer to use registering book of seeds provided by the project .....	91
Picture 71 : Capacity building of the lead farmers in technical of animation by the DRAEP Vakinankaratra in Antsirabe .....	91
Picture 72 : Eco-Code of CEG Antsoatany.....	96
Picture 73 : Eco-code of the CEG Ambohimandroso .....	96
Picture 74 : Eco-code of the CEG Antokofoana .....	97
Picture 75 : Eco-code of CEG Vinaninkarena .....	97
Picture 76 : Eco-code of the Private High School Loterana Antanifotsy .....	97
Picture 77 : Signing of the commitment chart in the CEG Ambohimandroso.....	98
Picture 78 : Thirty training session of the teachers to introduce agro-ecology in schools.....	99
Picture 79 : Delivery of booklets to CEG Ampitatafika .....	99
Picture 80 : Official release of the 3D animated film «agro-ecology for future generations» at Tranompokonolona Antsirabe.....	100
Picture 81: Intrants et matériels mis à la disposition des écoles pour faciliter la mise en place des parcelles d'application .....	101
Picture 82 : Application plots of CEG Vinany, Upland Rice on Stylosanthes mulch .....	102
Picture 83 : Application plots of CEG Vinany, Upland Rice on Mucuna mulch and Maize + Cowpeas / Mucuna ..	102
Picture 84 : Application plots of CEG Tsarasanandro - Antokofoana, fallow of Stylosanthes after Upland Rice + Stylosanthes.....	102
Picture 85 : Application plots of CEG Tsarasanandro - Antokofoana, Upland rice on Mucuna mulch and on residues of Maize + cowpeas + Mucuna.....	102
Picture 86 : <i>The students are very involved in all the activities carried out at the level of the application plots ...</i>	102
Picture 87 : <i>Crop residues (Maize + Mucuna) at the level of the CEG Antsoatany application plot .....</i>	103
Picture 88 : The effectiveness of knowledge transfer in environmental education and agroecology was among the criteria evaluated in the competition for the best school.....	104
Picture 89 : Exchange visit between schools at CEG Vinaninkarena .....	105
Picture 90 : Testimony of students during the review workshop of activities at the level of schools supervised by the project as part of the introduction of agroecology in schools.....	106
Picture 91 : Workshop of school activity review in Antsirabe.....	106
Picture 92 : Workshop of school activity review in Antsirabe.....	106
Picture 93 : Parents' testimony during the workshop of school activity review in Antsirabe.....	106
Picture 94 : Children's testimony during the workshop of school activity review in Antsirabe.....	106
Picture 95 : Group work during the workshop of school activity review in Antsirabe.....	106
Picture 96 : Exchange visit of TFNAC members to the GSDM training site in Ivory.....	112
Picture 97 : Awareness workshop on the promotion of agrometeorological data organized at the Antsirabe social residence .....	113
Picture 98 : Carrying out monitoring missions for CirAEP Antsirabe II agents in the commune of Andranomanelatra .....	115

Picture 99 : During the Vakinankaratra Showcase, the Stand of the MANITATRA 2 project attracted many visitors 116

Picture 100 : During the Vakinankaratra Showcase, thematic photos and specific inputs in agroecology were presented to illustrate the different practices developed by the MANITATRA 2 project. .... 117

Picture 101 : Exchange visit for the farmers of Inanantonana ..... 121

Picture 102 : Exchange visit for CSA representatives ..... 121

Picture 103 : The Vakinankaratra FDA-funded Dairy Farming Improvement Micro-Project is progressing well in the Village of Ankofafa/CR Andranomanelatra (FO VEHIVAVY MIHARY) ..... 124

Picture 104 : Two Field days of agro-ecology organized in the Vakinankaratra Region on March 19 and 20, 2020 ..... 126

Picture 105: COMESA Supervision mission by Cissy K., GSDM office in Antsirabe ..... 137

Picture 106: Visit to CEG Antokofoana – COMESA monitoring mission..... 137

Picture 107: Installation of contour line for protection for erosion control at the CEP of RAKOTO Philippe, lead farmer in Soavina – COMESA Supervision mission ..... 137

Picture 108: Reforestation realized during Manitatra 1 in Belanitra/Ankazomiriotra – COMESA supervision mission..... 137

Picture 109: Visit of the Private Loterana Antanifotsy High school – COMESA supervision mission..... 138

Picture 110: Visit of a vermicompost production unit in Antemotra/ Antanifotsy – COMESA supervision mission ..... 138

Picture 111: Visit of an off-season forage plot (oats) at LALAINA, lead farmer in Ambohimandroso ..... 138

Picture 112: A photo-reporter has been appointed by COMESA for a service in the project intervention areas.. 138

Picture 113: Visit of a representative of the European Union to the intervention areas of Manitatra 2 ..... 139

Picture 114: The entire farm of RAIVOARISOA Marie Monique, one of the lead farmers of the project, is currently in agroecology ..... 139

Picture 115: The students of CEG Vinaninkarena, one of the public schools supervised by Manitatra 2, worked well, with beautiful application plots ..... 140

Picture 116: With a view to producing quality organic manure with different composting methods, the project offered technical and financial support to improve the barns: hard paving, building with roof, with a manure collector and manure pit under -shelters like that of RAHARIMANANA Victoire, a dairy farmer supported by the project..... 140

Picture 117: The integration of agroecology in schools, like the visitors of the day, was well received by students, teachers and parents of students at the Private College AINA-Vinaninkarena..... 141

Picture 118: With the support of the project, the FO SANDRATRA received funding from the FDA Vakinankaratra to implement a project to improve gasy chicken farming with agroecological practices ..... 141

Picture 119: In the same village as the FO SANDRATRA, the FO VEHIVAVY MIHARY for its part set up a project to improve dairy farming, also financed by the FDA; and takes advantage of park manure to develop several vermicompost production units and correct the low fertility of crop fields..... 142

Picture 120: The FIADANANTSOA center has plots that are already very degraded, but whose fertility is improving year after year with systems based on Cajanus cajan and mucuna, and other agroecological practices in general..... 143

Picture 122 : With its specific color, the Acacia mangium reforestation carried out by GSDM as part of the MANITATRA 1 and 2 project is beginning to redraw the landscape in the commune of Vinany. 150

## LIST OF FRAMED

Framed 1: Environmental context and climate change in the project intervention areas, RABARIJHON Rivo consulting group, Final evaluation of the Manitatra 2 project, 2021 .....	35
Framed 2: Evolution of the adoption of Conservation Agriculture in the areas of intervention of the project (Group of consultants RABARIJHON Rivo, Final evaluation of the Manitatra 2 project, 2021) .....	37
Framed 3: System performance in conservation agriculture (CA).....	44
Framed 4: Summary of the results obtained at the level of the GSDM training site in Ivory (MOUSSA Narcisse, Summary report of the GSDM training site in Ivory during the 2021-2022 agricultural campaign, 2022). ...	46
Framed 5: Average area available per family farm in the project intervention areas (RABARIJHON Rivo consulting group, Final evaluation of the Manitatra 2 project, 2021).....	47
Framed 6: Evolution de la pratique de l'AC sur le riz pluvial dans les zones d'intervention du projet (Groupe de consultants RABARIJHON Rivo, Evaluation finale du projet Manitatra 2, 2021) .....	48
Framed 7: Management of organic matter in the project intervention areas (RABARIJHON Rivo consulting group, Final evaluation of the Manitatra 2 project, 2021) .....	67



*Framed 8: Adoption du lombricompost suivant les types d'exploitation (RAHARISON Tahina et al, 2022, le lombricompost dans la pratique: adoption et adaptation par les EAF de Vakinankaratra, Journal de l'Agroécologie n°14, 2022)71*

Framed 9: Testimony of Dadakoto, one of the reference farmers in the Region on the production of vermicompost  
73

**Framed 10 : Agroecology has been well established at the level of the pilot schools through its multiple positive impacts (testimony of Ms. RINDRA) ..... 107**

Framed 11 : The interest brought by the students on this project has far exceeded expectations (testimony of Mickaël)..... 108

Framed 12 : The interest brought by the students on this project has far exceeded expectations (testimony of Gaël)  
109

Framed 13 : l'Agroécologie a été bien implantée au niveau des écoles pilotes par ses impacts positifs multiples (témoignage de M. Pierre) ..... 110

Framed 14: *The Highlands of Madagascar, the opportunities of Agroecology in a context of demographic pressure, GSDM, 2020 ..... 131*

Framed 15: *Southeastern areas of Madagascar, coping with vulnerability through agroecological practices, GSDM, 2020..... 132*

Framed 16: The Middle West of Madagascar is a potential area for agricultural extension, GSDM, 2021..... 132

Framed 17: The South of Madagascar, a difficult area: opportunities are offered by agroecology, GSDM, 2021.. 133

Framed 18: *Knowledge and access to services of lead farmers (Group of consultants RABARIJHON Rivo, Complementary study on agroecology in certain strategic areas of Madagascar, 2021)..... 147*

Framed 19: Adoption rate of agroecological practices according to accessibility to LF services (RABARIJHON Rivo consulting group, Complementary study on agroecology in certain strategic areas of Madagascar, 2021) .... 148

Framed 20: *Survival rate of reforested plants (RABARIJHON Rivo consulting group, Final evaluation of the Manitatra 2 project, 2021 ..... 149*

# I. EXECUTIVE SUMMARY

## BRIEF DESCRIPTION

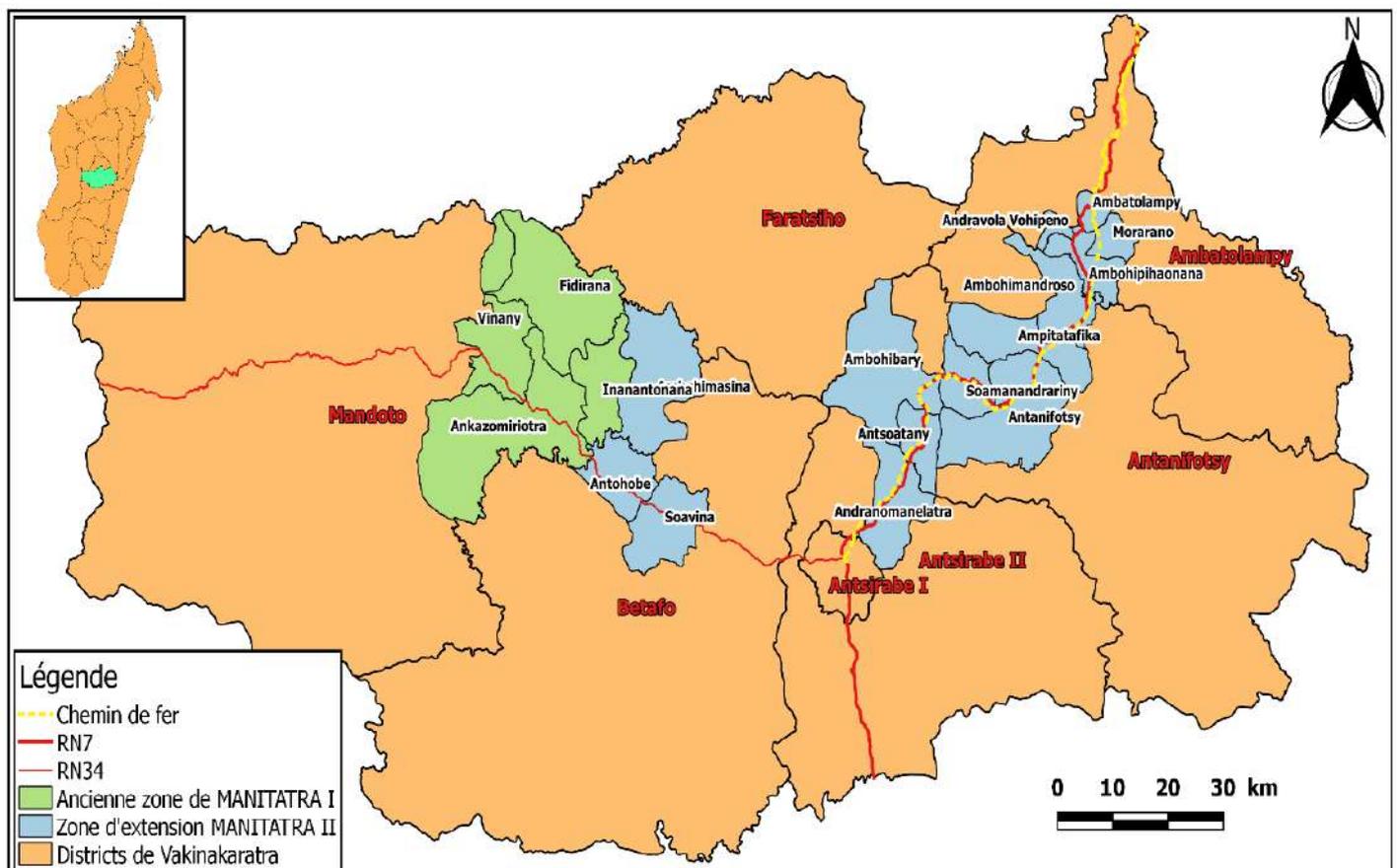
The Climate Smart Agriculture (CSA) pilot program that is coordinated by the Common Market for East and Southern Africa (COMESA) is part of a regional undertaking involving five (5) Member States (MS). The other MS are Uganda, Seychelles, Swaziland and Zimbabwe. The new program will be implemented during the period 2018-2020. The programme is funded by the EU under the Intra Africa, Caribbean and Pacific countries (Intra ACP) Global Climate Change Alliance plus (GCCA+) pro-gramme.

In Madagascar, this program wishes to enhance the experiences and successes of the previous GCCA project (MANITATRA 1) that was implemented during the period 2014-2016 targeting 4 communes in the Mid-West of the Vakinankaratra region and in 4 communes of the South East.

The main achievements from the previous project included the following : households with en-hanced livelihood were improved : e.g. 3,355 farmers (20% women) were practicing CA/CSA in the Mid-West and 3,138 (42% women) in the South-East. Forestry, Agroforestry, CA, CSA and best practices were the most important activities adopted by these farmers. The project has promoted the use of best practices in particular bio-pesticides, composting and repellent plants. Advocacy for CSA have been enhanced through the organization of Field Days (one per region) attended by central and regional Authorities.

MANITATRA 2 will target the VAKINANKARATRA region and will cover two different ecosystems : (i) le Mid-West (600 to 1000 m asl) which aims at up scaling the experiences of MANITATRA 1 and will cover new communes and (ii) the Highlands (1200 to 1800 m asl) which is a new area without activities during MANITATRA 1 but with a high expansion of upland rice (districts of Antsirabe, Antanifotsy and Ambatolampy)

Map 1: Zones et communes d'intervention du projet Manitatra 2



This project will be up scaling experiences gained during MANITATRA 1 and previous projects. Also experiences from other projects, partners or members of GSDM will be Incorporated in this new project.

The project main objective is to support the up scaling of CSA in order to mitigate climate change and to improve food security in Madagascar.

The expected Results of the project are highlighted below :

- Result 1 : CSA and Best Practices are up-scaled in two ecosystems of the VAKINANKARATRA Region ; covering the Highland and Mid- West regions in Madagascar ;
- Result 2 : Capacity of various stakeholders is built in Climate Smart Agriculture, Conservation Agriculture and Agroforestry ;
- Result 3 : Farmer organizations are supported and linked to various stakeholders in the Agriculture Sector to support sustainability of project results.

Total beneficiaries of the project will be 18,000 farmers of which 15,000 are expected to adopt the technologies they have learnt in the Farmers Field School (FFS).

The following will be achieved with the project :

- \* Women benefiting the project is estimated at 30% ;
- \* Total area under CA is estimated at 2000 ha (500 ha for year 1, 1500 ha year 2 and 2000 ha year 3) ; Total erosion avoided is, therefore, estimated at 40.000 Metric tons during 3 years (based on average loss of 10 t/ha/year) ;
- \* 1,500,000 trees will be planted as forestry, agroforestry or hedgerows. Based on these achievements, the project will reduce emission by increasing the number of trees through afforestation (500,000 trees/year to make it 1.500.000 trees during the project term) ;
- \* The project will improve the farmer's ability to climate change adaptation by in-creasing cropping systems using CSA ;
- \* Among significant benefits of the project will be to buffer the impact of erratic rain-fall by soil permanent cover ;
- \* The projects will up-scale best practices like the use of bio-pesticides, repellent plants and all technology of composting ;
- \* The project will contribute to the improvement of forages for dairy cattle in the high-lands by introducing legumes and other types of forages, by improving cowsheds and by extending the area based on experiences of FIFAMANOR ;
- \* The project will upscale or introduce fish rising in the paddy fields or in ponds based on experiences of APDRA and CIRAD ;
- \* The project will update data on CSA upscaling in some strategic areas of the Country.

## Grant summary

Total Resources required (EURO)		<b>821.090,01</b>
Total resources allocated (EURO)		
	<b>COMESA</b>	<b>727.271,49</b>
	<b>Other sources: (GSDM own Fund or State fund for taxes)</b>	<b>38 818,52</b>
	<b>FDAR</b>	<b>50.000</b>
	<b>In kind</b>	<b>5.000</b>
	<b>Un funded</b>	

### Summary of project achievements

If we make a fairly minimalist summary, the Manitatra 2 project was implemented along 3 main lines:

- Individual support for family farms on the adoption of the various agroecological practices promoted by the project (result 1);
- Building the capacities of the various stakeholders (outcome 2);
- And, sustainability of the activities carried out by the project, through the linking of beneficiaries with technical and financial partners in order to facilitate their access to services for the extension of the agroecological practices adopted (result 3)

*Result 1 : CSA and Best practices are up scaled in two ecosystems of the Vakinankaratra region - Highland and Middle West regions in Madagascar*

#### **Awareness meetings and exchange visits to boost the appropriation of different agroecological practices**

As part of the scaling up of agroecological practices in the 2 areas of intervention, the project has adopted a “farmer to farmer” approach i.e. :

- Lead Farmers (LFs): the project trained a total of 85 Lead farmers during its implementation ;
- Farmer field school (FFSs): these Lead farmers implement agroecological practices within their farms ;
- Exchange visits and training: the FFSs are promoted through exchange visits and training organized by the leading farmers for their peers.

Thus, the device put in place by the GSDM to multiply the opportunities allowing the farmers to exchange and increase their interests around Climate Smart Agriculture/Conservation Agriculture. A total of 965 group sessions were organized by the project team. These saw the participation of 21,284 farmers, including 9,482 women (i.e. 44.5%). These group sessions are made up of awareness meetings, exchange visits inside and outside the communes. In general, the objectives set in the project document for these activities were largely exceeded.

#### **Scaling up Conservation Agriculture (CA) to support rainfed rice crops**

For the scaling up of conservation agriculture systems, the farmers, during the exchange visits and other group sessions, were able to observe that crops on covers resist better than those on plowed land. From there, the interest of the

peasants in this practice began to increase. At the end, 2,058ha of *tanety*<sup>1</sup> in the 2 project areas were cultivated with different conservation agriculture systems. There is also an interest shown by farmers in Mucuna-based systems. Indeed, these systems represent 31.5% of this achievement. They have many advantages : nitrogen fixation, weed control, moisture retention, fights against bioaggressors (fall armyworms, white grubs, etc.). Moreover, the yield of upland rice after mucuna is the best compared to other cover crops. But, all CA systems are much more efficient compared to conventional systems.

At the end of the project, system « **Maize associated with mucuna** » in rotation in the following year with « **upland rice intercropped Cajanus with fertilization with compost (80%) and vermicompost (20%)** » appears to be the most adopted system. It offers high biomass production every year.

#### Reforestation and agroforestry to protect *tanety*

As part of reforestation actions, the project promotes local skills in the production of young forest plants. A total of 72 village nurserymen collaborated with the project in this direction.

We were able to plant 2,464,050 young forest plants; i.e. 164% of the target set in the project document. It should also be noted that this number of seedlings was limited by the available budget. Indeed, the needs of the peasants were far above it. It should be noted that nearly 60% of the plantations are made up of *Acacia mangium*. Indeed, this fast-growing legume spreads naturally with seeds that can be carried by wind, runoff or other vectors. In addition, this species does not acidify the soil, and leaves a possibility of recultivation later. It should be noted that the reforestation carried out within the framework of Manitatra 1 (2014-2015) shows a change in the landscape in the space of 4 to 5 years. Surveys during the final evaluation of the project by the group of consultants “Rabarijhon Rivo” mentioned a survival rate of **more than 70%** of these seedlings planted. The result is even better when starting with agroforestry systems (association with cassava, peanuts and ground peas)

Fruit trees in agroforestry should allow family farms to diversify production on the same plot, and to obtain significant periodic income. But, the project had very little result in this activity. Indeed, during the project implementation period, we were able to facilitate the acquisition of 16,434 young fruit plants for 949 beneficiaries, including 349 women (i.e., 36.8%). This result corresponds to only 33% of the objective set in the project document.

Hedgerows and hedgerows have several functions. They make it possible to limit water and wind erosion, to limit the wandering of animals, to produce significant biomass for composting and for use as biopesticides for species such as tephrosia. In total, 1,314,679 linear meters of hedgerows were installed under this project, i.e. 131% of the project’s final objective.

#### Adoption of good agricultural practices to improve production on *tanety* and food security

Actions within the framework of support for the management of organic matter have been accentuated by the project supervision system. The production of organic manure is of great interest to local producers, in particular because of the high cost of chemical fertilizers and the requirements of ferral soils in general. Thus, vermicompost, classic and 45-day compost, and liquid compost are the most adopted by farmers in the areas. In these registers, the objective set in the project document has been exceeded.

But, to have quality composts, it will be necessary to improve the cowsheds. Indeed, for the majority of breeders, park manures are subject to loss of fertilizing elements by evaporation and leaching. In addition, the manures are mixed with soils because of storage problem. The objective of improving a cowshed is to improve the health of cattle, while producing quality manure for the various composting practices. A total of 212 breeders benefited from technical and financial support from the project in this area. Note that on average, the project provided 0,33€ for breeders who wanted to improve their cattle park meaning that most of the costs are born by the farmers themselves.

<sup>1</sup> *Tanety* : hillsides as opposed to the lowlands which are in Madagascar are generally irrigated paddy fields

Furthermore, within the framework of support for the improvement of milk production in the Region, the project collaborated with FIFAMANOR. The latter focused their interventions on the training of project technicians, and the establishment of demonstration sites in fodder cultivation. Thus, the project supervision system, accompanied by FIFAMANOR agents, supervised a few dairy farmers on the improvement of barns and the provision of plant fodder materials.

Still in this perspective of the fight against food insecurity and the improvement of the incomes of rural households in the Region, distributions of orange-fleshed sweet potato vines were made during the implementation of the project. In total, 19,300 kg of liana were made available to 1,563 supervised farmers. These are new varieties with a short cycle (production from 3 months), non-photoperiodic, with tubers rich in A vitamin. These varieties developed by the International Potato Center are meant for undernourished children in poor countries.

Finally, as part of the promotion of rice-fish farming, the project collaborated with the ATDRM association (association of technicians involved in the AMPINA project implemented by APDRA). At the beginning of its intervention, this association made an inventory of fish farming activities in the Region. The biggest problems observed during this stage being the theft of fish and the inbreeding of carp in the Region. Thus, the project introduced 93 spawners into the area, including 60 males and 33 females; and subsidized fingerlings at half price. During the project, 559 farmers benefited from this support. The survey carried out by the project team revealed an average weight of fish varying between 200g to 250g. This constitutes a considerable increase in income at the scale of the family farm.

#### Implementation of an agroecology situation in certain areas of Madagascar and supply of an online database

It should be noted that GSDM has mandated the “BRL Madagascar and BEST” consortium to set up the national situation of agroecology in certain agroecological zones of Madagascar within the framework of the PAPAM project. This work is not yet completed at this stage.

But, to extend the areas of investigation a little further, an additional study was undertaken in Manitatra 2. It was carried out by the group of consultants “Rabarijhon Rivo” in the Vakinankaratra et the South East regions : this work is currently completed and the report is available and some data is cited in this report.

On the other hand, CIRAD, through its IT specialist Jean-Baptiste LAURENT, has signed an agreement with GSDM for the simplification of the “MANAMORA” online database. Indeed, this base, being too heavy, cannot be filled by the other stakeholders in the dissemination of agroecological practices in Madagascar. Thus, with the support of CIRAD, we were able to set up the “MANABOOST” database, with more aggregated data at the commune level. Manitatra 2 data are already entered into this new database. But the challenge, currently, is to animate the other partners in order to have a global vision of agroecology at the national level. Similarly, training and the establishment of this base at the level of the branches of the ministry were not yet carried out during the project.

#### *Result 2 : Capacity on various stakeholders is built in Climate Smart Agriculture*

##### Formation des pépiniéristes et des paysans leaders prestataires du projet

La formation des pépiniéristes a été réalisée dans le cadre de la convention de collaboration avec la DREDD Vakinankaratra. Au total, le projet a travaillé avec 72 pépiniéristes. Ce qui correspond à 144% de l’objectif inscrit dans le document de projet.

De l’autre côté, les paysans leaders quant à eux ont bénéficié des formations de la part du GSDM et de leurs partenaires. En effet, les formateurs du GSDM ont organisé des formations relatives aux pratiques agroécologiques en général. L’ATDRM a organisé la formation sur la rizipisciculture. Le centre CEFFEL a dispensé la formation sur le maraîchage, la gestion de la matière organique et l’agroforesterie. Et, enfin, la DRAE Vakinankaratra a réalisé la formation sur les conseils de gestion familiale, les méthodes de conservation et transformation des fruits et légumes, et les législations sur la pisciculture. Il faut noter que 85 paysans leaders ont collaboré avec projet ; soit 170% de l’objectif final.

### Introduction of agroecology in schools

The project has collaborated with 12 secondary schools, including: 6 schools that have already initiated this approach as part of the PAPAM project for one year (in 2017-2018); and 6 new schools identified during the diagnosis carried out within the framework of Manitatra 2. In summary, GSDM and the the Ministry of National Education trained representatives of the teachers at the level of each school, successively, on the various agroecological practices and environmental education. Then, these teachers carried out a cascade training for the benefit of the other teachers before transferring knowledge to students in the 6th and 5th grades. For this training of students, there is theoretical training in the classroom and practices at the level of application plots.

In general, the students manage to raise their parents' awareness; hence the notion of "reverse education" was identified, meaning that the students by means of discussions and visits to the application plots convinced their parents to change practices. This was really in many cases a change of paradigm.

Furthermore, this activity makes it possible to strengthen the advocacy activities carried out by GSDM with the ministries. It should be noted that at present, agroecology is already included in school curricula. Not as a separate subject; but the different practices are introduced into the existing subjects.

### Organization of exchange visits at the GSDM training site in Ivory

GSDM training site in Ivory makes it possible to see the performance of CA systems over several years. But visitors to the site also take the opportunity to visit the plots of farmers supervised by the nearby project. Thus, during these visits, participants can draw a parallel between the potential of CA systems (at the site level) and the adaptation made by farmers.

Within the framework of the Manitatra 2 project, 12,598 people have been registered to have visited the site. Which corresponds to almost 100% of the project objective. These visitors are very diverse, and come from everywhere: farmers, researchers, students, technicians, teachers, trainers, parents of students, journalists, etc.

### Valorization of agrometeorological data

In this context of climate change, agrometeorological data could be a good decision-making tool for family farms. In this sense, a collaboration agreement was signed between GSDM and the regional office of Meteorology of the Vakinankaratra region. Three stakeholder workshops were organised. Weather bulletins have been designed and distributed to selected development partners on a quarterly basis. You can find there the ten-day rainfall during the previous quarter; and the forecast for the next period. It should be noted that 7 training sessions on reading these bulletins were organized in the project areas.

### Involvement of the branches of the ministries in the implementation of the project

The project has signed a collaboration agreement with the regional offices of the Ministries of Agriculture and Environnement (namely DRAE and DREDD Vakinankaratra). For the DRAE, this agreement describes the commitments of the two parties to carry out training and support for the lead farmers and the overall monitoring of the project.

Then, the agreement with the DREDD sets the method of execution of the training of nurserymen and the support of the reforestation activities carried out each year.

### *Result 3 : Farmer organizations are supported and linked to various stakeholders in Agriculture*

The health crisis linked to the Covid-19 pandemic prevented the realization of an exchange visit outside Madagascar.

It should be remembered that in result 1, the project adopts individualized support for farmers on agroecological practices. And, in terms of sustainability of his actions, it was proposed to put these farmers in contact with other

technical and financial operators. The FDA is a device promoted by the State as a financial tool for the development of agricultural activities in the Region.

Thus, the project has supported farmers' groups to set up and submit funding requests to the FDA. Since the beginning of the project, 141 applications integrating agroecology in each micro-project have been submitted to the FDA for funding. Among them, 25 micro-projects were funded by the FDA

### *Communication and visibility*

#### Organization of 2 Field days of agroecology to strengthen advocacy actions

On March 19 and 20, 2020, two field days of agroecology were organized by the GSDM in the Vakinankaratra Region. These field days were attended by decision makers, researchers, development actors, technicians and representatives of FOs . 167 people took part in these 2 days.

During this event, we were able to carry out visits to the farms supervised by the project and a restitution in the room.

#### Publications and radio and TV broadcasts on project experiences for wide dissemination

It should be noted that communication is a transversal activity at the level of GSDM on activities relating to agroecology. GSDM has used many channels for a wide dissemination of information, capitalizations and news on agroecology.

Thus, GSDM collaborates with the National Malagasy Radio (RNM) on the FIVOY program. This program also helps to strengthen awareness-raising actions on the challenges of agroecology in this context of climate change.

We are also working with Malagasy national television (RNM) as part of the E-see Magazine program on the distribution of technical films produced as part of the project. These films provoked a lot of enthusiasm, especially on the part of farms outside the project area.

Finally, IT tools are dissemination channels widely used by GSDM. This concerns in particular the website, the online digital library, YouTube and the social networks (Page and Facebook) of GSDM.

#### Design of tools for technicians and capitalization documents of project activities

The project has training sheets that have been designed and edited by the Communication team at headquarters. They are available at GSDM office in Antsirabe. And the project technicians can mobilize them during their activities. In addition, these different training sheets were printed on A4 paper before being laminated. This version was distributed to lead farmers so that they could familiarize themselves with the tool, and bring more quality to their services.

Then, 10 technical films were produced in collaboration with the E-see Magazine team on different agroecological themes :

- Vermicompost manufacturing techniques ;
- Reforestation (2 films) ;
- Techniques on conservation agriculture (2 films) ;
- Rice-fish farming ;
- Improvement of milk production ;
- Biological control or "ady gasy" ;
- A documentary film on agroecology produced in the various areas of intervention of the GSDM in Madagascar, including in Vakinankaratra as part of the Manitatra 2 project;
- and, a film on the two (02) days of agro-ecology of Vakinankaratra;;
- Finally, capitalization sheets in 4 agro-ecological zones of Madagascar were produced: Highlands, South-East, Middle West and South of Madagascar.

### *Project administration (human and equipment)*

For the implementation of Manitatra 2, two systems were proposed by GSDM: a local team and a head office team. The local team is made up of 2 agricultural engineers, 7 technicians and 50 Lead farmers. It ensures the implementation of the project on the ground. Then, the headquarters GSDM team participates in the strategic planning and monitoring of field activities.

### *Project oversight*

The Steering Committee was set up at the beginning of year 2 of the project. In the process, the first meeting was piloted on August 13, 2019; and a second on September 24, 2020. They were all made in Antananarivo.

Establishing the baseline situation for the project posed some constraints for the GSDM. Indeed, the “GEOSYSTEMS & Development” firm was commissioned to carry out this study. However, the latter did not fulfill their missions in accordance with the commitments described in the signed agreement. Thus, GSDM has established an internal reference situation.

Then, GSDM, after taking the necessary steps to comply with the procurement rules, commissioned the “Rivo Rabarijohn” consulting group to carry out the mid-term evaluation and the final evaluation of the project. The two studies have the general objective of examining the results of the project in terms of the achievement of the objectives set in the project document in relation to the periods of implementation.

Finally, despite the Covid-19 pandemic, COMESA was still able to carry out 2 technical and financial monitoring missions for the project in Madagascar. During these missions, field visits enabled the COMESA monitoring and evaluation officer to assess the realities on the ground in terms of the dissemination of agroecological practices by the project.

## II. PROJECT FINANCIAL PERFORMANCE

Project financial performance (table 1, details in annexe 1) is in accordance with technical performance and linked to the occurrence of the pandemic COVID 19. Despite this pandemic, results 1 and 2 were obtained with good performance.

Project Financial Performance  
Table 1: Project financial performance following the logical framework

Budget acc.	Planned Activities	Budget (€) PROJECT DOC	Budget (€) PROJECT REALLOC	Budget (€) after extension	TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED EURO (AUGUST 22 - OCT 22)	TOTAL DISBURSED € (JULY 18 - OCT 22)	% DISBURSED / Budget Realloc
	RESULT 1 : CSA and best practices are up scaled in two ecosystems of the VAKI-NANKARATRA region, covering the Highland and Middle West regions in Madagascar	280 039,47	329 552,89	313 427,53	287 428,07	-	287 906,33	87,36%
	RESULT 2 : Capacity of various stakeholders is built in							
	2. Climate smart Agriculture Conservation Agriculture and Agroforestry	103 022,11	88 857,87	89 821,86	84 971,08	-	84 971,08	95,63%
	RESULT 3 : Farmers organizations are supported and linked to various stakeholders in the Agriculture to support sustainability of the project results							
	3.	32 512,20	25 614,84	12 286,28	11 167,54	-	11 167,54	43,60%
	4. COMMUNICATION AND VISIBILITY	50 235,86	36 807,93	38 478,10	39 638,99	-	39 638,99	107,69%
	5. PROJECT ADMINISTRATION (HUMAN AND EQUIPMENTS)	168 093,87	165 057,26	187 043,93	185 304,18	112,43	185 416,61	112,33%
	6. PROJECT OVERSIGHT	45 789,27	37 583,60	40 570,96	40 560,44	113,33	40 673,77	108,22%
	<b>July 2018 to Oct 2022</b>	<b>679 692,79</b>	<b>683 474,40</b>	<b>681 628,65</b>	<b>649 070,29</b>	<b>225,75</b>	<b>649 774,31</b>	<b>95,07%</b>
	7.2.1 Administrative charges	47 578,49	43 796,88	45 642,63	43 753,12	2 251,06	46 004,18	100,79%
	<b>YEAR 4 TOTAL REALLOC BUDGET (EUROS)</b>	<b>727 271,28</b>	<b>727 271,28</b>	<b>727 271,28</b>	<b>692 823,41</b>	<b>2 476,81</b>	<b>695 778,49</b>	<b>95,67%</b>



### III. DETAILED PROGRESS ON PROJECT IMPLEMENTATION

#### III.1. Result 1 : CSA and Best practices are up scaled in two ecosystems of the Vakinankaratra region - Highland and Middle West regions in Madagascar

##### III.1.1. Conduct awareness raising, exchanges visits and field days to facilitate experiences sharing and learning between beneficiaries

Table 2: Inception workshop and awareness raising

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
1.1.1	Inception workshop	Number of workshop	1	1	0	0	0	1	100%
		Number of participant	120	110	0	0	0	110	92%
1.1.2	Exchanges visites between & inside communes	Number of participants in exchanges visits inside communes	8 000	1 781	4 104	5 230	140	11 255	140%
		Number of participants exchanges visits between commune	500	518	437	881	322	2 158	432%
	Awareness, Information and communication about project activities	Number of participants	7 000	2 242	3 900	1 713	16	7 871	112%
1.1.3	Car hiring and other expenses during awareness raising	Number of car hiring days	100	27	25	30	12	94	94%

On November 15, 2018, an official launch workshop for the Manitatra 2 project was held in Antsirabe. More than 110 participants attended this event, including local authorities, representatives of various ministries, technical and financial partners, local development actors, members of the GSDM organization, the Manitatra 2 project team and journalists. This workshop made it possible to inform and discuss the objectives, intervention methodologies and expected results of the project.

In the implementation of this project, the mechanism put in place by the GSDM to multiply the opportunities allowing the farmers to exchange and increase their interests around the CSA/CA. Indeed, many awareness sessions and various types of exchange visits were organized. But, like the majority of countries in the world, Madagascar has not been spared by the health crisis linked to the COVID 19 pandemic. Directly impacted by the measures taken by the government in an attempt to control the circulation of the virus responsible for this pandemic, such as confinement, the impossibility of organizing events that require a gathering of people, the various barrier gestures, numerous awareness sessions and/or exchange visits have been cancelled.

During these years of the project, there was a consistency in the different approaches implemented, which has a positive impact on the appropriation of agroecological practices by farmers. Indeed, the project opted for a “farmer-to-farmer” dissemination approach. We chose and trained about fifty farmers, called “Lead Farmers”, to ensure the scaling up of agroecological practices around them. But, to convince their peers, these Lead Farmers should themselves be convinced, by putting agroecology into practice within their farms. This is how the first dissemination tool, called “Farmers Field Schoil” or FFS, is disseminated in the project intervention areas. For the farmers around, seeing the Farmer Leaders invest in these innovations leads them to pay particular attention to each agroecological practice. This makes it one of the differences compared to the “Technician to Farmer” approach which is mostly a top down approach.

Then, these FFSs serve as places of training and visits for the farmers in the area. And, we have seen that the “exchange visits” (whether at the level of the FFSs, or other plots of farmers supervised by the project) are effective in convincing family farms on the performance of different agroecological practices. Because, these visits allow them:

- assess the performance of the various agroecological practices promoted by the project (comparison with conventional practices);
- and, to discuss with other farmers (adopters or non-adopters) on different topics around these practices.

### III.1.1.1 Awareness, information and communication

The information/communication sessions are very important to achieve the objective of scaling up the agroecological practices promoted by the project. At the beginning of the project, this approach aims to inform the target population of the objectives, intervention methodologies, activities and expected results of the project. But during the implementation, we also organized many other sessions in order to launch the different agroecological practices corresponding to each period; and to develop project methodologies for supporting adopters. They are generally followed by training and/or exchange visits.

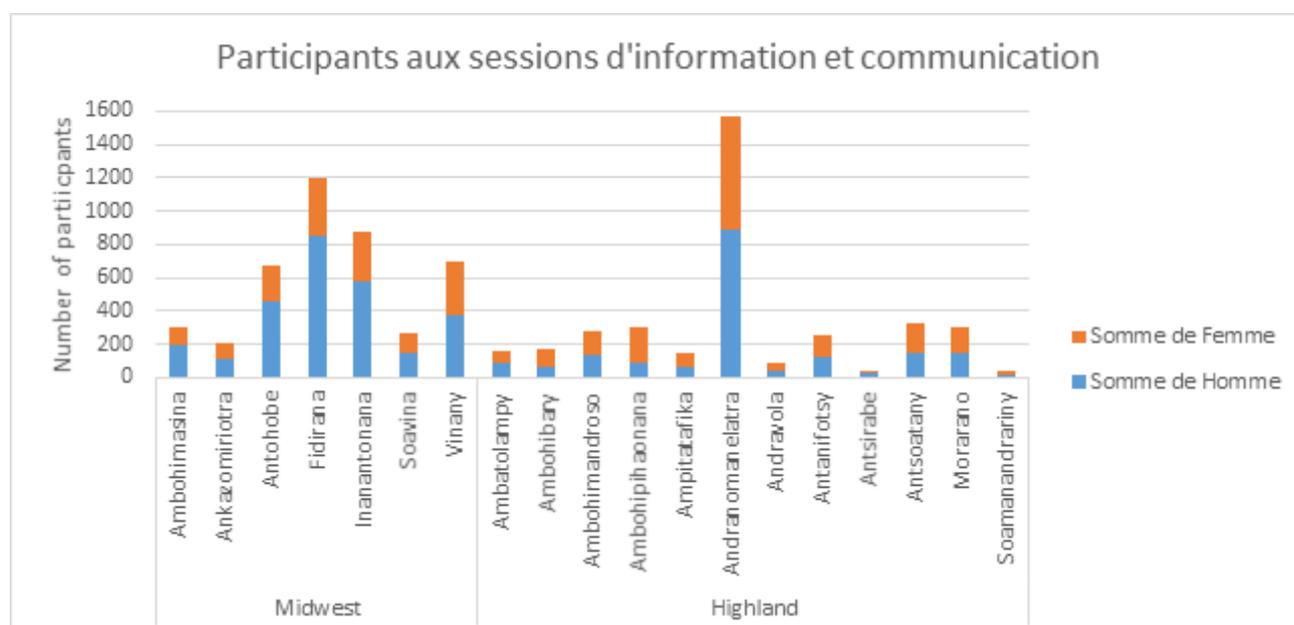
Table 3: Awareness raising and exchange visits

AREA	Number of sessions	Participants		
		Total	Women	% Women
<b>Highland</b>	<b>100</b>	<b>3 669</b>	<b>1 846</b>	<b>50,31%</b>
Ambatolampy	5	157	67	42,68%
Ambohibary	7	167	106	63,47%
Ambohimandroso	11	281	149	53,02%
Ambohipihaonana	16	304	212	69,74%
Ampitatafika	4	150	89	59,33%
Andranomanelatra	15	1 574	686	43,58%
Andravola	8	84	40	47,62%
Antanifotsy	11	249	124	49,80%
Antsirabe	1	35	9	25,71%
Antsoatany	6	325	176	54,15%
Morarano	13	300	158	52,67%
Soamanandrarinny	3	43	30	69,77%
<b>Midwest</b>	<b>158</b>	<b>4 202</b>	<b>1 493</b>	<b>35,53%</b>
Ambohimasina	9	298	101	33,89%
Ankazomiriotra	13	202	92	45,54%
Antohobe	35	669	216	32,29%
Fidirana	40	1 197	346	28,91%
Inanantonana	32	877	301	34,32%
Soavina	15	268	120	44,78%
Vinany	14	691	317	45,88%
<b>Overall</b>	<b>258</b>	<b>7 871</b>	<b>3 339</b>	<b>42,42%</b>

A total of 258 information/communication sessions were carried out by the project team. These saw the participation of 7,871 people (which gives us an average of 30 to 31 participants per session). There is also a strong participation of

women in these sessions (42% of participants), particularly in the highlands of Vakinankaratra.

Graph 1: Participation à des sessions de sensibilisation dans les différentes communes d'intervention du projet



### III.1.1.2 Exchange visits inside communes

The project opted for a “farmer-to-farmer” dissemination approach. In total, about fifty Lead Farmers, distributed in the 2 intervention areas, collaborated with the project. They were chosen and trained by the project technicians, the central GSDM team and other partners (Ceffel, ADTRM/APDRA, DRAEP Vakinankaratra) in order to store the baggage necessary for the transmission of agroecological knowledge to their peers. They are also setting up Farmers Field Schools (FFS) to serve as a place for exchange and discussion on agroecological practices through visit and/or training sessions.

It should be noted that the establishment of FFSs and the organization of exchange visits organized by the leading farmers in their area make it possible to draw the attention of producers to the performance of agroecological practices compared to conventional practices in the same ecosystem. Indeed, the surrounding operators will be able to observe throughout the year the relevance, accessibility and adaptability of the practices promoted by the project; while maintaining productive natural resources.

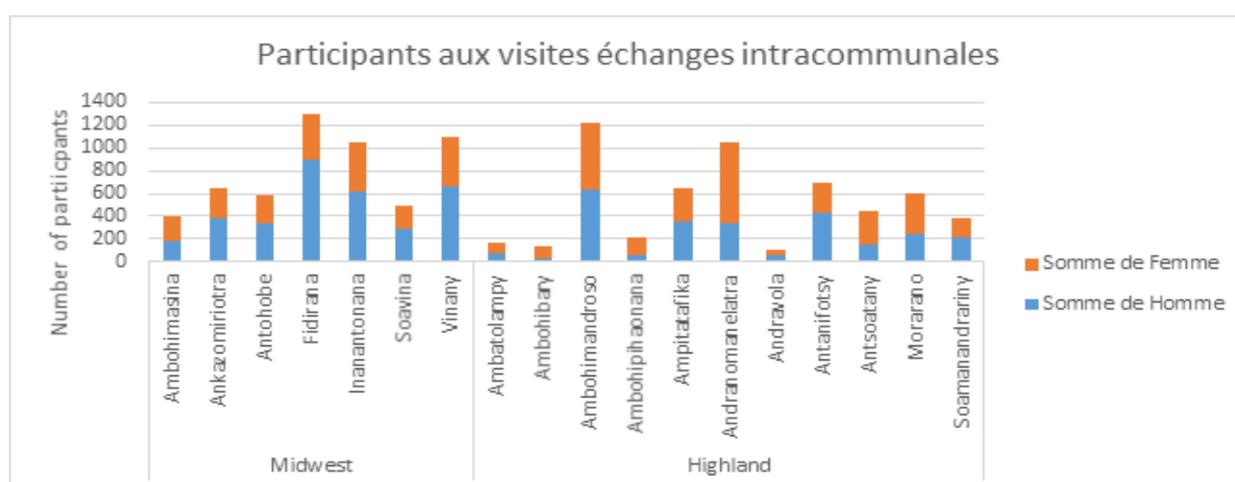
Table 4: Exchange visits inside communes

Areas/ Communes	Number of sessions	Number of participants	Number of Women	% Women
<b>Highlands</b>	<b>281</b>	<b>5649</b>	<b>3071</b>	<b>54%</b>
Ambatolampy	12	172	99	58%
Ambohibary	8	57	40	70%
Ambohimandroso	53	1138	566	50%
Ambohipihaonana	13	206	141	68%
Ampitatafika	24	597	280	47%
Andranomanelatra	56	1056	716	68%
Andravola	8	107	45	42%

Areas/ Communes	Number of sessions	Number of participants	Number of Women	% Women
Antanifotsy	38	640	273	43%
Antsapandrano	1	43	24	56%
Antsoatany	16	453	296	65%
Hautes Terres	4	190	19	10%
Morarano	32	604	360	60%
Sambaina	3	84	66	79%
Soamanandrarinny	13	302	146	48%
<b>Mid-West</b>	<b>349</b>	<b>5606</b>	<b>2229</b>	<b>40%</b>
Ambohimasina	27	396	207	52%
Ankazomiriotra	41	642	262	41%
Antohobe	37	578	247	43%
Fidirana	72	1296	396	31%
Inanantonana	68	1050	439	42%
Soamanandrarinny	1	48	32	67%
Soavina	32	498	209	42%
Vinany	71	1098	437	40%
<b>Overall</b>	<b>630</b>	<b>11 255</b>	<b>5 300</b>	<b>47%</b>

In total, 630 intra-communal exchange visits were organized by the Lead Farmers and/or project technicians. In the project document, the GSDM proposed to reach 8,000 participants in this type of exchange visit. This objective was largely exceeded, with an achievement rate of 140%. The female participation rate is high at 47%. In the highlands of Vakinankaratra, there were even more women than men who took part in these visits.

Graph 2: Participation aux visites échanges intracommunales organisées par l'équipe du projet



### III.1.1.3 Exchange visits between communes

To strengthen intra-communal exchange visits, the project also organized exchange visits requiring participants to travel outside their commune of residence. This type of exchange visit is organized during the agricultural campaign, in particular just before the harvest period; to enable participants to assess the performance of CA systems and other agroecological practices.

These visits allow participants to broaden their horizons in relation to the dynamics linked to the adoption of agroecology in other communes. Thus, there were visits between communes; but also visits between zones (highlands or middle west).

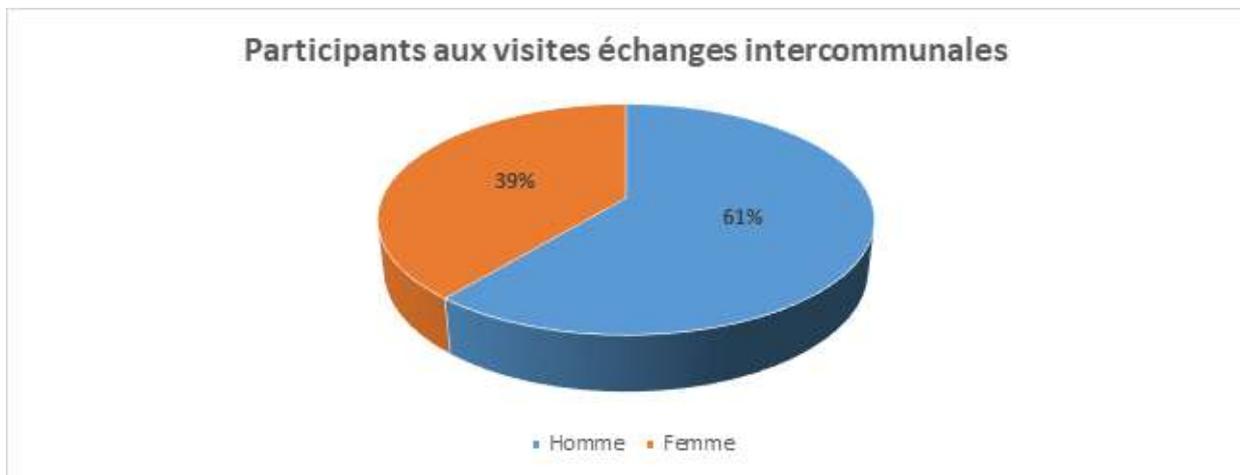
The exchange visits carried out at the level of the GSDM training site in Ivory allow farmers to see the performance of the adoption of agroecological practices over a very long period.

Table 5: Participation aux visites échanges intercommunales organisées par l'équipe du projet

Area visited	Number of sessions	Number of participants	Number of Women	% Women
Highland	32	885	420	47%
Midwest	45	1273	423	33%
Overall	77	2158	843	39%

During the project, 77 extra-communal exchange visits were carried out. The participants in these visits numbered 2,158 people, including 843 women (39%). This number of participants represents 432% of the target set in the project document. But given the importance of this approach in the dissemination of agroecological practices, the project tried to maintain it despite having achieved the initially planned objective.

Graph 3: Participation in inter-communal exchange visits organized by the project team



It should also be noted that among these achievements, 2 visits were made within the framework of the agreement established with the ATDRM concerning fish farming. They took place at the fish farmers supervised by APDRA in Sahanivotry/CR Manandona, Antanety Sud/CR Inanantonana and in Mazoto/CR Vinany, for potential fish farmers in the areas of intervention of the Manitatra 2 project.

Many were the agroecological practices that caught the attention of the participants in these visits. However, it can be said that the cropping systems based on mucuna and vermicompost are those that marked the majority there. Indeed, the participants were able to observe the resistance of the rice plants on a good cover of Mucuna despite random rainfall. In addition, the plots are clean, with very low weed pressure. Finally, if the capitalizations of experiences in

conservation agriculture during previous projects have shown an impact on crop yields from the third or fourth year; mucuna-based systems show a significant increase in upland rice yield from the first year without tillage on plots with good biomass. Hence, the increase in mucuna seed needs during the 2nd and 3rd year of the project.

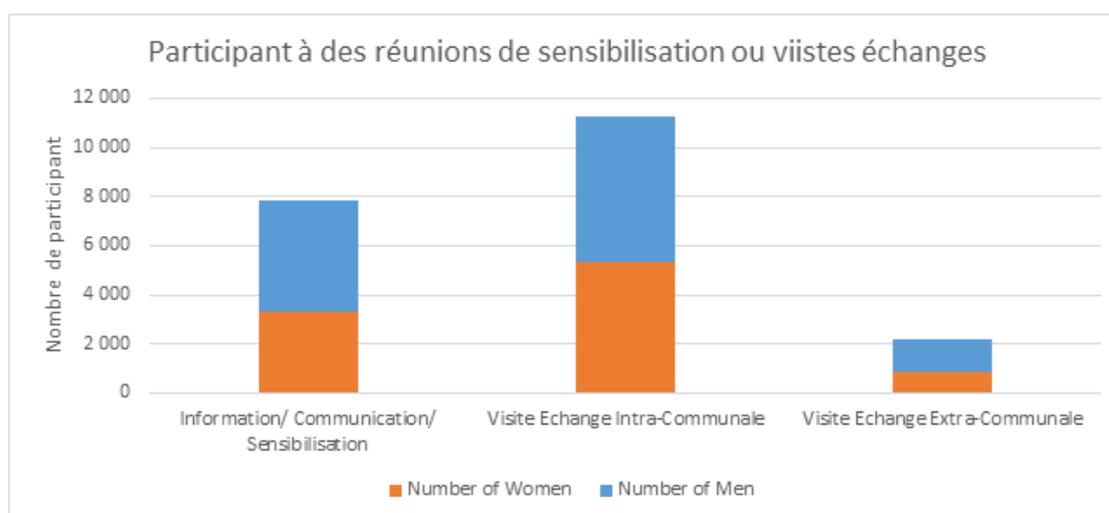
Vermicompost was also widely discussed during these visits. Progress data on this practice will be developed later; but, we can say that after the organization of exchange visits, in particular extra-communal visits, many farmers began to invest in this practice.

Table 6: Summary table of exchange visits and awareness-raising meetings carried out

RECAPITULATION	Number of sessions	Number of participants	Number of Women	% Women
Information/Communication/Awareness	258	7 871	3 339	42,4%
Exchange visit within the Communes	77	2 158	843	39,1%
Visit Exchange between Communes	630	11 255	5 300	47,1%
Overall	965	21 284	9 482	44,5%

In short, 965 group sessions were organized by the project team. A total of 21,284 participants were registered, including 9,482 women. This corresponds to a female participation rate of 44.5%. It should be noted that these different types of group sessions are very complementary with a view to scaling up the agroecological practices promoted by the project. Indeed, information/communication/awareness meetings allow beneficiaries to learn about the different practices to be implemented throughout the year; as well as the methodology adopted by the project to support the supervised farmers. These meetings will be followed by practical training sessions, at the level of FFSs or on the plots of other farmers around. Paragraphs detailing the different training courses carried out during the project will be developed later. The supervised farms will then be invited to take part in exchange visits in order to learn from the experiences of other farmers.

Graph 4: summary of awareness meetings and exchange visits





Picture 1 : exchange visit inside commune at level of FFS of RAKOTO Philippe (lead farmer), at Ampasanombalahy – Soavina.

Picture 2 : exchange visit between communes on the application plots of CEG Tsaramasoandra, Antokofoana – Soavina.



Picture 3 : exchange visit of farmers supervised by AFDI in the FFS of DANIEL (lead farmer), at Antemotra – Antanifotsy.

Picture 4 : exchange visit of NGO Vahatra team on the fry production demonstration site, at Ilempona - Antanifotsy.

### III.1.2. Upscale Conservation Agriculture to support the growing of upland rice and other crops

Table 7: Conservation Agriculture upscaling

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
1.2.1	Provides seeds of cover crops (mucuna, Stylosanthes, cowpea...)	Quantity of Mucuna seeds provided (kg)	18 112	1 850	9 862	5 950	0	17 662	98%
		Quantity of Stylosanthes seeds provided (kg)	2 097	260	1 087	492	0	1 839	88%
		Quantity of Cowpea cv David seeds provided (kg)	1 400	1 000	50	0	0	1 050	75%
		Quantity of Oat seeds provided (kg)	1 800	0	600	1 200	0	1 800	100%
		Quantity of Vigna seeds provided (kg)	150	150	0	0	0	150	100%
		Quantity of Cajanus cajan seeds provided (kg)	9 875	0	6 375	2 900	0	9 275	94%
		Number of farmers provided seeds of cover crops	5 000	1 824	3 119	1 491	0	6 434	129%
		Acreage of full Conservation Agriculture (ha of CA)	2 000	603,49	1 520,96	2 058,70	1 699	2 058,70	103%
1.2.2	Support for Stylosanthes rollers	Number group farmer provided Stylosanthes rollers	5	0	0	4	0	4	80%

The Manitatra 2 project was set up to support the practice of rainfed rice through Conservation Agriculture (CA) systems. Indeed, this practice presents an enormous expansion in the area. There are many reasons for this:

- Demographic pressure and reduction in the area of lowlands per family farm
- The results of research organizations that have produced high performing upland rice varieties.

However, current farming practices very quickly degrade their land capital, leading to a reduction in yield and strong pressure from pests. Climate change is making this situation even worse, and making the job of a farmer very difficult. Conservation agriculture combined with other agro-ecological practices are positioned, so far, as the most relevant practice to deal with these constraints. It is based on 3 principles : reduction of soil disturbance, permanent soil covers, associations and crop rotations using various service plants (cover crops).

It should be recalled that among the 17 communes of intervention of the project, 04 communes only (Ankazomiriotra, Inanantonana, Fidirana and Vinany) have already benefited from the Manitatra 1 project and other projects for the dissemination of agroecological practices (such as the BVPI SE/HP). The other communes, especially those in the Vakinankaratra Highlands, constitute new extension areas. The seeds of the cover crops are not yet available there. This is why the introduction of various varieties of these specific plants was one of the priority activities of the project.

#### III.1.2.1 Provides seeds of cover crops

During 3 agricultural campaigns, the project facilitated the availability of various seeds of cover crops. A total of 6,434 farmers benefited from cover crop seeds. This represents 129% of the target set in the initial document. The cover plants used generally consist of twining legumes, food legumes and shrub legumes. Various species have been used:

- **17,662 kg of mucuna seeds:** this is the cover crop that interested a lot of farmers; whether on the highlands, or in the middle west of Vakinankaratra. Mucuna seeds are not edible. But, farmers are currently beginning

to incorporate it into animal feed as a source of protein. The seed of mucuna is currently available in the communes of intervention of the project. But, at this stage, the lead farmers position themselves as the center of information on these seeds. Either they have it; or they know the peasants who have them.



Picture 5 : Mucuna grains must be harvested in time to avoid theft and losses in the fields.

- **1,839kg of Stylosanthes seeds:** with a very high production of aerial and underground biomass, Stylosanthes is the most technically efficient cover crop. It adapts well in the middle west of Vakinankaratra. However, the fact that it requires a year of fallow over 2 agricultural campaigns limits the appropriation of this system for small farms with less than 3ha of land. The FANILO cooperative (fokontany Mazoto, Commune Vinany) specializes in the sale of this type of seed. It produces it; and also collects that of the peasants around. Many farmers, associations/NGOs, projects (as in the case of Manitatra) have obtained their supplies of Stylosanthes seeds from this cooperative. It has a production capacity of around 1,500 kg of Stylosanthes seeds per year ;
- **1,050kg of cowpea seeds:** the “David” variety was used. It gives medium coverage. But, it does not adapt very well in the Vakinankaratra. Indeed, only a few farmers were able to have production. In addition, this plant is very attacked by aphids and pod miner caterpillars. In addition, cowpea biomass degrades very quickly; leaving room for weeds for a large part of the dry season if it is associated with other much more consistent cover plants (mucuna, Stylosanthes, Cajanus, oats, etc.). Currently, very few farmers still have cowpea seed among the farmers supervised by the project. However, cowpea seeds are edible; and much appreciated by the peasants ;
- **1,800kg of oats seeds:** this grass has a particular characteristic in its ability to capture nitrogen around like legumes. In addition, it allows to have clean plots by its allopathic character. Oats were offered to dairy farmers in order to produce both covers on the plots and fodder for cattle. In the highlands of Vakinankaratra, it has been installed on plots as cover for the cultivation of food legumes (beans, soybeans) which have very rapidly degraded biomass. Thus, after the harvest of these legumes, it is up to the oats to continue to grow and cover the plots. Farmers can still make a cut for cattle feed. But, after that, we let them cover the plots

to serve as a seedbed for the next season's crop ;

- **150kg of *Vigna umbellata (tsiasisa)* seeds** : this food legume was introduced into the areas by the project during its first year. But, it does not fit at all in the Region. The biomass produced is satisfactory in some cases; but it does not go to seed. Thus, it was no longer used from the second year of the project ;
- **9,275 kg of *Cajanus cajan* seeds**: this shrubby plant was used at the beginning of the project, only, as live hedges and hedging of the plots. But, from the second year of the project, the farmers began to associate it with upland rice and other food crops such as groundnuts, ground peas, etc. With its very powerful root system, it decompacts the soil. In the middle west of Vakinankaratra, it develops rapidly after the rice harvest, in order to provide sufficient coverage for the next season. On the other hand, in the highlands, it grows quite slowly. Thus, in year 2, maize + mucuna are directly installed inside the *Cajanus* plants. *Cajanus* seeds are edible. But, this plant is also heavily attacked by pod miner caterpillars. And, without appropriate sanitary protection, we do not produce seeds. This is why the seed of *Cajanus cajan* is still unavailable in quantity and quality in the area. One of the challenges of the GSDM and other partners in the dissemination of agroecological practices in the Region is to put in place an effective protocol for producing *Cajanus* seeds.

### III.1.2.2 Conservation Agricultural (CA) practice

As we have already mentioned above, the Manitatra 2 project was set up to support the practice of rainfed rice which is spreading at high speed in the Region. We know the importance of rice for Malagasy people. However, despite the fact that more than 80% of the population is made up of rural households, in 2022, there was still a gap in rice estimated around 500,000T. Moreover, with strong population growth, the degradation of natural resources and less and less functional hydro-agricultural infrastructures, the rice fields will no longer be sufficient to try to ensure rice self-sufficiency for the country. Thus, we are led to exploit the *tanety*. In the Vakinankaratra Region, this is already very developed. Indeed, in 2021-2022, 30% of rice production will come from *tanety*; if this rate is reduced to 11% nationwide. But, even in Vakinankaratra, the bad management made by the peasants will not allow a sustainable exploitation of the *tanety*.

#### Framed 1: Environmental context and climate change in the project intervention areas, RABARIJHON Rivo consulting group, Final evaluation of the Manitatra 2 project, 2021

In the highlands, the intensification of agricultural production, with the abandonment of fallow land, the systematization of tillage (manual or using animal traction) and the overexploitation of cultivated land using conventional techniques has generalized the phenomena of erosion, with dramatic environmental consequences :

- at the level of rainfed hillside crops: loss of fertility, degradation of land and fallow land, erosion claws.
- in the rice fields of the plains: silting up and damage (submersion).

In the Middle West, crops are mainly concentrated around rice production in irrigated lowlands. The often sloping *tanety* are also exploited and erosion problems with consequences similar to those observed in the Highlands are observed. Moreover, bush fire is a common phenomenon in the area resulting in a considerable loss of forest cover.

Drought like the one observed in 2019 has negative impacts on agricultural production and especially on rice. Apart from the drought, the rainy seasons are becoming shorter and shorter but the rains are of high intensity.

To correct the mode of production of rainfed food crops in Vakinankaratra, the GSDM proposed agroecological practices centered on the scaling up of conservation agriculture. Indeed, conservation agriculture helps restore soil fertility. But, without other practices such as reforestation and the various *tanety* development devices (contour, quickset hedges, hedging, grass strip, etc.), it will not be possible to maintain fertility at plot level. In addition, rainwater will always

continue to run off without being able to replenish the groundwater. Thus, we will always continue to see our sources dry up again and again.

In addition, the contribution of fertilizing elements is important in order to compensate for natural exports through the development of plants, especially with demanding crops such as corn and rice. However, the price of synthetic fertilizers has risen sharply. And, their negative impacts on natural resources, the quality of agricultural products and the health of consumers are already known. Thus, it is more appropriate to rely much more on organic fertilization and to reduce the use of chemical fertilizers as much as possible. The project proposed different practices to improve organic manure : classic compost, recycling farmyard manure, liquid compost, etc. These themes will be developed much more in the following paragraphs. But, to be able to produce quality organic manure, we need two things : quality and quantity of manure from the park and green materials. To have quality manure, you have to start by improving the barns. The notion of agriculture/livestock integration comes into play, with agriculture producing quality fodder for farm animals ; and livestock which provides quality manure to increase the fertility of the plots. As green materials to compost, legumes are highly recommended. And, shrubby legumes installed in hedging and living hedges at the level of the plots would thus take on several roles : protection of the plots against erosion, windbreak, and production of the biomass necessary for composting. Finally, certain species of shrubby legumes such as *Tephrosia vogelii* can also be used in various biological control methods (*ady gasy*). Other repellent plants, including neem, are also used in this area. These practices make it possible to reduce the use of chemical treatments as much as possible.

In short, the different agroecological practices are used on farms in a coherent and complementary way. Hence the objective of the project to support rainfed rice crops through Climate-Smart Agriculture, or globally agroecology.

Table 8: Achievement in conservation agriculture during the project

Area/Commune	Year 1	Year 2	Year 3	Extension
Highland	184,9564	571,0115	862,379	675,408
Ambatolampy	4,19	1,975	7,03	7,07
Ambohibary	13,39	49,6775	49,7325	21,325
Ambohimandroso	35,345	95,175	152,258	129,588
Ambohipihaonana	10,693	12,409	28,974	31,344
Ampitatafika	19,78	50,684	77,525	61,675
Andranomanelatra	52,865	159,265	252,87	173,14
Andravola		3,8	8,6825	
Antanifotsy	18,31	80,573	113,369	103,603
Antsoatany	11,215	59,422	71,292	52,262
Morarano	16,5534	40,371	59,766	54,521
Soamanandrany	2,615	17,66	40,88	40,88
Midwest	418,534	949,944	1196,323	1023,118
Ambohimasina	14,68	67,53	85,86	77,82
Ankazomiriotra	71,04	128,53	148,91	132,235
Antohobe	17,72	109,905	177,08	153,7
Fidirana	128,22	285,21	350,29	303,98
Inanantonana	78,199	124,171	131,523	116,568
Soavina	16,71	54,318	74,02	61,93
Vinany	91,965	180,28	228,64	176,885
<b>Total area (ha)</b>	<b>603,4904</b>	<b>1520,9555</b>	<b>2058,702</b>	<b>1698,526</b>
<b>Number of farmers</b>	<b>1 744</b>	<b>3 412</b>	<b>4 378</b>	<b>3 920</b>

Support for farms, with the different Conservation Agriculture systems for rainfed food crops, evolved throughout the project. During the first year, the project focused a great deal on setting up dissemination tools (the farmer field schools or FFS); and achievements with operators who immediately wanted to test a few practices. In total, 603ha of *tanety* have been installed according to different conservation agriculture systems. This achievement allowed the project management system to clearly illustrate the various activities (training and exchange visits) around this theme during the second year of implementation. Many farmers, especially those in the highlands, have seen for the first time the performance of conservation agriculture systems. In addition, the start of the 2019-2020 agricultural campaign was marked by prolonged rainfall gaps. Farmers, during exchange visits and other group sessions, have found that crops on covers resist better than those on ploughs. From there, the interest of the peasants in this practice began to evolve. During the 2nd agricultural campaign, 1,520ha were cultivated according to different conservation agriculture systems in the project intervention areas. We even reached 2,058ha during the third year of implementation.

**Framed 2: Evolution of the adoption of Conservation Agriculture in the areas of intervention of the project (Group of consultants RABARIJHON Rivo, Final evaluation of the Manitatra 2 project, 2021)**

For the practice of CA, it should be noted that this is an average across the *fokontany* concerned by the Project, knowing that all the Communes are not affected. At the commune level, this percentage of farmers concerned is lower.

Table 9 : Evolution of the percentage of farms adopting CA

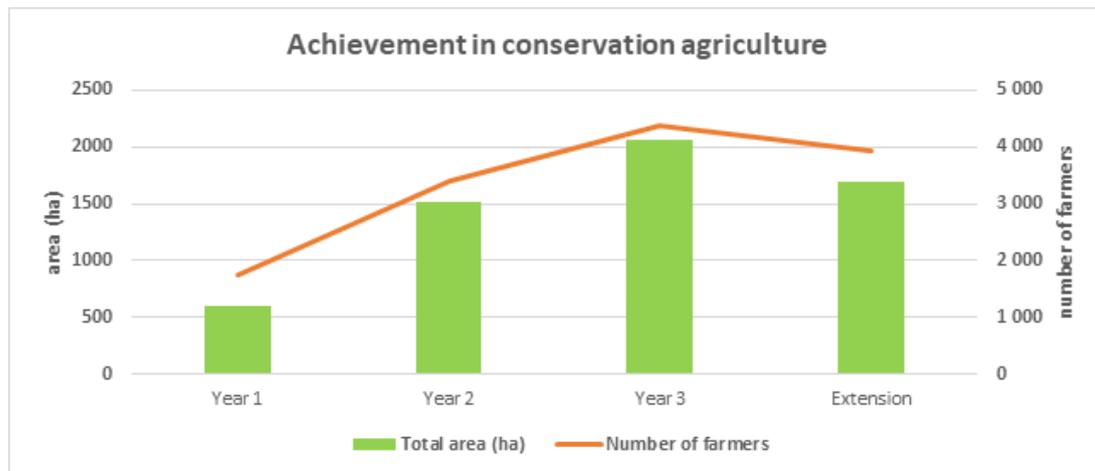
Adoption/pratique	Highlands			Mid West			Overall avg		
	T0 (Base line)	Mid term	Final	T0 (Base line)	Mid term	Final	T0 (Base line)	Mid term	Final
Conservation Agriculture (CA)	0%	13%	27%	2%	9%	42%	ns	10%	37%
CA based mucuna	ns	12%	22%	ns	5%	19%	ns	7%	20%
CA with Cajanus, Crotalaria, tephrosia	ns	10%	22%	ns	4%	32%	ns	6%	28%
Stylosanthes based CA	ns	0%	0%	ns	5%	15%	ns	4%	11%

These high percentages are due to the enthusiasm of the farmers after the observation of the first two years and the exchange visits carried out. However, this will not yet guarantee the sustainability of the system because many of them have been supplied with seeds by the Project and it is still necessary to wait a few years to be able to properly measure the sustainability and the real adoption of CA. In any case, this high percentage already makes it possible to show in some way the interest and effectiveness of field schools, “farmer-to-farmer” dissemination systems and exchange visits. The example of the village of Mandritsarakely in Antsoatany where one can observe about thirty farms adopting CA without the project intervening there but resulting from the knowledge and experiences acquired by the leader of the CEG Antsoatany on CA .

For the 2021-2022 agricultural campaign, GSDM has received approval from the European Union and COMESA to mobilize the remaining budget to complete the activities that could not be done during the 3-year period initially planned for the project (collection of data in agroecology in various agroecological zones of Madagascar, establishment of a database on agroecology, etc.). Thus, the supervision system was reduced to one agronomist (project manager), one technician and 15 lead farmers. Naturally, this system was mainly used in data collection. Support for farms was less frequent than before. But, despite this, many farmers benefiting from the project have continued to adopt conservation agriculture. We have thus recorded 1,699ha of land in CA during this year.

In summary, 2,058.70 ha of *tanety* are cultivated according to the different Conservation Agriculture systems. This corresponds to 103% of the target set in the project document.

Graph 5: Achievement in conservation agriculture during the project



As a reminder, Conservation Agriculture is based on three principles : the reduction of soil disturbance, permanent soil cover, and the association and rotation of crops with auxiliary plants. In short, during the first year, biomass must be produced to enter the systems.

Apart from the many advantages of CA systems (improvement of soil fertility, improvement of soil structure, improvement of soil texture, conservation of humidity on the plots, etc.), a good biomass makes it possible to control the weeds on the plots the following year. In the absence of satisfactory coverage during the first year; it will be necessary to plow again in Year 2, and to install systems with high biomass production.

- The systems adopted during this first year depend on the quality of the starting soil:
- Maize associated with legumes or Rice associated with shrubby legumes for rich soils
- Cassava, groundnut, or associated ground pea on poor soils (low-input systems)
- Improved fallow land for very degraded soils.

At the beginning of the second year, when you see that the cover on the plot is sufficient, direct seeding can be done on the residues of previous crops. Rice occupies an important place in the diet of the Malagasy population. Thus, in general, when the quality of the soil begins to regenerate, we take the opportunity to install rice. At the end of this year, it will be necessary to leave a maximum of crop residues on the plot to serve as a seed bed for the next crops.

For the future, it will be necessary to install directly (without plowing) systems making it possible to recreate biomass. Then, to cultivate without plowing on crop residues. And so on. In short, to properly manage the operation of a plot with CA systems, it is necessary to favor systems with high biomass production at least one year out of two. But we can also produce biomass all year round with systems like **“Maize + Twining legumes like mucuna”** in rotation with **“Rice + Shrubby legumes like Cajanus sp”**. In this case there is really good permanent cover on the plots. It is important to note that the maize leaves on the plot a good lignified biomass which can last all the dry season while a biomass of rice only is not enough, hence the association with Cajanus this is highly recommended. Moreover, farmers tend to give rice straw to cattle instead of leaving it on the plot.

Table 10: Achievements in Conservation Agriculture in project year 3

CA systems	Number of plots	Areas (ha)	Number of adopting farmers	Of which Women	% Women
Mucuna based CA systems	3289	648,64	2177	946	43,5%
Legume trees CA systems	2776	576,23	1896	839	44,3%
Stylosanthes based CA systems	1428	456,75	956	277	29,0%
Food legumes CA systems	1744	370,18	1318	553	42,0%
Oat CA systems	90	6,91	87	35	40,2%
Grand Total	9327	2 058,70	4 378	1 812	41,4%

From this table, Conservation Agriculture has been practiced at 2,058.7 ha in the two project areas. This represents 103% of the final objective of the project. A total of 4,378 producers, 41.4% of whom are women, were supported in this agroecological practice during this third and final year of the project.

Then, the trend observed during the second year of the project, in terms of the most adopted systems, was confirmed for this year. Indeed, **Mucuna-based systems are the most adopted**. It is on these systems that we count the number of plots, surface area, and the highest number of adopters.

The supervised farmers were able to assess the performance of these systems through exchange visits or other information and awareness-raising actions carried out by the project team. During the period of plot preparation, farmers noticed the absence of weeds on crop fields with a good biomass of mucuna. Then, covered soils retain much more moisture than can be sown with the first useful rain. And despite the very unpredictable rainfall, the plots with a dead cover of mucuna almost always show better vegetation compared to conventional systems. In addition, a positive effect of mucuna has been observed in the fight against bioaggressors. And finally, the rice yield after mucuna shows a significant increase compared to conventional systems.



Picture 6 : Good Mucuna biomass after maize harvest on the plot of RAZAFINDRATOKO Emilson (Dadakoto) in Antemotra (Antanifotsy)



Picture 7: Good production of rainfed rice on Mucuna mulch on the CEG Antsoatany student application plot



Picture 8 : Very good coverage of Cajanus and Mucuna on Michel's FFS in Soamanandrarin



Picture 9 : Total control of weeds by a good biomass of mucuna



Picture 10 : it takes a good post-harvest operation of mucuna seeds in order to have a high germination rate

Picture 11 : Excellent production of upland rice installed directly, without tillage, on mucuna residues

Then comes the systems **based on shrubby legumes**. The project has, above all, used the Cajanus Cajan as a cover plant. This shrubby plant was used at the beginning of the project, only, as living hedges and hedging of the plots. But, from the second year, the farmers began to use it in combination with upland rice and other crops such as groundnuts, ground peas, etc. With its very powerful root system, it decompacts the soil. It performs natural plowing at plot level. In the middle west of Vakinankaratra, it is developing rapidly after the rainfed rice harvest, in order to provide sufficient cover for the next campaign. On the other hand, in the highlands, it grows quite slowly. Thus, in year 2, maize + mucuna are directly installed inside the Cajanus plants.

With a rate of 26% of the total achievements of the project in Conservation Agriculture. More than 81% of the realization of the project in these systems is constituted by the association Upland Rice + Cajanus.

But to guarantee a good biomass after the rice harvest, the establishment of the Cajanus must not be too late, especially in the highlands. A good Cajanus biomass during the dry period makes it possible to prepare the seed bed for upland rice or associated maize for the next agricultural campaign. In addition, this conditions the absence of weeds on the plots. Moreover, the seeds of Cajanus are edible. This is why this system could significantly reduce the lean season for many households.



Picture 12 : After the harvest of rain-fed rice, the Cajanus grows very well (FFS of LF Modeste à Ambohibolakely - Fidirana)



Picture 13: Very clean plot under good biomass of Cajanus after harvest of rain-fed rice (FFS of LF Alfred in Fidirana)



Picture 14 : Good biomass of Cajanus cajan after rainfed rice harvest

Next, systems **based on Stylosanthes**. With 24.7% of project implementation in conservation agriculture, these systems are suitable only in the Middle West of Vakinankaratra. In this part of the Region, the area farmed per household is relatively large compared to the average in the Highlands. This explains the high surface area/number of adopters ratio compared to other systems. In the highlands, this cover crop has very slow growth.

These systems are very efficient technically, and can restore soil fertility very quickly. Indeed, Stylosanthes produces a lot of both aerial and root biomass. They help keep soil moisture well and fight Striga. Only, over 2 successive agricultural

campaigns, Stylosanthes-based systems require one year of fallow. And studies carried out recently have shown that they are not suitable for small and medium-sized farms with an agricultural area of less than 3ha. During this fallow period, households adopting these systems only produce Stylosanthes seeds and sell them at 17,000Ar<sup>2</sup> per kilo.

These systems have a wide range of uses. Indeed, on rich or moderately rich plots, upland rice or maize can be dressed with Stylosanthes. Then, to recover marginal land, it can be planted pure or combined with low-input crops such as cassava, groundnuts and ground peas. In addition, the Stylosanthes is installed only once on a plot. Afterwards, the seeds that fall into the ground will grow naturally to cover the ground; and all this even in the event of fire passing through the plots. Furthermore, when soil fertility improves and weeds become increasingly troublesome, end-of-cycle plowing can be practiced; to then install maize associated with annual legumes. But the seeds stored in the ground will grow to take over the system. In recent years, the rainfed rice yield of the members of the FANILO cooperative (farmers' organization supervised by the project in the municipality of Vinany) has stabilized between 3.5t/ha to 5t/ha depending on the rainfall (start of rain, amount and distribution of rainfall).



Picture 15: Despite rainfall constraints, upland rice and maize on mulch from Stylosanthes d'Ernest (member of the FANILO Cooperative in Vinany) still show good vegetation, as they do every year; contrary to the plots on plowing of the peasants around.



Picture 16 : Upland rice on Stylosanthes mulch in Amparihy

Picture 17 : Good vegetation of maize sown directly on Stylosanthes mulch in Mamoriomby - Fidirana

2 3,78€ per kg



Picture 18 : Fallow of Stylosanthes, at level of farmer supervised by the project at Mazoto - Vinany.



Picture 19 : Comparison of vegetation : Upland rice on plowing (in right) and on mulch of Stylosanthes (left), at level of farmers in Mazoto - Vinany.



Picture 20 : Harvest of Stylosanthes seeds (plot of a member of the FANILO Coopérative in Amparihy - Vinany)



Picture 21: Good production of rain-fed rice on a Stylosanthes mulch (plot of a member of the FANILO Coopérative in Amparihy - Vinany)



Picture 22: Plot of Stylosanthes at the GSDM Training Site in Ivory after grain harvest and first rolling



Picture 23 : The FANILO Cooperative (seed producer) has a production capacity of around 1,500 kg of Stylosanthes seed.

And, finally, **systems based on food legumes**. In these systems, the project mainly brought improvements on the durability of systems with Soya. These systems represent 21% of the project’s achievement in conservation agriculture. They are proposed in particular for relatively small farms; and who need to maximize the production from their crop fields each year. Generally, soybeans or cowpeas, which have good nitrogen fixation, are used for upland rice the following year. These systems can be summed up by a standard “Maize + Food legumes//Upland rice” rotation<sup>3</sup>. But the low biomass produced by these systems often results in high weed pressure for the next season.



Picture 24 : Corn + Soy Association (plot of a farmer supervised by the project in Andranomanelatra)

### Framed 3: system performance in conservation agriculture (CA)

At the end of the 2019/2020 campaign, the project team carried out a yield survey, comparing the systems in conservation agriculture and those in conventional. Thus, it has been observed that the plots in conservation agriculture always have higher yields than those in conventional ones.

Table 11: Performance comparison between conventional systems and CA systems

	Up land rice				Maïze			
	Number of plots	Avg Yield (kg/ha)	Std deviation (kg/ha)	CV (%)	Number of plots	Avg Yield (kg/ha)	Std deviation (kg/ha)	CV (%)
Conventional tillage (1)	498	1382,4	801,0	57,9%	424	1242,2	974,3	78,4%
No tillage on mulch (2)	409	2634,1	977,4	37,1%	39	2389,5	712,4	29,8%
<b>Difference in yields (2) - (1)</b>	<b>kg/ha</b>	<b>1251,7</b>			<b>kg/ha</b>	<b>1147,2</b>		
	<b>%</b>	<b>90,6%</b>			<b>%</b>	<b>92,4%</b>		

If we take the example of upland rice, a survey carried out by the project team on 499 conventional plots gave an average yield of 1,376 kg/ha (standard deviation: 801 kg/ha; coefficient of variation: 58 %). On the other hand, on 462 plots of upland rice installed without plowing on crop residues, the average yield increases to 2,640 kg/ha (standard deviation: 968; coefficient of variation: 37%); i.e. double the yield in conventional ploughing. It should be noted that these are results from surveys of farmers on plots known to the lead farmers of the project.

It should be noted that the data on the conventional systems were collected at the level of the non-supervised plots around the leading farmers. On the other hand, the data on CA crops come from the plots supervised by the project. And, on reading this table, we see a doubling of the yield of rainfed rice and maize in CA.

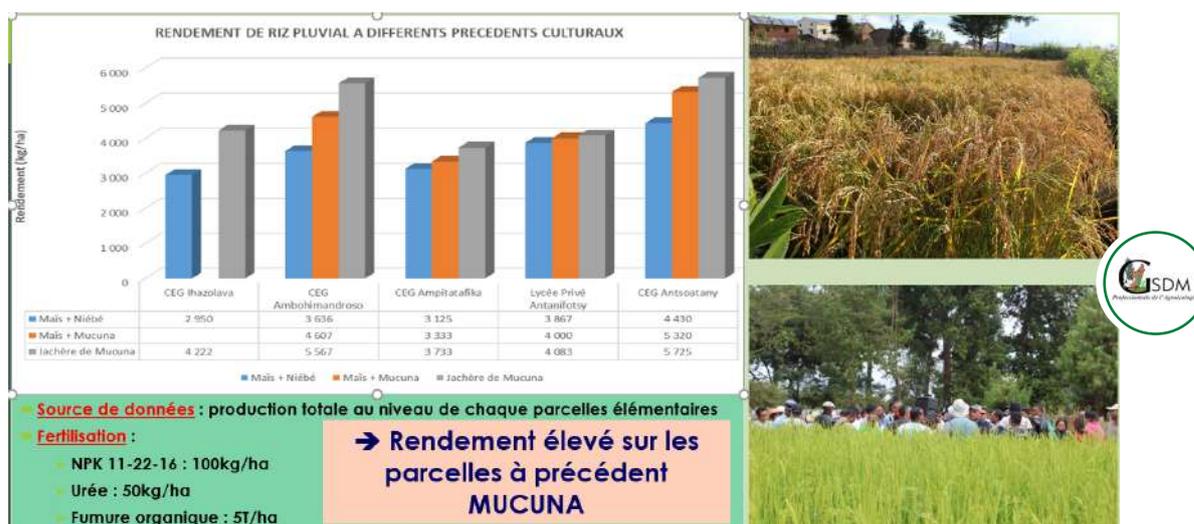
In addition, the species used as a cover crop also have significant influences on the yields of rainfed food crops. It has been noticed that Mucuna-based systems are the most adopted by farmers. It is on these systems that we count the number of plots, surface area, and the highest number of adopters. Apart from the other advantages of this system, what generally attracts the attention of farmers remains the significant increase in yields from the first year of cultivation, without plowing, on mucuna mulch.

3 Maize intercropped with Food legumes followed by Upland rice the following year

Table 12: Comparison of crop yield in CA following previous crops

Previous crops on cover crops	Up land rice				Maize			
	Number of plots	Avg yied kg/ha	Std deviation	CV (%)	Number of plots	Avg yied kg/ha	Std deviation	CV (%)
Mucuna based CA systems	56	3286,1	1182,3	36,0%	14	2569,2	702,3	27,3%
Legume trees CA systems	341	2554,6	896,6	35,1%	9	2325,9	739,0	31,8%
Stylosanthes based CA systems	12	1850,7	754,2	40,7%	16	2268,0	720,3	31,8%

On reading this table, 56 plots of farmers supervised by the project have been the subject of an installation of rainfed rice on Mucuna mulches (or maize + mucuna). The average yield is 3,286 kg/ha (standard deviation: 1,182; coefficient of variation: 36%). In some Farmer Field Schools (FFS) and application plots of schools supervised by the project, rainfed rice yields of up to 5,725 kg/ha have even been recorded on plots with a previous Mucuna fallow. Currently, mucuna seeds are available in quantity from farmers supported by the project.



Picture 25: Comparison of rainfed rice yield at different cropping precedent

**Framed 4: summary of the results obtained at the level of the GSDM training site in Ivory (MOUSSA Narcisse, Summary report of the GSDM training site in Ivory during the 2021-2022 agricultural campaign, 2022).**

Yields from mucuna-based systems are always the best: which confirms the results with farmers and schools supervised by the Manitatra 2 project. Hence the enthusiasm of farmers for mucuna-based systems, particularly in the Highlandlands;

- Yields on plowing even with organic and/or mineral fertilization gradually decrease;
- The difference is enormous between systems under plant cover in conservation agriculture (3.5 to 5.0 t/ha) and systems on tillage (1.0 to 2.0 t/ha);
- Despite climate change, systems on plant cover show much more stable yields from one year to the next, while those on tillage decrease regularly. This reflects the strong resilience of CA systems in the face of climate change. ;
- The gap between yields in F1 (manure only) and F2 (manure + low dose of fertilizer) is reduced. This means that fertility has been reconstituted in systems under plant cover and that the addition of synthetic fertilizers no longer shows a significant effect on yield.

In short, in total, we trained 4,378 farmers for this agroecological practice. Among these adopters, 1,812 are made up of women (i.e. 41.4%).

Table 13: Distribution of CA achievements in the project intervention areas / communes

Zone/Commune	Number of plots	Area (ha)	Adopters		
			Total	Women	% Women
<b>HIGHLANDS</b>	<b>5 141</b>	<b>862,38</b>	<b>2 328</b>	<b>1 117</b>	<b>48,0%</b>
Ambatolampy	50	7,03	34	17	50,0%
Ambohibary	177	49,73	142	74	52,1%
Ambohimandroso	902	152,26	382	115	30,1%
Ambohipihaonana	185	28,97	81	43	53,1%
Ampitatafika	502	77,53	223	105	47,1%
Andranomanelatra	1 114	252,87	534	327	61,2%
Andravola	82	8,68	47	16	34,0%
Antanifotsy	751	113,37	313	130	41,5%
Antsoatany	452	71,29	253	115	45,5%
Morarano	602	59,77	315	169	53,7%
Soamanandrarinny	324	40,88	80	37	46,3%
<b>MID - WEST</b>	<b>4 186</b>	<b>1 196,32</b>	<b>2 050</b>	<b>695</b>	<b>33,9%</b>
Ambohimasina	353	85,86	184	102	55,4%
Ankazomiriotra	529	148,91	325	115	35,4%
Antohobe	814	177,08	318	117	36,8%
Fidirana	768	350,29	348	64	18,4%
Inanantonana	577	131,52	263	93	35,4%
Soavina	409	74,02	188	84	44,7%
Vinany	736	228,64	471	123	26,1%
<b>Total achievement</b>	<b>9 327</b>	<b>2 058,70</b>	<b>4 378</b>	<b>1 812</b>	<b>41,4%</b>

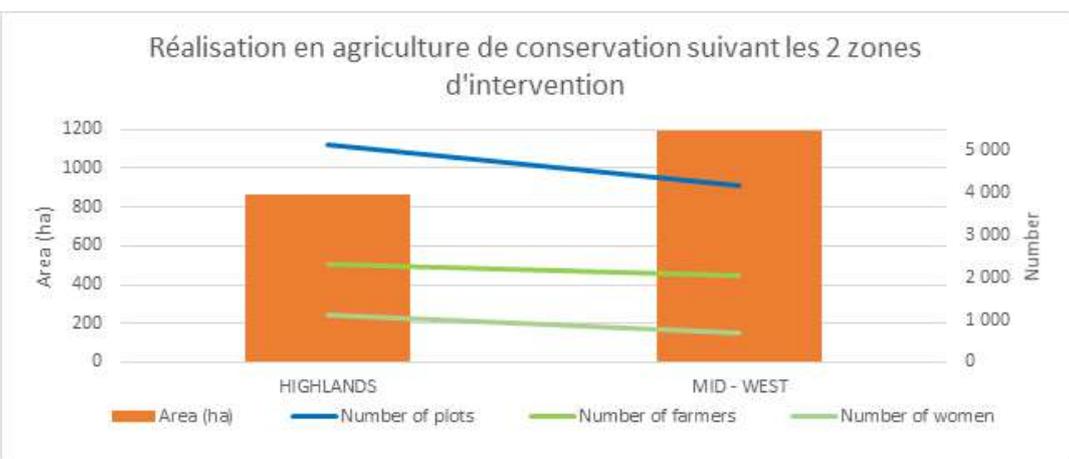
We also note that despite a high number of communes, the achievements in the highlands are always lower than those in the middle west of Vakinankaratra throughout the project. Indeed, 42% of this surface is in the Highlands; and 58% in the Middle West of Vakinankaratra. However, the number of plots in the Highlands is much higher than that in the Middle West. Indeed, in general, the exploitation on the Highlands of Vakinankaratra is very small compared to that in the Middle West. The average surface area in CA for farmers in the two zones combined is 47are.

**Framed 5: Average area available per family farm in the project intervention areas (RABARIJHON Rivo consulting group, Final evaluation of the Manitatra 2 project, 2021)**

For the two (2) ecosystems of the Vakinankaratra region, the average area available by agricultural farm is respectively 215 ares (CV 89%), 150 ares (CV 88%) and 50 ares (CV 99%) for the Middle West 1 , Middle West 2 and the Highlands. The Highlands area is characterized by a small area. However, the Middle West area of Vakinankaratra still has a large area dominated by the *tanety*.

Finally, it should be remembered that it was the project that introduced this practice to farmers in the highlands. But in the middle west, there were already interventions from other projects before (Manitatra 1, PAPAM, BVPI-SE/HP, etc.). This proves that it takes time for family farms to begin to assimilate and integrate agroecological practices into their habits.

Graph 6: Comparatid of CA achievements of the project in the middle west and in the highlands of Vakinankaratra

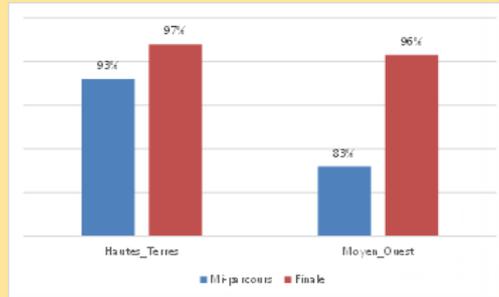


Promising developments in the adoption of conservation agriculture have a positive impact on the adoption of the CA practice in rainfed rice. It should be remembered that the MANITATRA 2 project was set up to support the practice of upland rice with the practice of conservation agriculture. This practice is currently experiencing significant expansion. Current farming practices degrade the soil very quickly and coupled with the adverse effects of climate change, the decline in yield is inevitable.

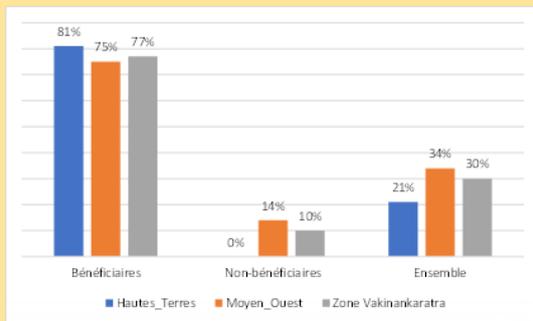
Framed 6: Evolution de la pratique de l'AC sur le riz pluvial dans les zones d'intervention du projet (Groupe de consultants RABARIJHON Rivo, Evaluation finale du projet Manitatra 2, 2021)

On avg, upland production has increased from mid-term évaluation to the final évaluation

Graph 7: Evolution of the practice of upland rice in the survey areas



This graph shows a fairly high rate of the practice of rainfed rice that it should be noted that this reflects the situation in the Communes of intervention of the project which initially targets rainfed rice production areas.



For rainfed CA rice, at the end of the project, 77% of the beneficiaries had promoted this technique, while it was only 10% for non-beneficiaries.

Graph 8 : CA practice on rainfed rice

We can clearly see in the following table that the CA system is beginning to be practiced by producers in rainfed rice cultivation. If in 2015, between 1 to 6% of rainfed rice cultivation plots are conducted with the CA system, at the end of the project intervention, 21% of producers practice the system in 75 to 100% of their cultivation plots of rice on *tanety*. In the Highlands, the share of the CA system in rainfed rice cultivation varies from 2.3% to 16.9%; no comparison is possible given the unavailability of data at the start of the project.

It should be noted, however, that a majority of producers do not yet practice CA in rainfed rice growing on *tanety*.

Table 14 : Share of CA areas in rainfed rice cultivation

	0%	0 à 25%	25% à 50%	50% à 75%	75% à 100%
<i>Avg Highlands</i>	68,4%	2,3%	9,4%	2,9%	16,9%
<i>Avg Mid West</i>	60,0%	1,1%	11,5%	3,2%	24,3%
<i>Overall avg</i>	63,7%	1,6%	10,6%	3,1%	21,0%

### III.1.2.3 Support for the acquisition of Stylosanthes rollers

After a fallow period, Stylosanthes produces such biomass that the preparation of the plot before recultivation becomes difficult. But, using a Stylosanthes roller makes this practice much easier. Indeed, the rolling of the biomasses of Stylosanthes is carried out after the harvest of the seeds (June). After this operation, we obtain a plot covered by a relatively thick layer of Stylosanthes mulch, but which is brittle and much more manageable during sowing.

However, the cost of this roll is very high for the majority of farmers in the middle west. It is in this sense that the project proposed collaboration with the FDA (agricultural development fund) in order to reduce the share of farmers who have formed a formal association. Thus, the project supported these FOs to set up and submit a funding request for the purchase of Stylosanthes rollers and other agricultural equipment from the FDA Vakinankaratra. Four (4) FOs were able to acquire this equipment, thanks to FO-FDA-MANITATRA 2 tripartite funding.

Table 15: Distribution of funding for the acquisition of the Stylosanthes rollers by the FOs supervised by the project

FOs	Localisation	Fokontany	Com-mune	Funding (Ariary) <sup>4</sup>			
				Total	FDA Vakinankaratra	Projet MANITATRA 2	Fos contributions
Coopérative FANILO	Amparihy	Mazoto	Vinany	19.565.700	14.986.000	3.000.000	1.579.700
OP FIAVANANT-SOA	Ankily	Antampondravola	Fidirana	15.234.250	11.164.000	3.000.000	1.070.250
OP MANDRESY	Matieloana	Matieloana	Antohobe	14.585.700	10.504.000	3.000.000	1.081.700
OP TANJONA	Mandritsara	Antohobe	Antohobe	12.995.700	9.073.000	3.000.000	922.700
<b>TOTAUX</b>				<b>62.381.350</b>	<b>45.727.000</b>	<b>12.000.000</b>	<b>4.654.350</b>



Picture 26: Rollers of Stylosanthes at the GSDM training site in Ivory



Picture 27: Official receipt of the rollers obtained as part of the collaboration with the FDA Vakinankaratra

### III.1.3. Upscale agroforestry and forestation

Table 16: Agroforestry and forestation upscaling

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
1.3.1	Support tree nursermen (potting bags, other materials...)	Number of tree man nursery supported	50	27	58	47	17	72	144%
1.3.2	Support adopting farmers in tree plantlets for reforestation (Acacia, Eucalyptus...)	Number of trees plantlets for reforestation	1 500 000	557 351	1 095 051	728 468	83 180	2 464 050	164%

4 1€ = 4500 Ar

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
1.3.3	Support adopting farmers in fruit tree plantlets	Number of fruit plantlets of farmers adopting	50 000	6 527	6 929	2 978	0	16 434	33%
1.3.4	Provide seeds of hedgerows (Cajanus, Tephrosia....)	Quantity of Tephrosia seeds provided (kg)	3 169	1 000	1 169	1 000	0	3 169	100%
		Quantity of Cajanus seeds provided (kg)	3 550	350	2 000	2 900	0	5 250	148%
		Quantity of Crotalire seeds provided (kg)	168	168	0	0	0	168	100%
		Number of farmers provided seeds of hedgerows	6 500	1 468	2 452	1 132	0	5 052	78%
		length of hedgerow (en mL)	1 000 000	239 877	699 873	369 289	5 640	1 314 679	131%

As part of reforestation actions, the project promotes local skills in the production of young forest plants. A total of 72 village nurserymen collaborated with the project in this direction. These nurserymen have already received training from DREDD Vakinankaratra technicians in the production of woody seedlings.

In terms of reforestation, it should be recalled that the final objective of the project in terms of reforestation has already been achieved in 2020 (during year 2 of the project). Only, we have seen the importance of this activity in this context of lack of forest cover in Madagascar. Thus, the implementation of this activity continued during year 3 and the extension period of the project. At the end, we were able to plant 2,464,050 forest seedlings; i.e. 164% of the target set in the project document. It should also be noted that this number of seedlings was limited by the available budget. Indeed, the needs of the peasants were far above it.

Concerning the support of the project within the framework of the promotion of fruit trees, we opted for a subsidy of **50% of the price of young fruit plants, but capped at 1250Ar<sup>5</sup>**. This activity should allow farmers to have other sources of considerable periodic income. And, family farms know it. But, as the purchase of young fruit plants coincides with the lean season, farmers find it difficult to cover their contribution.

Finally, as part of the development of the *tanety*, the establishment of hedges and living hedges at plot level is one of the practices promoted by the project. It makes it possible both to reduce the harmful effects of water erosion, while producing very interesting legume biomass for the production of various types of compost. But as in the case of CA dissemination, the project had to import hedgerow seeds.

### III.1.3.1 Support to nurserymen

In total, the project collaborated with 72 village nurserymen, scattered in the 17 communes of intervention. We made sure to have one or more nurserymen in the fields of action of each lead farmer in order to shorten the journeys to the final beneficiaries as much as possible. Indeed, the remoteness of nurserymen contributes to the demotivation of farmers to take advantage of the endowment of young plants by the project; and the decrease in the survival rate of reforested plants.

The project has issued **purchase vouchers** in order to avoid the circulation of money. Following awareness-raising actions and field surveys, the leading farmers give vouchers corresponding to the needs of each farmer interested in the reforestation activity. These farmers then go to the indicated nurseryman, with these vouchers, in order to collect the young plants. Indeed, the young forest plants are 100% subsidized by the project. On the other hand, transport, digging and planting are the responsibility of the beneficiaries.

<sup>5</sup> 0,28€

At the end of the reforestation campaign, the project team collects the vouchers from each nurseryman in order to pay for their services. The unit price of young plants from these 72 nurseries is 190Ar<sup>6</sup>.



Picture 28 : FANILO Coopérative nursery of Acacia Mangium and Eucalyptus at Mazoto – Vinany.



Picture 29 : Support in Acacia mangium tree plantlets in Fidirana

Table 17: List of nurserymen who have collaborated with the Manitatra 2 project

N°	Nurseryman	Gender	Address	Commune	Area
1	RASOAMALALA Georgette	Femme	Ankazomiriotra II	Ankazomiriotra	Moyen ouest
2	RAVONIARISOA Julienne	Femme	Ankazomiriotra II	Ankazomiriotra	Moyen ouest
3	RAMARIALIMANANA Voahirana Nirina	Femme	Ankazomiriotra II	Ankazomiriotra	Moyen ouest
4	RAKOTONDRAISOA Fanja Harinaivo	Homme	Ankazomiriotra II	Ankazomiriotra	Moyen ouest
5	RAKOTONDRIINA Louis Pascal	Homme	Ankazomiriotra I	Ankazomiriotra	Moyen ouest
6	RANDRIANASOLO Faralahy	Homme	Ankazomiriotra I	Ankazomiriotra	Moyen ouest
7	RAVOMANANA Richard	Homme	Belanitra	Ankazomiriotra	Moyen ouest
8	LALAINA Farasoia Isabelle	Femme	Ankazomiriotra I	Ankazomiriotra	Moyen ouest
9	RAKOTONDRAINAIVO Jean Baptiste	Homme	Mazoto	Vinany	Moyen ouest
10	RAKOTONANAHARY Edmond	Homme	Mazoto	Vinany	Moyen ouest
11	KOPERATIVA Fanilo	Homme	Mazoto	Vinany	Moyen ouest
12	RABENANDRASANA Joseph	Homme	Ankamory	Vinany	Moyen ouest
13	RANDRIAMIANDRISOA Tokiniaina Ferdinand	Homme	Andromba	Vinany	Moyen ouest
14	RAKOTONIRINA Jean Noël	Homme	Ambatolahy	Vinany	Moyen ouest
15	RAKOTONDRAINAIVO Jean Louis Donné	Homme	Vinany	Vinany	Moyen ouest
16	RAFAMATANANTSOA Martin	Homme	Inanantonana	Inanantonana	Moyen ouest
17	RAKOTOMALALA Herisoa	Homme	Inanantonana	Inanantonana	Moyen ouest
18	RAZAFIMAHATRATRA Armand	Homme	Inanantonana	Inanantonana	Moyen ouest
19	RASOLOMANANA Justin	Homme	Ambatomainty	Inanantonana	Moyen ouest
20	RAKOTONJANAHARY Andriamiandrisoa Guy	Homme	Antanety Sud	Inanantonana	Moyen ouest
21	RAHANTARIMANANA Jacky Daniel	Homme	Mamoriomby	Fidirana	Moyen ouest
22	RAVELOMANANJAFY Hanta Jeannot	Homme	Mamoriomby	Fidirana	Moyen ouest
23	RAKOTOARIMANANA Daniel	Homme	Mamoriomby	Fidirana	Moyen ouest
24	RAKOTOMANANTSOA Modeste	Homme	Ambohibolakely	Fidirana	Moyen ouest
25	RAMANANDRAIBE Manampisoa Charlie	Femme	Fidirana	Fidirana	Moyen ouest
26	RANDRIAMANANTENA Jean Pierre	Homme	Soavina	Soavina	Moyen ouest
27	NARINDRANJANAHARY Fitolahy Edmond	Homme	Antohobe	Antohobe	Moyen ouest

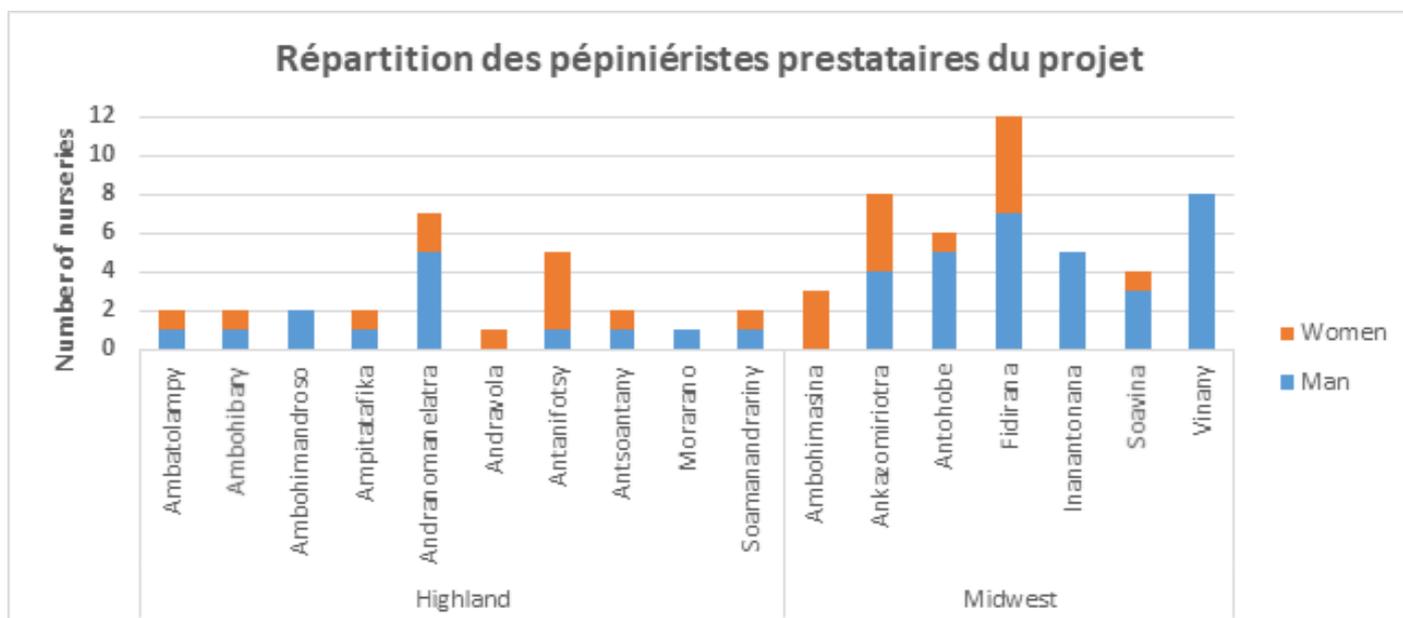
6 0,042€

N°	Nurseryman	Gender	Address	Commune	Area
28	RAVONIARISOA Maminirina Odette	Femme	Ambohimasina	Ambohimasina	Moyen ouest
29	RAVOLAHANITRINIAINA Herinarindra	Femme	Ambohimasina	Ambohimasina	Moyen ouest
30	MAHASOA Maxi Léa Liliane	Homme	Antampondravola	Fidirana	Moyen ouest
31	RABEMANANTSOA Augustin	Homme	Ankily	Fidirana	Moyen ouest
32	RASOLOMAMPIANINA Clémentine	Femme	Fidirana	Fidirana	Moyen ouest
33	RAIVOARISOA Meline Juliette	Femme	Fidirana	Fidirana	Moyen ouest
34	RATOLOJANAHARY Simone André	Homme	Itrafo/Morafeno	Fidirana	Moyen ouest
35	RANDRIAMANANTENA Jules	Homme	Antokofoana	Soavina	Moyen ouest
36	RAKOTO Philippe	Homme	Soavina	Soavina	Moyen ouest
37	RANOAVOMANANA Morasata	Homme	Korosovola	Antohobe	Moyen ouest
38	RAKOTONIAINA Solomon	Homme	Matieloana	Antohobe	Moyen ouest
39	RAFANJANIRINA Jeanne Philomène	Femme	Antohobe	Antohobe	Moyen ouest
40	BEHASIMBOLA Mahasaky	Homme	Soavina II	Antohobe	Moyen ouest
41	Ramahazomanana Jean Aimé François	Homme	Antanimarinal	Ambatolampy	Hautes terres
42	Randriamampiadana Pascal	Homme	Andriamingodana	Morarano	Hautes terres
43	Rasoarinarivo Odette	Femme	Ambinanibe	Andravola	Hautes terres
44	Rafalimanana Lala Jean	Homme	Analalava/Isody	Ambohimandroso	Hautes terres
45	RANDRIAMIHAJASOA Bruno	Homme	Mahaketraka	Ambohimandroso	Hautes terres
46	RAZAFINDRAVONY Laingo Maminirina	Femme	Masoandro	Ampitatafika	Hautes terres
47	RATOLOJANAHARY Njaka Mamisoa Aimé	Homme	Ampitatafika	Ampitatafika	Hautes terres
48	RAKOTOASIMBOLA Andrianantenaina Desiré	Homme	Andriantsilahy	Antanifotsy	Hautes terres
49	RASOAMAMPIONONA Honorine	Femme	Antemotra	Antanifotsy	Hautes terres
50	RAMANANJATOVO Jeannot Roger	Homme	Ambilona 1	Soamanandrany	Hautes terres
51	RAJAONARISON Noelinirina	Homme	Morarano I	Ambohibary	Hautes terres
52	RANDRIANARISOA Etienne	Homme	Ampangabe	Antsoantany	Hautes terres
53	RAZANAMASY Yvonne	Femme	Antsapanimahazo	Antsoantany	Hautes terres
54	ANDRIANAIVO Jean Christian	Homme	Andranotsara	Andranomanelatra	Hautes terres
55	RASOANANDRASANA Marie Odette	Femme	Fiadanana	Andranomanelatra	Hautes terres
56	RAKOTONDRANARY Roger	Homme	Andongambe	Andranomanelatra	Hautes terres
57	RATOVONJANAHARY Vonjiniaina	Homme	Tsararano	Andranomanelatra	Hautes terres
58	RAFANIMEZANTSOA Jean De Dieu	Homme	Andranomanelatra	Andranomanelatra	Hautes terres
59	Rakotondramary Roger	Homme	Andranomanelatra	Andranomanelatra	Hautes terres
60	Rasoanantenaina Theodile	Femme	Andranomanelatra	Andranomanelatra	Hautes terres
61	Rajaosafara Harimalala Ida Odette	Femme	Ambohibary	Ambohibary	Hautes terres
62	Andriamiantsoa Aimé Jean Michel	Femme	Antanety	Soamanandrany	Hautes terres
63	Ralaimidona Leonard Etienne	Femme	Antsahamaina	Antanifotsy	Hautes terres
64	Haingoharitiana Holiniana V.	Femme	Antemotra	Antanifotsy	Hautes terres
65	Vololoniaina Linah Herintsoa Safidy	Femme	Ambohimandroso	Soavina	Moyen ouest
66	Rasoanandrasana Ina Jocelyny Noro	Femme	Antanimarina	Ambatolampy	Hautes terres
67	Randrianotahianiaina Mamy Victor	Homme	Vinany	Vinany	Moyen ouest
68	Andriantsiferana Olivier	Homme	Soavina 2	Antohobe	Moyen ouest
69	Rasoamampionona Clementine	Femme	Fidirana	Fidirana	Moyen ouest
70	Rasoarimanana Myriame Isabelle	Femme	Fidirana	Fidirana	Moyen ouest
71	Kantonirina Fanoela	Femme	Marovitsika	Ambohimasina	Moyen ouest
72	Ranivonirina Olga Dauphine	Femme	Antanifotsy	Antanifotsy	Hautes terres

In short, the project worked with 72 nurserymen; which greatly exceeded the 20 initially planned. They are distributed as follows:

- 26 women and 46 men
- 26 in the highlands and 46 in the middle west

Graph 9: Distribution of the project's service provider nurseries



During the 3 years of the project, the young plants were subsidized. Nurserymen thus had a secure market. But, during the 2021/2022 campaign (extension period without additional cost), the project identified 20 nurseries who have always produced. They sold the young plants to the surrounding peasants, motivated to reforest. These 20 nurserymen therefore have a good chance of continuing their activities even if there will be no more projects. They will continue to produce small quantities calibrated according to the needs of the surrounding farmers. To help them in this mission, the project offered them small materials :

- two (2) wheelbarrows
- a 16 liter sprayer
- a 120 liter tank to produce liquid compost
- and, 4kg of plastic sheath

### III.1.3.2 Support adopting farmers in tree plantlets for reforestation

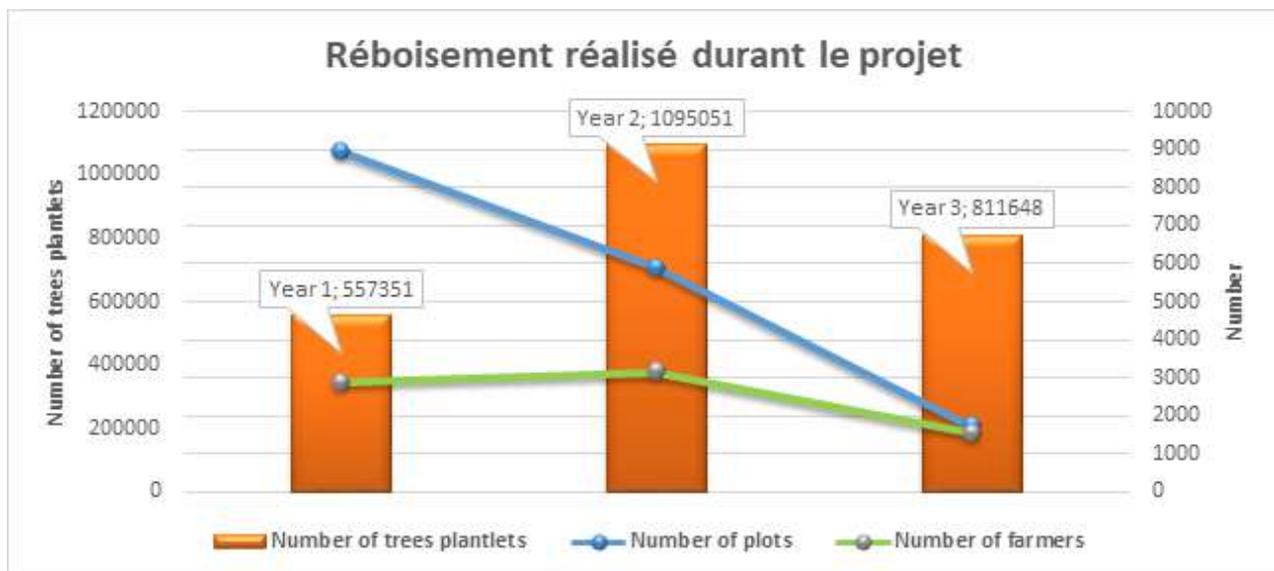
Table 18: Distribution of subsidized seedlings in the project intervention communes

Area/commune	Number of plots	Number of trees plantlets	Number of farmers	Women beneficiaries	% Women
Highlands	2132	746146	1437	481	33,5%
Ambatolampy	10	10245	9	4	44,4%
Ambohibary	193	38345	129	67	51,9%
Ambohimandroso	193	112915	118	24	20,3%
Ambohipihaonana	60	35475	44	7	15,9%
Ampitatafika	246	73295	189	60	31,7%

Andranomanelatra	592	176135	371	151	40,7%
Andravola	3	1980	1	0	0,0%
Antanifotsy	307	147645	240	77	32,1%
Antsoatany	321	37256	192	51	26,6%
Morarano	135	79910	87	22	25,3%
Soamanandrarinny	72	32945	57	18	31,6%
Midwest	14426	1717904	5311	1061	20,0%
Ambohimasina	364	74545	179	43	24,0%
Ankazomiriotra	4576	377127	1149	197	17,1%
Antohobe	1079	183022	714	166	23,2%
Fidirana	2692	339910	1145	225	19,7%
Inanantonana	1889	324855	807	170	21,1%
Soavina	423	137627	338	73	21,6%
Vinany	3403	280818	979	187	19,1%
<b>Total général</b>	<b>16558</b>	<b>2464050</b>	<b>6748</b>	<b>1542</b>	<b>22,9%</b>

For 3 years, the project subsidized forest seedlings. But, as we had already mentioned previously, during the extension period, we recorded nurseries who continued to produce young plants; and sell them to surrounding reforesters. Thus, by accumulating all the young plants planted during the project, we arrive at 2,464,050 plantlets. This result corresponds to 164% of the objective set in the project document.

Graph 10: Summary of reforestation actions carried out under the project



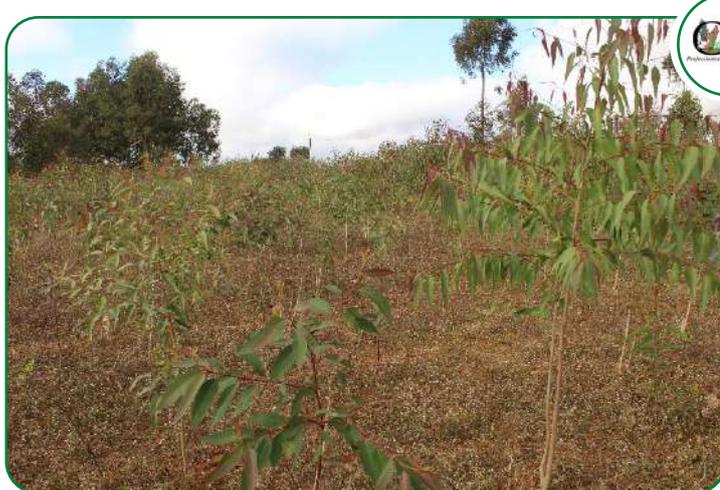
16,558 plots have thus been reforested. And 6,748 reforestation farmers are the direct beneficiaries. Admittedly, planting densities differ from one plot to another. In addition, among these installations, there were those that were made on the edge of the plots. But, if we take a standard spacing of 2m\*2m as a reference, we will have a planting density of 2,500 plantlets/ha. And, the realization of the project in this area will correspond, thus, to a wooded area of about 985ha.

The project proposed fast-growing forest species adapted to the areas of intervention. But, the choice of species to plant was made, in the end, according to the needs of the farmers.

Table 19: forest species used during the project

Étiquettes de lignes	Year 1	year 2	year 3	Extension	Grand total
Highlands	20 250	337 421	348 525	39 950	746 146
Eucalyptus Camaldulensis	20 250	2 700			22 950
Eucalyptus Citriodora		316 626	316 105	33 650	666 381
liquidambar		18 095	32 420		50 515
Pinus				3 300	3 300
Midwest	537 101	757 630	379 943	43 230	1 717 904
Acacia auriculiformis	2 983				2 983
Acacia mangium	363 169	700 565	378 262	30 940	1 472 936
Eucalyptus Camaldulensis	45 001			4 560	49 561
Eucalyptus Citriodora	102 999	57 065	1 681	4 030	165 775
Eucalyptus globulus	2				2
Eucalyptus robusta	22 947				22 947
Pinus				3 700	3 700
Garnd total	557 351	1 095 051	728 468	83 180	2 464 050

On the Highlands of Vakinankaratra, the project opted much more on *Eucalyptus citriodora*. We still wanted to promote other species such as Liquidambar, but in the absence of plant materials available, we stayed on Eucalyptus. This corresponds to the needs expressed by the majority of farmers.



Picture 30 : Very high survival rate of Eucalyptus citriodora plants in the commune of Ambohimandroso



Picture 31 : Liquidambar is of interest to farmers, but suffers on very poor land

But, in the Middle West of Vakinankaratra, we have prioritized *Acacia mangium*. It is a fast-growing legume that spreads naturally with seeds that can be carried by wind, runoff or other vectors. Indeed, small forests are forming around the old *Acacia mangium* plantations (for example a few *Acacia mangium* plants planted on the edge of plots on the GSDM training site in Ivory). Moreover, this species does not acidify the soil, and leaves open the possibility of recultivation later.



Picture 32: new plantation of *Acacia mangium* and *Cassia siamea* in the rural commune of Inanantonana

It should be noted that in the space of 4 to 5 years, reforestation can really modify a landscape. The plantations carried out during the MANITATRA 1 project are perfect examples. Indeed, in the Middle West, the difference is notable between the communes of intervention of MANITATRA 1 and the other communes of extensions for MANITATRA 2.



Picture 33 : Small drill from the natural regrowth of *Acacia mangium* grains from old plantations at the Ivory Site

Picture 34 : The reforestations carried out during MANITATRA 1 (2015) have become forests currently

Finally, the project team recommended the installation of low-input crops in association with forest seedlings. Cassava, peanuts and ground peas are ideal for this purpose, so that farmers can have food products for the first two (02) years when the trees are still small. This will largely offset the cost of installing trees that could not be exploited until several years later. In addition, these crops protect the tree seedlings from fire or the wanderings of zebus. Finally, species such as *Acacia mangium* will grow even faster by taking advantage of the care and maintenance done by farmers for food crops.



Picture 35 : Reforestation with *Acacia mangium* on a plot fitted out by vegetated contour lines with *Cajanus* + *Brachiaria marandu* (Realization of an adopter in Ambohibolakely - Fidirana)

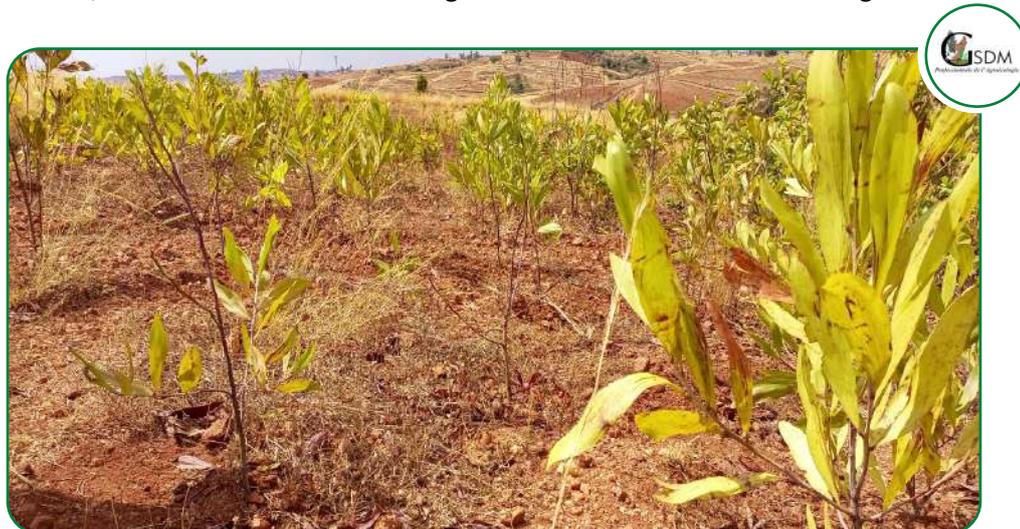
Picture 36: Reforestation with *Acacia mangium* carried out during the first year of the project associated with cassava (plot of an adopter in Ambohibolakely - Fidirana)

It should be noted that currently, the population in the project intervention areas is aware of the need to rebuild forest cover. On the one hand, the lack of lumber is sorely felt.

Then, the meteorological data showed that there is not really a significant difference in rainfall over the past 20 years. On the other hand, this rainfall is very poorly distributed throughout the year. There are very heavy rains. But, erratic rainfalls are also becoming more frequent. And, in this case, the absence of forest cover is very favorable to runoff, to the detriment of water infiltration to replenish groundwater.

In the end, the needs for young plants expressed by the farmers were clearly higher than this result. And, despite having increased the budget line allocated to this activity during the budget reallocation made each year, these were not yet sufficient.

If we analyze the table below, we see that the project had much more results in the middle west than in the highlands of Vakinankaratra. First, during the first year, the installation of the project framework was done during the start of the reforestation campaign. Thus, we immediately focused on the middle west based on the achievements of Manitra 1, particularly with regard to the producers of young plants. In this year, there was almost no reforestation action done on the highlands. In addition, the available area is much higher in the mid-west than in the highlands.



Picture 37 : Reforestation with *Acacia mangium* on heavily degraded land



Picture 38 : 3-year-old Cassia siamea, this fast-growing legume adapts very well to the Middle West of Vakinankaratra

### III.1.3.3 Support adopting farmers in fruit tree plantlets

Table 20: Project support for fruit growing

Area/commune	Number of trees plantlets	Number of farmers	Women	% Women
<b>Highlands</b>	<b>11 855</b>	<b>531</b>	<b>211</b>	<b>40%</b>
Ambatolampy	1 211	35	19	54%
Ambohibary	2 245	34	11	32%
Ambohimandroso	1 191	65	23	35%
Ambohipihaonana	470	41	11	27%
Ampitatafika	1 166	48	15	31%
Andranomanelatra	1 266	26	13	50%
Andravola	89	10	6	60%
Antanifotsy	1 221	61	19	31%
Antsoatany	1 310	43	22	51%
Morarano	1 561	164	70	43%
Soamanandrarinny	125	4	2	50%
<b>Midwest</b>	<b>4 579</b>	<b>418</b>	<b>138</b>	<b>33%</b>
Ambohimasina	314	28	16	57%
Ankazomiriotra	343	51	21	41%
Antohobe	458	44	13	30%
Fidirana	1 688	155	37	24%
Inanantonana	1 237	51	25	49%
Soavina	294	40	14	35%
Vinany	245	49	12	24%
<b>Grand total</b>	<b>16 434</b>	<b>949</b>	<b>349</b>	<b>37%</b>

Fruit trees in agroforestry should allow family farms to diversify production on the same plot, and to obtain significant periodic income. It is in this sense that we proposed, in the project document, to support the farmers in order to acquire robust and healthy young plants.

The project subsidized the seedlings at half price, but with a maximum of 1,250Ar/seedling<sup>7</sup>. However, the purchase of young fruit plants coincides with the rainy season (lean season). Farmers find it difficult to mobilize funds in their treasury in order to be able to support their contribution.

Table 21: support for the acquisition of young fruit plants

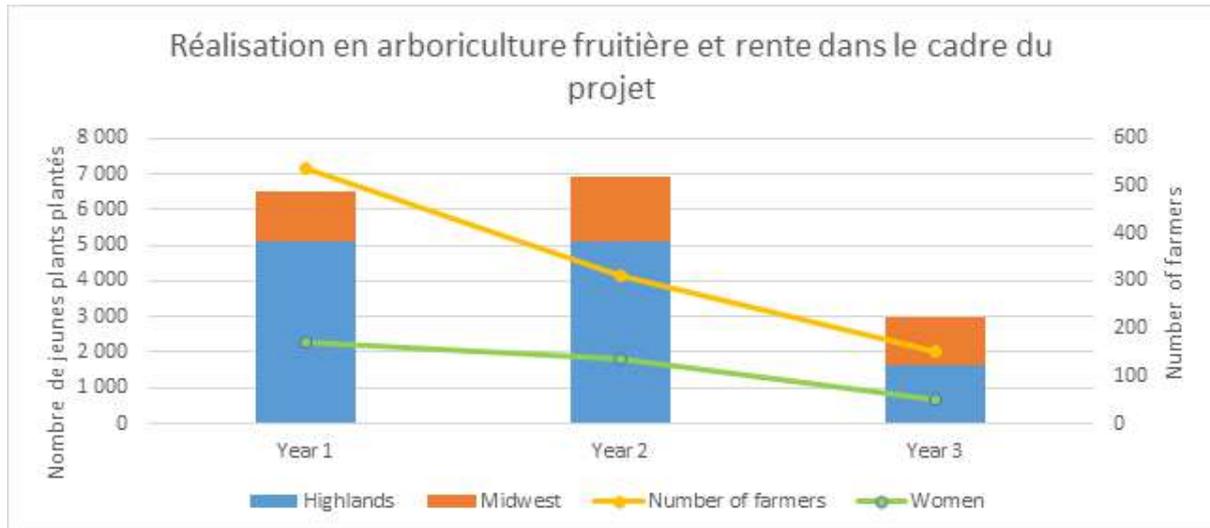
Year	Trees plantlets planted			Number of beneficiaries		
	Highlands	Midwest	Total général	Total	Women	% Women
Year 1	5 105	1 422	6 527	537	173	32,2%
Year 2	5 119	1 810	6 929	311	136	43,7%
Year 3	1 631	1 347	2 978	153	52	34,0%
<b>Overall</b>	<b>11 855</b>	<b>4 579</b>	<b>16 434</b>	<b>949</b>	<b>349</b>	<b>36,8%</b>

<sup>7</sup> 0,27€ per seedling

In short, the project had very little result in this activity. Indeed, during the project implementation period, we were able to facilitate the acquisition of 16,434 young fruit plants for 949 beneficiaries, including 349 women (i.e., 36.8%). This result corresponds to only 33% of the objective set in the project document.

It is also noted that 72% of the subsidized seedlings were planted in the highlands of Vakinankaratra. This is due to the proximity of the area to the national road n°7, facilitating the sale of the fruits.

Graph 11: Summary of support for the acquisition of young plants during the project implementation period



Picture 39 : Support in fruit plantlets, lemon Mayer.

#### III.1.3.4 Support adopting farmers in seeds of hedgerows

Table 22: Anti-erosion devices installed as part of the project

Area/commune	Number of plots	Achievement (m)	Number of farmers	Women	% Women
<b>Highlands</b>	<b>865</b>	<b>255 328</b>	<b>1 346</b>	<b>633</b>	<b>47%</b>
Ambatolampy	14	1 670	20	12	60%
Ambohibary	31	2 232	68	20	29%
Ambohimandroso	64	13 748	168	55	33%
Ambohiphaonana	47	20 360	93	40	43%

Area/commune	Number of plots	Achievement (m)	Number of farmers	Women	% Women
Ampitatafika	83	43 310	127	63	50%
Andranomanelatra	314	103 783	403	233	58%
Andravola	5	1 710	10	5	50%
Antanifotsy	104	44 450	189	80	42%
Antsoatany	53	5 740	98	33	34%
Morarano	147	17 825	155	89	57%
Soamanandrarinny	3	500	15	3	20%
<b>Midwest</b>	<b>631</b>	<b>268 333</b>	<b>1 219</b>	<b>432</b>	<b>35%</b>
Ambohimasina	92	35 875	128	67	52%
Ankazomiriotra	138	63 485	249	100	40%
Antohobe	129	35 626	235	91	39%
Fidirana	59	27 460	233	45	19%
Inanantonana	66	31 807	111	36	32%
Soavina	87	20 680	129	55	43%
Vinany	60	53 400	134	38	28%
<b>Total général</b>	<b>1 496</b>	<b>523 661</b>	<b>2 565</b>	<b>1 065</b>	<b>42%</b>

Hedges have several functions. Installed along contour lines, they limit water erosion. Then, they also serve as windbreaks for the crop inside the plot. In addition, the hedging of the plots also makes it possible to limit the animals damage, in particular with species not palatable by zebus such as the *Crotalaria sp.* However, due to a lack of reliable seed, we only used *Crotalaria gramihana* during year 1 of the project. In addition, the species promoted by the project are shrubby legumes that produce significant biomass for the production of various types of compost. With their very powerful root system, these legumes also improve soil structure and contribute to water infiltration. Finally, Tephrosia is also a repellent plant, which can be valued as *Ady gasy*<sup>8</sup>.



Picture 40 : Plot fitted out with contour lines planted with Cajanus (FFS from LF Alfred to Fidirana)

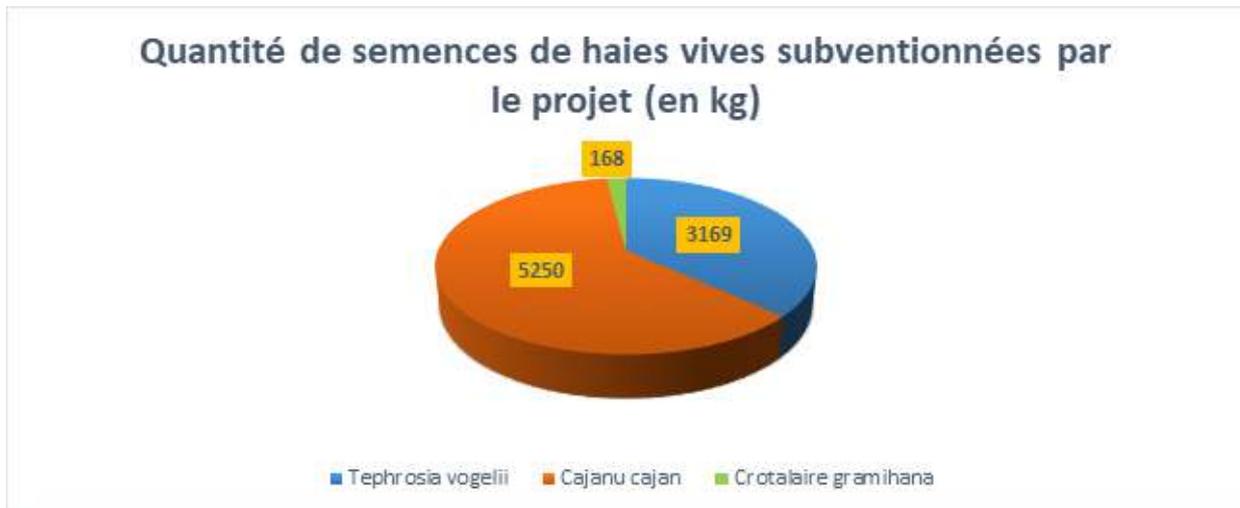


Picture 41 : hedges with Cajanus (Adoption at Tanetibe Toavala - Andranomanelatra).

But, as in the case of cover crop seeds, the project was also forced to introduce and subsidize specific seeds for living hedges.

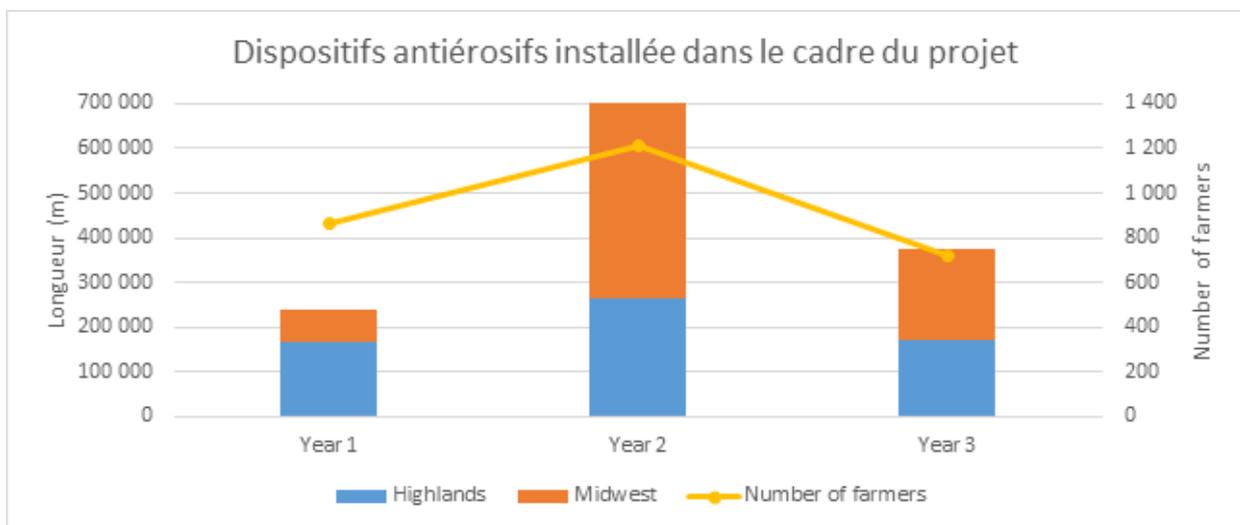
8 *Ady gasy* : technique of plant protection using only repellent plants or other biopesticides

Graph 12: Distribution of hedgerow seeds distributed by the project according to their species



We see that this practice is beginning to interest many people. Indeed, since the beginning of the project, 5,052 farmers have benefited from this type of seed. This represents 78% of the final objective of the project. In addition, 1,314,679 linear meters of living hedges (i.e. 131% of the project's final objective) were installed with these seeds. More than 50% of the realization of the project in this theme was done during the 2nd year.

Graph 13: Récapitulatif des accompagnements pour l'aménagement des tanety par l'équipe du projet



Like reforestation, this practice also makes it possible to mark landscapes. It is clearly visible during the dry seasons. Indeed, hedging and living hedges are the plants that remain green during this period. Generally speaking, hedging and/or living hedges were the practices most adopted by the farmers supervised by the project. Indeed, apart from the advantages of these practices that we have already listed above, farms are more motivated to use *Cajanus cajan* by these seeds which are edible.

Table 23: Types of devices installed according to the areas of intervention

	Achievement (m)
Highlands	605 279
Countour lines	1 450
Hedges/living hedges	603 829
<b>Midwest</b>	<b>709 400</b>
Countour lines	195 627
Hedges/living hedges	513 773
<b>Total général</b>	<b>1 314 679</b>

On the other hand, we had very little result in terms of landscaping along the contour lines. It is in the middle west, in particular, that the situation is very critical. The term contour line is already familiar to most farmers. However, their practice is the exact opposite of the principles of contour lines. Indeed, these peasants think that the contour lines are channels installed on the tanety to facilitate the evacuation of water. Which is, immediately, the starting point of landslides and the appearance of *lavaka*<sup>9</sup>. One of the challenges set by the project was to correct this practice; because the anti-erosion devices installed along the level curves should slow down rainwater and encourage its infiltration to replenish the groundwater. But, at the end of the project, we were only able to put in place models of appropriate systems, which should serve as a point of reference for other farmers.



Picture 42: Landscaping of the plots with contour lines well done

9 Lavaka : gully erosion



Picture 43 : Cajanus cajan hedge associated with Brachiaria marandu in the Ankily - Fidirana watershed



Picture 44 : Contour lines in the adopter plots, at Tsinjoarivo - Soavina.

Picture 45 : Hedgerow in tephrosia - application plots of CEG Tsarasanandro, Antokofoana - Soavina.

#### III.1.4. Promote other best practices

There are many good agricultural practices that the Manitatra 2 project disseminates in its areas of intervention:

- the promotion of biocidal or repellent plants based on the experiences of BVPI, GSDM and CEFFEL;
- the different types of composting with the introduction of biocidal or repellent plants, including vermicompost, classic compost, 7-day compost, liquid compost;
- the improvement of cowsheds (or breeding habitats in general) in order to optimize the production of quality organic manures, and to collect manure;
- the installation of fodder plots in order to improve milk production in the Region based on the experiences of FIFAMANOR;
- the introduction of improved varieties of sweet potato with orange flesh in order to reduce the problem of food insecurity based on the experiences of FIFAMANOR;
- the development of rice-fish farming based on the experiences of APDRA

Table 24: Best practices disseminated by the project

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
1.4.1	Provide seeds of mucuna, crotalaire, others plants used as biopesticides/repellent plants (based on the experiences of BVPI, GSDM, CEFFEL)	Number of farmers provided seeds of mucuna, crotalaire, others plants used as biopesticides/repellent plants	5 500	1 607	2 233	1 326	0	5 166	94%
1.4.2	Provide worms for composting	Quantity of provided worms for composting (kg)	10	10	0	0	0	10	100%
		Number of adopters	250	46	261	401	14	722	289%
	Compost 7 days	Number of adopters	200	60	52	9	0	121	61%
	Compost 45 days	Number of adopters	200	63	115	74	63	315	158%
	Classic compost	Number of adopters	600	202	438	221	115	976	163%
	Liquid compost	Number of adopters	250	65	153	85	24	327	131%
1.4.3	Participate to improve cowsheds for quality manure and composting	Number of dairy farmers benefiting improved cowsheds for quality manure, for better of dairy cows and for composting	300	1	152	5	54	212	71%
1.4.4	Provide seeds of forage (grasses and legumes and off season forage...) and food safety plants (orange flesh potatoes) based on experiences of FIFAMA-NOR	Quantity of Oat seeds provided (kg)	1 620	0	1 470	0	0	1 470	91%
		Quantity of Ryegrass seeds provided (kg)	635	0	485	150	0	635	100%
		Quantity of Chloris seeds provided (kg)	150	0	0	0	0	-	0%
		Quantity of Brachiaria seeds provided (Cutting)	125 000	0	0	30 000	0	30 000	24%
		Quantity of Pennisetum seeds provided (Cutting)	6 250	0	0	36 250	0	36 250	580%
		Quantity of Fodder radish seeds provided (kg)	160	0	10	150	0	160	100%
		Quantity of Corn cv pannar seeds provided (kg)	75	0	0	0	0	-	0%
		Quantity of Orange-fleshed sweet potato creeper provided (Cutting)	16 300	1 900	6 400	7 000	4 000	19 300	118%
	Number farmers provided seeds of forage and food safety plants	2 000	285	578	700	0	1 563	78%	
1.4.5	Provide fry and other equipment for farmers for fish raising in the paddy field or in ponds (base on the experiences of APDRA and CIRAD)	Number of farmers provided equipment and fry for fish raising in the paddy field or in ponds	150	0	316	243	0	559	373%

During the project implementation period, 5,166 farmers benefited from plant materials subsidized by the project. This represents 94% of the project objective.

Actions within the framework of support for the management of organic materials have been accentuated by the project supervision mechanism. Organic manure production is of great interest to local producers. The reasons for this change in behavior are generally : the good quality of these improved organic manures; and the high cost of chemical fertilizers. Thus, vermicompost, classic and 45-day compost, and liquid compost are the most adopted by farmers in the areas.

Afterwards, the project proposed to participate in the improvement of the barns in order to produce good quality manure. A total of 212 breeders benefited from technical and financial support from the project in this area. It should be noted that on average, the project provided 150,000Ar<sup>10</sup> for breeders who wanted to improve their cowshed.

Furthermore, as part of support for improving milk production in the Region, the project distributed various varieties of fodder seeds during this semester. In addition, 19,300 kg of orange-fleshed sweet potato<sup>11</sup> vines were made available to supervised farmers in order to fight against food insecurity. In total, 1,563 beneficiaries of these different plant materials were counted. This represents 78% of the final objective.

Finally, as part of the promotion of rice-fish farming, the project collaborated with the ATDRM association (association of technicians involved in the AMPINA project implemented by APDRA). For this, the project offered a subsidy of half the price of fingerlings. Since the start of the project, 559 farmers have benefited from this support. The survey carried out by the project team revealed an average weight of fish varying between 200g to 250g. This constitutes a considerable increase in income at the scale of the family farm.

#### III.1.4.1 Provide seeds of plants used as bio-pesticides and repellent plants

The objective set by the project in this theme was to promote biocidal or repellent plants in the methods of combating various bioaggressors in order to reduce the use of chemical treatments as much as possible. At this stage, we are not yet going to claim to ban the use of pesticides. Because there is still a lot of research to be done to get there. But, the idea was to adopt coherent agricultural practices in order to reduce the pressure of bioaggressors; and to use chemical treatments only in this amount of pesticides used. We would no longer use pesticides when the surrounding ecosystem becomes much more balanced. It is in this sense that we say that agroecology is the transition to organic farming.

In addition, the project also found positive impacts of mucuna against the proliferation of Fall Armyworms<sup>12</sup> (FLA). Indeed, numerous observations on side-by-side plots have shown **that Spodoptera frugiperda moths do not lay their eggs on maize plants with already well-developed mucuna**. While maize plots without mucuna are heavily infested.

To reduce the use of pesticides, the project has promoted different types of biocidal or repellent plants, in particular mucuna, crotalaria, tephrosia, tansy, wormwood and comfrey. The project also made these plant materials available to farmers. And, in total, 5,166 beneficiary peasants were registered. This represents 94% of the target described in the project document.

In short, the tansy, comfrey and wormwood plants were supplied from the CEFFEL Andranobe center. This was first delivered to the lead farmers and some farmers to serve as a nursery; before spreading them in the areas. These species are used as manure or mixed in the liquid compost in order to reduce the use of chemical treatments as much as possible. Comfrey manure is used in prevention and treatment against late blight (*Phytophthora infestans*) on potato or tomato plots. Absinthe manure helps fight against aphids. Tansy manure is very effective against red mites. Finally, tephrosia manure gives good results against cabbage Plutella.

10 33€

11 Orange flesh sweetpotatoes are specifically meant for undernourished children as they are rich in A vitamin ; furthermore are non photoperiodic varieties and early ones (90 days).

12 Spodoptera frugiperda (Noctuidae)



Picture 46 : Liquid compost at level of a farmer supervised by the project at Antemotra - Antanifotsy.



Picture 47 : Training of the lead farmers to use biocidal/repellent plants, with the CEFFEL center

### III.1.4.2 Organic matters management

One of the outstanding contexts of the Region is the difficulty in the management of fertility. On the Highlands, farmers are already in the habit of bringing organic matter to the crop fields. But their qualities do not allow short-term use by cultivated plants. Indeed, farmers generally mix park manures with local grass (*Aristida sp*) which, being a very lignified plant, decomposes very slowly. In the Middle West, the decline in livestock herds combined with inappropriate zebu parks are resulting in a low availability of quality farmyard manure.

#### Framed 7: Management of organic matter in the project intervention areas (RABARIJHON Rivo consulting group, Final evaluation of the Manitatra 2 project, 2021)

Table 25: Pourcentage des agriculteurs adoptants des différents types de compost dans les deux zones

	Zone		
	Highlands	Mid West	avg
<b>Classic compost (conventional compost)</b>	42%	43%	43%
<b>Liquid compost</b>	8%	5%	6%
<b>7 days compost</b>	9%	3%	5%
<b>Lombricompost</b>	7%	7%	7%
<b>Organic manure</b>	52%	47%	49%

Conventional compost remains the most practiced by 42% of the farms overall if it was only at 24% during the mid-term evaluation. In the space of 12 months, the project was able to increase the rate of adoption of this practice by 18 points. This trend stems from the fact, on the one hand, that cattle breeding is quite important in both areas; and on the other hand, the ripple effects of other members of the community to practice it by seeing the successful experiences of project beneficiaries. The production of organic manure is a common practice on farms. Even farms that do not have cattle try to produce compost from available biomass and purchased or collected manure. This movement confirms the perception of farmers on the unavoidable need for organic fertilizers to ensure reasonable production. In addition, chemical fertilizers are expensive, so producers are forced to resort to composting. This inclination is only limited by insufficient biomass and manure.

However, the Manitatra 1 project has enabled us to appreciate the advantages of the practice of vermicompost. This practice presents itself very well as being a relevant solution in the face of this lack of organic matter, whether in quantity or quality. And as planned in the activities in the Manitatra 2 project, we delivered 10kg of decomposing worms<sup>13</sup> to promote this technique in its areas of intervention. Each swath of vermicompost set up becomes a production unit for these decomposer worms in order to increase the number of adopters of this technique.

But apart from vermicompost, the Manitatra 2 project also continues to raise awareness about the practice of other types of composting. Classic compost is still the most adopted. Furthermore, after consultations and collaboration with CEFFEL, the project also popularizes liquid composts. This technique is very easy to do. All you need is a container, water, zebu dung, and green leaves. And, to have other advantages, apart from the supply of fertilizing elements for the crops, biocidal or repellent plants are incorporated into the mixture to reduce the attack of bioaggressors.

a. Vermicomposting

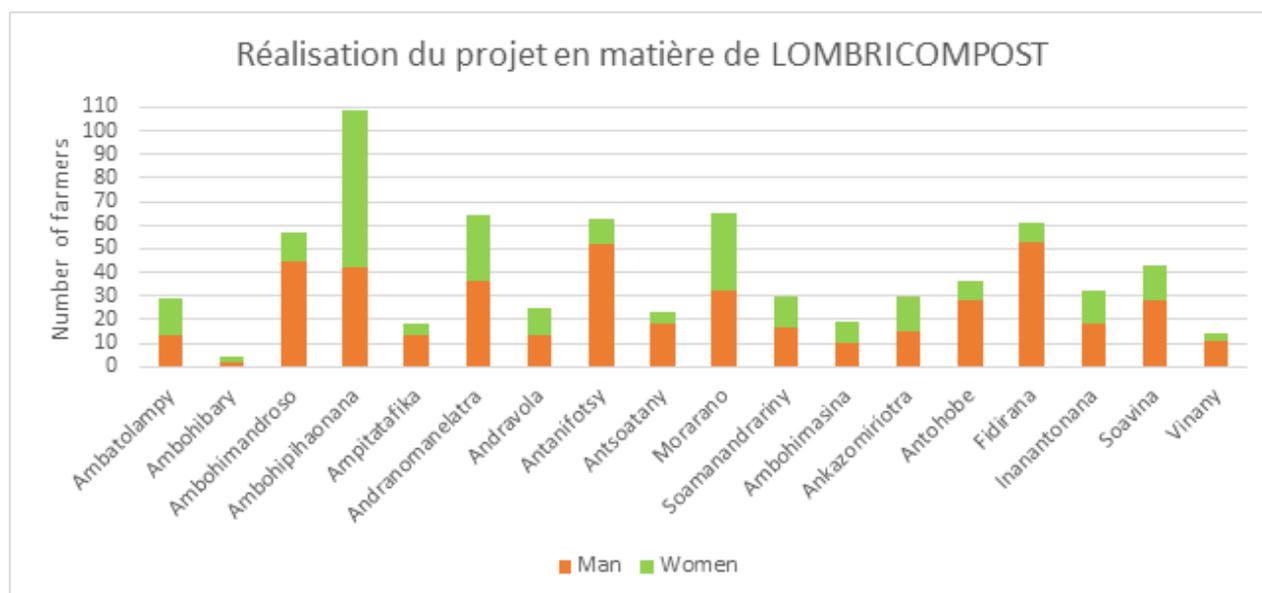
Table 26: Practice of vermicompost

Area/commune	Number of farmers	Women	% Women
<b>Highlands</b>	<b>487</b>	<b>204</b>	<b>42%</b>
Ambatolampy	29	16	55%
Ambohibary	4	2	50%
Ambohimandroso	57	12	21%
Ambohipihaonana	109	67	61%
Ampitatafika	18	5	28%
Andranomanelatra	64	28	44%
Andravola	25	12	48%
Antanifotsy	63	11	17%
Antsoatany	23	5	22%
Morarano	65	33	51%
Soamanandrarinny	30	13	43%
<b>Midwest</b>	<b>235</b>	<b>72</b>	<b>31%</b>
Ambohimasina	19	9	47%
Ankazomiriotra	30	15	50%
Antohobe	36	8	22%
Fidirana	61	8	13%
Inanantonana	32	14	44%
Soavina	43	15	35%
Vinany	14	3	21%
<b>Total général</b>	<b>722</b>	<b>276</b>	<b>38%</b>

Vermicompost is one of the practices that interests many farmers in the area. The reduction in expenses related to the cost of chemical fertilizers is the main cause. Indeed, this practice has already been developed during the Manitatra 1 project. And during the surveys carried out by the team at the beginning of Manitatra 2, nine (09) farmers were counted who continued to produce vermicompost. Then, at the end of March 2019, the project introduced 10 kg of decomposing worms (*Eisenia foetida*) to 13 farmers. Afterwards, the decomposer worms are transmitted from farmer to farmer.

13 *Eisenia foetida*

Graph 14: Distribution of farmers initiated by the project on vermicompost production



During Manitatra 2, 722 new adopters adopted the practice of vermicompost. ; i.e. 289% of the final objective. Off-season crops, rainfed food crops and irrigated rice nurseries are the main destinations for these organic manures currently.

Table 27: Knowledge of practices and adoption in the different areas surveyed

Area	Commune	Weighted total	Knowledge of vermicompost		Practice of vermicompost	
Mid West	Fidirana*	1287	694	54,0%	70	5,4%
	Inanantonana*	973	398	40,9%	27	2,8%
	Soavina	520	308	59,3%	72	13,9%
	Vinany*	787	290	36,8%	18	2,3%
	Ensemble	3567	1690	47,4%	187	5,2%
Highlands	Ampitatafika	885	516	58,3%	39	4,5%
	Andranomanelatra	977	798	81,7%	59	6,0%
	Morarano	753	288	38,3%	54	7,2%
	Ensemble	2615	1602	61,3%	152	5,8%
<b>Ensemble</b>		<b>6182</b>	<b>3292</b>	<b>53,3%</b>	<b>339</b>	<b>5,5%</b>

Source: RAHARISON Tahina et al, 2022, vermicompost in practice: adoption and adaptation by the family farms of Vakinankaratra, *Journal de l'Agroecology* n°14, 2022, GSDM

On reading this table, 53.3% of EAF know the practice of vermicompost. And only 5.5% actually practice it. At first glance, this adoption rate seems very low. But, reduced to the scale of the population, and taking into account the short period of supervision of the project on this practice, we can already conclude the dynamism on the adoption of this practice is well underway. We left with a small quantity of worms (4 and 10 kg subsidized successively by the Manitatra 1 and 2 project). But, currently, these worms are already being transmitted from one farm to another.

Table 28: Vermicompost practices according to the supervision (or not) of the project

Areas	Project Support	Adoption Vermicompost	Weighted number	%
Moyen Ouest	With project support	Non adopters	2664	98,3%
		Practice of vermicompost	46	1,7%
		Overall	2710	100,0%
	Supported by MANITATRA 2 project	Non adopters	715	83,5%
		Practice of vermicompost	142	16,5%
		Overall	857	100,0%
Highlands	With project support	Non adopters	1984	98,1%
		Practice of vermicompost	39	1,9%
		Overall	2023	100,0%
	Supported by MANITATRA 2 project	Non adopters	479	81,0%
		Practice of vermicompost	113	19,0%
		Overall	592	100,0%
Overall	With project support	Non adopters	4648	98,2%
		Practice of vermicompost	85	1,8%
		Overall	4733	100,0%
	Supported by MANITATRA 2 project	Non adopters	1195	82,5%
		Practice of vermicompost	254	17,5%
		Overall	1449	100,0%

Source: RAHARISON Tahina et al, 2022, vermicompost in practice: adoption and adaptation by the family farms of Vakinankaratra, *Journal de l'Agroecology* n°14, 2022, GSDM

The vermicompost technique spread far beyond the project. Indeed, we see in the table above, adoptions in areas without projects; even if the result is low compared to the project intervention areas.



Picture 48 : Swath (vermicomposters) made with different local materials (Ankily - Fidirana)



Picture 49 : Razafindrakoto Emilson (Dadakoto), a farmer supervised in Antemotra - Antanifotsy continues to increase his production unit to 25 swaths at the moment

In addition, a difference in the appropriation of vermicompost was also noted according to the types of exploitation. Indeed, large farms are able to take risks to test the practice.

*Framed 8: Adoption du lombricompost suivant les types d'exploitation (RAHARISON Tahina et al, 2022, le lombricompost dans la pratique: adoption et adaptation par les EAF de Vakinankaratra, Journal de l'Agroécologie n°14, 2022)*

A multidimensional statistical analysis made it possible to establish a typology of agricultural holdings based on a few structural variables, including: surface areas of tany/lowlands, capital in buildings and agricultural equipment, animals (draft zebus, dairy cows, pigs ), off-farm income, age of the head of the farm (CE) and the highest level of education between the CE and his spouse. In a very classic way, and to keep it simple, three types of family farms (EAs) have been selected: small EAs, medium EAs and large EAs.

It is important to give the main characteristics of the EAs to better understand the elements of the results, particularly in terms of the adoption of this practice. We show above all the characteristics linked to the Agricultural area (SAU), number of zebus, activities external to the EA as well as the use of external labor (temporary and permanent).

It should be noted that the structures of the EAs are different in the two zones.

Table 29 : Characteristics of EAs types in each zone

Mid West	1 Small farms		2 Medium farms		3 Large farms	
	avg	CV	Avg	CV	Avg	CV
Agricultural area SAU (are)	106	81%	168	80%	395	69%
Number of cattle	2	122%	2	113%	5	82%
Total off-farm income (Ar)	279 944	210%	1 015 979	163%	3 066 159	103%
Off-farm agricultural income (Ar)	705 948	70%	131 315	165%	120 125	158%
Total value of temporary labor (Ar)	166 454	138%	366 028	97%	1 373 081	74%
Total value of permanente labor (Ar)	35 884	457%	64 429	346%	991 466	67%

Highlands	1 Small famrs		2 Medium farms		3 Large farms	
	avg	CV	Avg	CV	Avg	CV
Agricultural area SAU (are)	40	71%	87	56%	223	66%
Number of cattle	1	144%	3	60%	4	90%
Total off-farm income (Ar)	1 041 699	142%	1 751 287	154%	3 635 771	161%
Off-farm agricultural income (Ar)	683 002	103%	332 678	140%	58 574	334%
Total value of temporary labor (Ar)	170 998	141%	383 172	88%	1 292 181	47%
Total value of permanente labor (Ar)	9 435	1053%	56 841	441%	733 902	159%

Thus, the levels of adoption according to these different types of EAs are given in the table below.

Table 30 : Adoption suivant les types family farms (EAs)

		Non adopters		Adopters	
		Weighted number	%	Weighted number	%
Mid West	Small family farms	1907	96,2%	74	3,8%
	Medium family farms	1233	94,6%	71	5,4%
	Large Family farms	233	84,6%	42	15,4%
	Overall avg	3373	94,7%	187	5,3%
Highlands	Small family farms	1948	94,9%	105	5,1%
	Medium family farms	459	94,0%	29	6,0%
	Large Family farms	56	76,6%	17	23,4%
	Overall avg	2463	94,2%	152	5,8%

\* A few EAs were discarded to produce the typology, which explains the small difference in the total number of EAs

The rate of adoption of vermicompost practices is much higher among large farms with 17% (15% in the Middle West and 23% in the Highlands). The adoption percentage drops to around 5% for medium and small EAs (lower among small EAs) while these two types represent 94% of Vakinankaratra EAs (Small: 65.3%, Medium: 29%, Large : 5.7%). This difference is to be linked to the investment capacity of the large farms, but also to the availability of labor and especially manure within the farm. The large EAs have on average more zebus and/or dairy cows (case of the Highlands).



Picture 50 : Vermicompost continues to attract many adopters to the Vakinankaratra Highlands



Picture 51: Dadakoto vermicompost drying unit in Antemotra



Picture 52 : Vermicompost at level of the FFS of MINO (lead farmer), at Ambohitrinibe – Ankazomiriotra.



**Framed 9: Testimony of Dadakoto, one of the reference farmers in the Region on the production of vermicompost**

**RAZAFINDRAKOTO Emilson**  
*(known as Dadakoto)*  
**74 years old**  
**Antemotra**  
**Commune Antanifotsy**  
**District Antanifotsy**  
**Région VAKINANKARATRA**



*“vermicompost, a practice that made me switch to organic farming”*

“Originally from the Commune of Antanifotsy, I have seen the reduction in agricultural productivity over the years. Previously, it suffices to introduce the seeds into the soil and good yields are obtained. I have 13 children. And yet, it was not too difficult for me to feed them. With agricultural and livestock products, I was able to buy land each year.

But, currently there are so many problems to overcome in order to be able to harvest. With climate change, we no longer know when to sow. Weeds grow so fast and increase loads. In recent years, army worms have appeared; and destroy all the cornfields. In addition, soil fertility declines from year to year. My children have an average of 6 children. And they have a much harder time supporting themselves than I do, in time, with them.

On tanety, I focus mainly on the cultivation of corn, upland rice, and beans. Despite the addition of chemical and organic fertilizing elements, the yield remains average, even low... 800 kg/ha for upland rice. Then, the project began its interventions in the area. He had chosen one of my neighbors to act as his relay. As a result, there were many people in our villages who came to ask questions about the activities of the project...but not me! I was a very suspicious person; and even towards my neighbours. Two months later, one of the project technicians also came to live with us. But, I continued to observe from afar what is happening. In April 2019, I heard that the project relay farmer in our fokontany was starting to raise earthworms. The news was spread very quickly, because it was something little known to the villagers. A few days later, I expected that it was not earthworm farming but a new technique for producing quality organic manure. With my 800kg/ha of rainfed rice on tanety, it bothered me a bit...but I’m still waiting. At the beginning of June 2019, I did something that I was not used to doing... I opened myself to others; I was visiting the

Lead farmer of the project in our village. I asked him if this technique of producing organic manure with earthworms was serious. He hadn't said anything...but he had taken me to see his production. The near-composts that were in the vermicomposter began to decompose. And, I immediately said to myself... it is really possible. I asked him to get me these special verses. But he told me that the production was still recent; and that the population of worms in the vermicomposter was not yet sufficient to be shared. So, I went home to start making two vermicomposters of 1m\*3m\*0.7m each. The Lead Farmer had helped me prepare the near-compost, while waiting for the worms. At the end of July 2019, the Lead Farmer had his first production. The quality of the manures was immediately visible to the eye. He then gave me 500g of this special worm, which I introduced into my production unit.

*During the 2019-2020 campaign, I prepared a small plot of 4are to put rainfed rice there. I had not brought any other fertilizations, apart from 16kg of vermicompost (400kg/ha) 120kg of farm manure (3T/ha). The result was spectacular! The project had organized numerous visits there; and all the people who had seen the rice vegetation on the eve of the harvest were flabbergasted. And I continued to open up more and more to others! I was able to harvest 212kg of paddy at the end, i.e. 5.3T/ha.*

*Currently, I have 30 vermicomposters of different sizes; which gave me 1.5T vermicomposts per month. I mobilize 2 permanent workers for production. I no longer use chemical fertilizers since my first production of vermicompost. With park manure, I always bring 400kg/ha of vermicompost to all my crops; whether on tanety or in the lowlands. Last year (2020-2021 campaign) my average rainfed rice yield was 4.5T/ha...nothing to do with the 800kg/ha of 3 years ago.*

*I currently sell a lot of vermicompost. For 2 years, I have been able to sell 15T of vermicompost at 1,200<sup>14</sup>Ar per kilo. This price is relatively high compared to that of other producers. But, customers appreciate the fact that my products have a low moisture content. For this, I made a small building to properly dry my vermicomposts. In addition, the exchange visits organized by the project and the distribution of technical films in the E-see magazine program ensure my publicity.*

For 2 years, I have been able to buy 3ha of tanety and 2 heads of zebus. But my greatest achievement remains the fact that a very reserved and isolated illiterate man like me was finally able to open up to others.

b. Compost 7 days

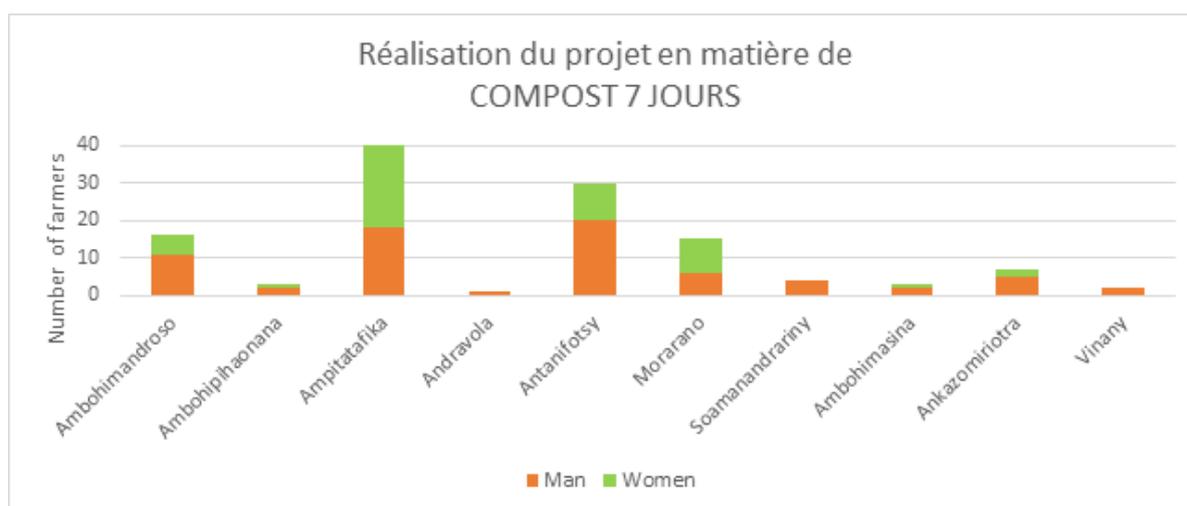
Table 31: Practice of compost 7 days

Area/commune	Number of farmers	Women	% Women
<b>Highlands</b>	<b>109</b>	<b>47</b>	<b>43%</b>
Ambohimandroso	16	5	31%
Ambohipihaonana	3	1	33%
Ampitatafika	40	22	55%
Andravola	1	0	0%
Antanifotsy	30	10	33%
Morarano	15	9	60%
Soamanandrarinny	4	0	0%
<b>Midwest</b>	<b>12</b>	<b>3</b>	<b>25%</b>
Ambohimasina	3	1	33%
Ankazomiriotra	7	2	29%
Vinany	2	0	0%
<b>Total général</b>	<b>121</b>	<b>50</b>	<b>41%</b>

14 0,26€ kg

The 7days compost, as its name suggests, makes it possible to produce very good quality organic manure for seven (7) days only. Generally, it is farmers who do a lot of market gardening who adopt this technique. Indeed, the availability of rumen juice, being the essential component of the activator, limits the adoption of this technique in all project areas. In addition, this rumen juice can be used in the manufacture of the activator a few minutes after the slaughter of the zebu. This explains the fact that there are more farmers producing 7-day compost in the Highlands (presence of killings and frequent slaughter of zebus) than in the Middle West. However, the activator can be stored and multiplied as needed. Thus, farmers in remote areas can try to acquire it to produce 7d compost.

Graph 15: Distribution of farmers initiated by the project on compost production 7 days



In total, the project worked with 121 farmers for the production of Compost 7 days. This result corresponds to 61% of the final objective.

c. Compost 45 days

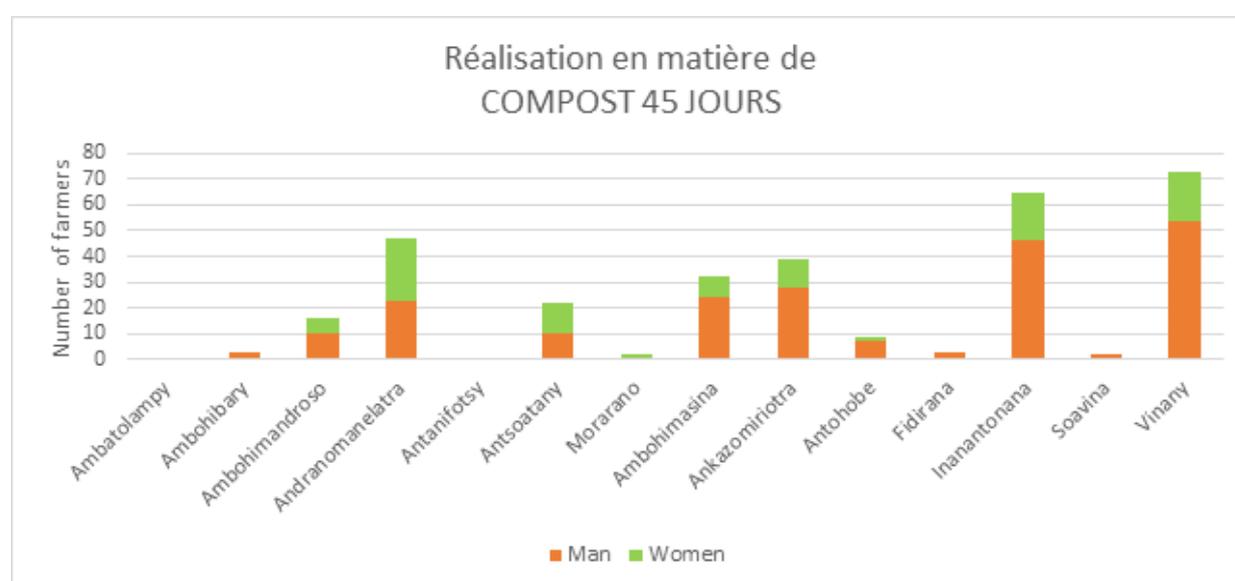
Table 32: Practice of compost 45 days

Area/commune	Number of farmers	Women	% Women
<b>Highlands</b>	<b>94</b>	<b>43</b>	<b>46%</b>
Ambatolampy	1	0	0%
Ambohibary	3	0	0%
Ambohimandroso	16	6	38%
Andranomanelatra	47	24	51%
Antanifotsy	1	0	0%
Antsoatany	22	12	55%
Morarano	2	1	50%
Vinany	2	0	0%
<b>Midwest</b>	<b>221</b>	<b>59</b>	<b>27%</b>
Ambohimasina	32	8	25%
Ankazomiriotra	39	11	28%
Antohobe	9	2	22%
Fidirana	3	0	0%

Area/commune	Number of farmers	Women	% Women
Inanantonana	65	19	29%
Soavina	2	0	0%
Vinany	71	19	27%
<b>Total général</b>	<b>315</b>	<b>102</b>	<b>32%</b>

The manufacturing processes of Compost 45d are very similar to those of classic compost, but with more frequent turning. In addition, during the preparation, we try to cut all the raw materials into very small pieces so that the decomposition is as fast as possible. During the project implementation period, 315 adopters were recorded, including 102 women (32%) who produced this type of compost. This represents 158% of the final objective of the project.

Graph 16: Distribution of farmers initiated by the project on compost production 45 days



d. Classic compost

Table 33: Practice of classic compost

Area/commune	Number of farmers	Women	% Women
<b>Highlands</b>	<b>451</b>	<b>220</b>	<b>49%</b>
Ambatolampy	8	2	25%
Ambohibary	30	16	53%
Ambohimandroso	9	1	11%
Ambohipihaonana	12	3	25%
Ampitatafika		19	39%
Andranomanelatra	161	103	64%
Andravola	6	2	33%
Antanifotsy	62	18	29%
Antsoatany	61	26	43%
Morarano	32	21	66%

Area/commune	Number of farmers	Women	% Women
Soamanandriny	21	9	43%
<b>Midwest</b>	<b>525</b>	<b>160</b>	<b>30%</b>
Ambohimasina	9	4	44%
Ankazomiriotra	76	24	32%
Antohobe	206	82	40%
Fidirana	118	16	14%
Inanantonana	19	8	42%
Soavina	80	22	28%
Vinany	17	4	24%
<b>Total général</b>	<b>976</b>	<b>380</b>	<b>39%</b>

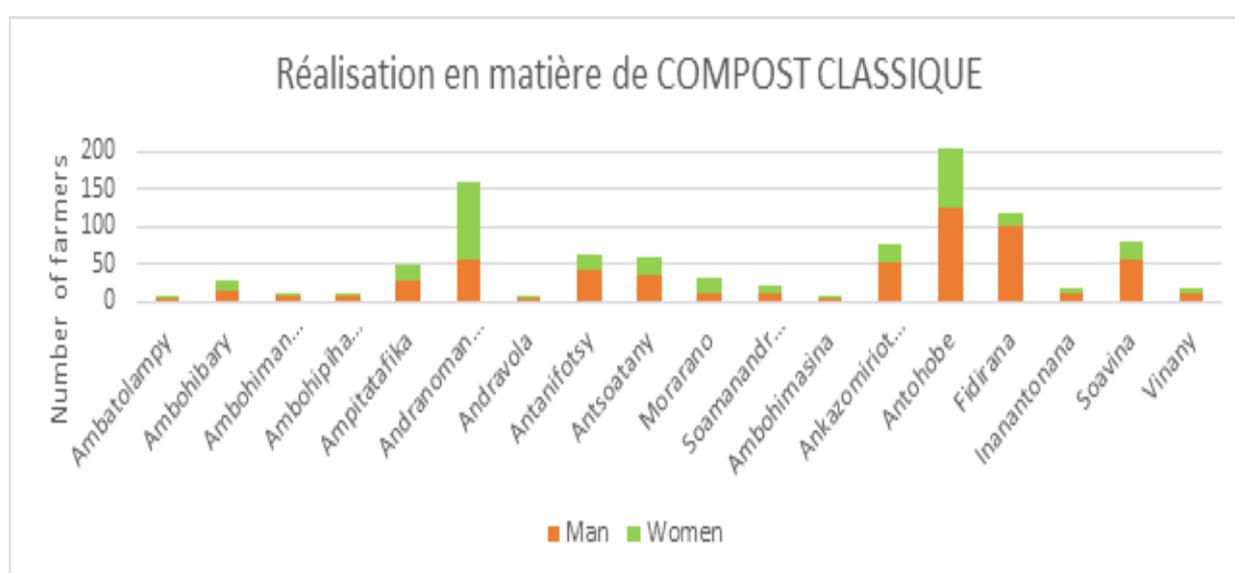


Classic compost is much easier to make. However, the decomposition time of the constituent materials is longer (about 3 months). In addition, the materials needed to make them are available everywhere: dry and green materials mixed with cattle manure. This is why it is the most adopted organic manure improvement practice in the area.

During year 2 of the project, the project team supported 640 new adopters, including 228 women (36%) in the production of conventional compost. This result at the end of June 2020 corresponds to 107% of the objective for year 2 of the project.

Picture 53 : Training on traditional compost manufacturing techniques carried out by CEFFEL in Antemotra - Antanifotsy

Graph 17: Distribution of farmers initiated by the project on the production of classic compost



e. Recycled manure

Table 34: Practice of recycled manure

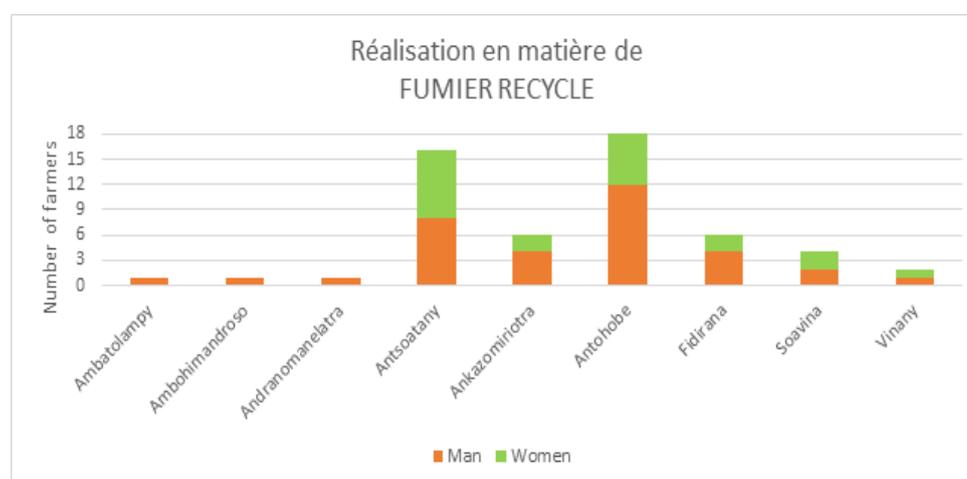
Area/commune	Number of farmers	Women	% Women
<b>Highlands</b>	<b>19</b>	<b>8</b>	<b>42%</b>
Ambatolampy	1	0	0%
Ambohimandroso	1	0	0%
Andranomanelatra	1	0	0%
Antsoatany	16	8	50%
<b>Midwest</b>	<b>36</b>	<b>13</b>	<b>36%</b>
Ankazomiriotra	6	2	33%
Antohobe	18	6	33%
Fidirana	6	2	33%
Soavina	4	2	50%
Vinany	2	1	50%
<b>Total général</b>	<b>55</b>	<b>21</b>	<b>38%</b>

In general, manure mixed with highly lignified litter is stored by producers in piles in the open air for an extended period. They are immediately brought to the plot when needed. This storage method has the following consequences:

- loss of manure quality due to exposure to heat and rain (release of nitrogen into the atmosphere, leaching of fertilizing elements, destruction of useful micro-organisms, etc.);
- incomplete and heterogeneous decomposition of manure;
- a risk of contamination of the plots during fertilization (hotbed of weed seeds).

Manure recycling consists of carrying out an aerobic fermentation of manure, as during composting processes. Thus, park manure is stored in heaps and under shelter. They must be watered gradually without soaking them (risk of leaching of the fertilizing elements). Then practice regular turning (two weeks). The manure is usable after complete cooling. It is generally farmers who have a relatively high number of cattle who adopt this practice.

Graph 18: Distribution of farmers initiated by the project on the production of recycled manure



During the entire project, 55 farmers were trained in this manure recycling practice. Among these adopters, there were 21 women (38%). In general, it is cattle breeding farms that practice manure recycling. They have a sufficient amount of organic matter. For farms that lack it, they opt for other composting practices, with additions of legumes.

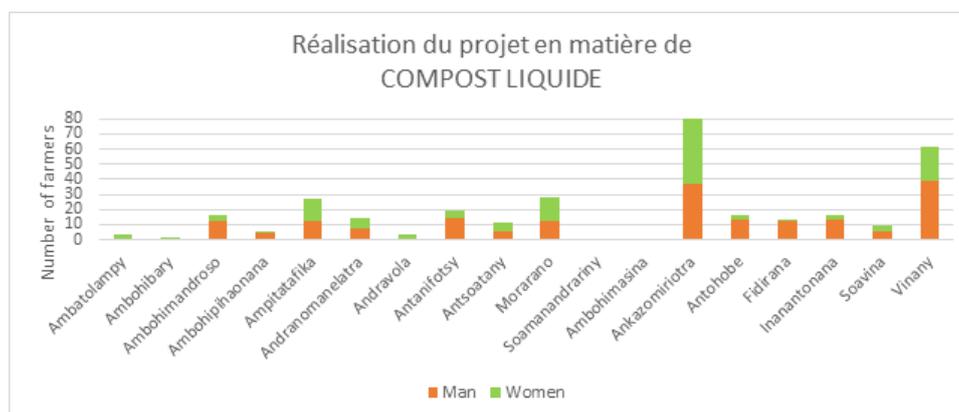
f. Liquid compost

Table 35: Practice of liquid compost

Area/commune	Number of farmers	Women	% Women
<b>Highlands</b>	<b>129</b>	<b>60</b>	<b>47%</b>
Ambatolampy	3	2	67%
Ambohibary	2	2	100%
Ambohimandroso	16	4	25%
Ambohipihaonana	5	1	20%
Ampitatafika	27	15	56%
Andranomanelatra	14	7	50%
Andravola	3	2	67%
Antanifotsy	19	5	26%
Antsoatany	11	6	55%
Morarano	28	16	57%
Soamanandrarinny	1	0	0%
<b>Midwest</b>	<b>198</b>	<b>78</b>	<b>39%</b>
Ambohimasina	1	0	0%
Ankazomiriotra	81	44	54%
Antohobe	16	3	19%
Fidirana	13	1	8%
Inanantonana	16	3	19%
Soavina	9	4	44%
Vinany	62	23	37%
<b>Overall total</b>	<b>327</b>	<b>138</b>	<b>42%</b>

As part of this practice, the project has valued the experiences of the CEFEL center in Andranobe/Antsirabe. It allows both to bring fertilizing elements to the plots, and to repel harmful insects. Liquid compost is a mixture of 10kg green leaves (with biocidal and/or repellent plants), 5kg of farmyard manure in 100 liters of water. The whole will be stirred every two (02) days. Liquid compost will be ready after 15 or 21 days. Generally, the various liquid compost products are intended for market gardening, food legumes such as cowpea, and shrubby legumes such as Cajanus.

Graph 19: Distribution of farmers initiated by the project on the production of liquid compost



For this practice, the project recorded 327 adopters, including 138 women (i.e. 42%). This result corresponds to 131% of the project objective. On the graph above, we can see that 2 communes stand out from the others with a number of adopters greater than 60. These are the communes of Ankazomiriotra and Vinany.



Picture 54 : The project provide a bonbone available to Lead Farmers to promote the practice of liquid compost (PL RAKOTO Philippe in Tsinjoarivo-Soavina)



Picture 55 : Some farmers who do a lot of market gardening invest in hard ponds to increase the production of liquid compost (LF Monique at Andranomanelatra)

### III.1.4.3 Participate to improve cowsheds for quality manure and composting

Improving cowsheds consists of:

- Installing a roof over part or all of the zebu park; the aim being to avoid leaching of the fertilizing elements by rainwater;
- Ensuring that the floor is solid so that manure does not mix with soil. This greatly diminishes their qualities. Moreover, decomposing worms do not digest them ;
- Making a collector, a manure pit under shelter to store manure ;
- And making a manure collector to accelerate the degradation of organic matter in the manure pit

The objective of improving a barn is to improve the health of cattle, while producing quality manure for the various composting practices.

The project provided support in cash around 150,000Ar<sup>15</sup> per cowshed for the benefit of interested breeders. In general, this project contribution is intended for the purchase of cement for the floor and the sewage collector. The other necessary materials are the responsibility of the beneficiaries. They can promote local materials.

Table 36: Support for the improvement of stables during the years of project implementation

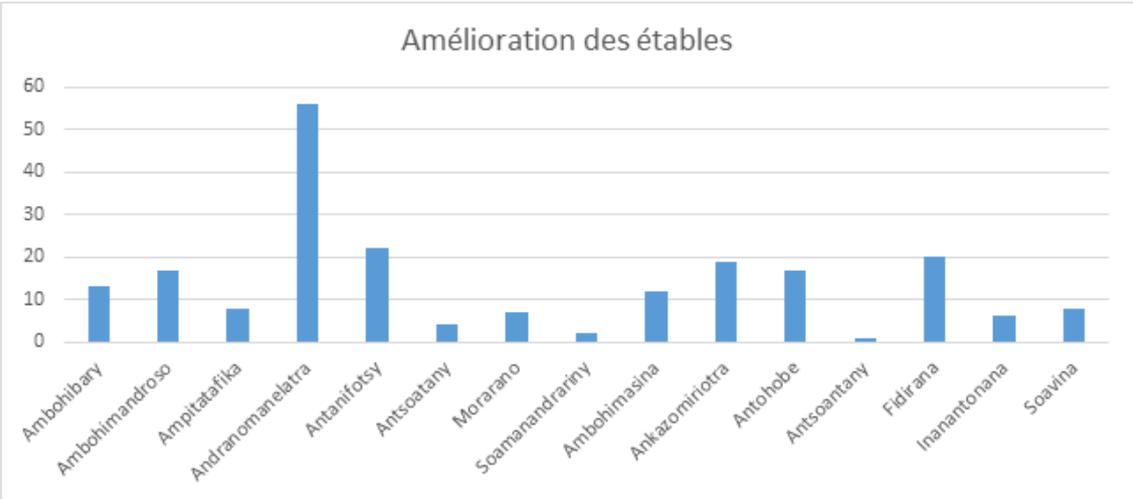
Étiquettes de lignes	Year 1	Year 2	Year 3	Extension	Overall
Highlands	1	82	1	45	129
Ambohibary		13			13
Ambohimandroso		9	1	7	17
Ampitafika		8			8
Andranomanelatra		26		30	56
Antanifotsy	1	14		7	22
Antsoatany		4			4
Morarano		7			7

15 33,33€ per cowshed

Soamanandrarinny		1		1	2
Midwest		70	4	9	83
Ambohimasina		12			12
Ankazomiriotra		19			19
Antohobe		15		2	17
Antsoantany				1	1
Fidirana		12	4	4	20
Inanantonana		6			6
Soavina		6		2	8
Overall	1	152	5	54	212

In total, 212 breeders were able to benefit from technical and financial support from the project to improve their barns. This result represents 71% of the final objective of the project. The vast majority of project results in these themes were obtained during year 2. Livestock farmers in the highlands, especially dairy farmers, were the most interested in this project action. Similarly, Andranomanelatra, the commune with the most dairy farmers, ranks first with 56 improved barns.

Graph 20: Technical and financial support for the project to improve barns



Picture 56: Cowshed of RANDRIANJAFY Jean Baptiste, improved following the actions of the project (Ambodiala - Ambohibary)



Picture 57 : improvement of cowshed in the farmer supervised by the project at Antokofoana – Soavina.



Picture 58 : Improvement of a cowshed with a grant from the project in Tsinjoarivo



Picture 59 : Improvement of a cowshed with a grant from the project in Inanantonana

#### III.1.4.4 Provide seeds of forage and food safety crop

As part of the fight against food insecurity and improving the income of rural households, the project offered support for improving milk production and introducing improved varieties of orange-fleshed sweet potato in its areas intervention. These activities are based on the experiences of FIFAMANOR.

First of all, as part of the improvement of milk production in the Region, the project has undertaken a collaboration with FIFAMANOR. The idea was to train the project management system on dairy farming management; to set up different pilot farms that can illustrate the improvements to be made on livestock management in the peasant environment; and to supervise GSDM technicians in their support activities for dairy farmers.

This collaboration began with an inventory of dairy farming in the communes where the project operates. Then, two training sessions were carried out for the project technicians. Finally, demonstrations on fodder crops were made in 3 municipalities distributed in the 2 project intervention areas.

Table 37: Summary of diagnostic results carried out by FIFAMANOR

DESIGNATIONS	OBSERVATIONS
Livestock composition	<ul style="list-style-type: none"> <li>On average 1.5 dairy cows per farm.</li> <li>Mainly mixed race exotic race</li> </ul>
Feeding system and forage areas used	<ul style="list-style-type: none"> <li>Use of collected grass in significant proportion</li> <li>Unbalanced ration (low use of concentrates)</li> <li>Forage crops not proportional to herd size</li> <li>Optimization of food resources especially in the off-season</li> </ul>
Habitat of dairy animals	<ul style="list-style-type: none"> <li>Mostly non-standard</li> </ul>
Problems encountered in dairy farming	<ul style="list-style-type: none"> <li>Insufficient food</li> <li>Difficult access to inputs and feed</li> <li>Lack of control over heat detection</li> <li>Insufficient technical access to animal health</li> </ul>
Expectations and desired training	<ul style="list-style-type: none"> <li>Livestock management</li> <li>Forage crops</li> <li>Storing fodder</li> <li>Heat detection</li> <li>Breeding management</li> <li>Milk processing</li> </ul>

To further help breeders improve their milk production, the project distributed fodder seeds:

- 1.470kg of oats
- 635kg of ryegrass
- 30,000 brachiaria cuttings
- 36,250 pennisetum giganteum cuttings
- 160kg of fodder radishes

Next, the project also distributed orange-fleshed sweet potato vines. These lianas were made up of 10 new varieties, namely: bora, donga, ekerewe, erica, irène, jane, kaly, menjy, ribany, sada and tosika. These are short-cycle varieties (production from 3 months), non-photoperiodic, with tubers rich in vitamin A. They are one of the solutions to correct vitamin A deficiency in children under 5 years old. ; and, overall, to alleviate the problem of food insecurity in the long term.

A total of 19,300 tons of these new sweet potato varieties vines were distributed during the project implementation period.

In short, the project recorded 1,563 farmers, cumulatively, having benefited from one or more plant materials mentioned above. This corresponds to 78% of the final objective of the project.



Picture 60 : As part of the fight against food insecurity, the project distributed 6,400kg of orange flesh sweet potato cuttings this season.



Picture 61: The yield of sweet potatoes is very interesting at RABEMANANTSOA Gilbert in Ankily - Fidirana like in most of the beneficiaries.

### III.1.4.5 Provide fry and other equipment for farmers for fish raising in the paddy field or in ponds

The project proposed collaboration with APDRA in this area of peasant fish farming, particularly rice-fish farming. The experience of organizations specializing in fish farming, such as APDRA, has shown that rice-fish farming can increase rice yields, while having another source of income, which is fish.

However, the late installation of the supervision system did not allow any intervention during this first year. A collaboration agreement was established with the ATDRM, an association of APDRA technicians who implemented a project called AMPINA in the Analamanga and Itasy Region. But the ATDRM will be accompanied by the APDRA during the collaboration with the GSDM. The objective of this collaboration is to strengthen the project team.

At the beginning of their interventions, the ATDRM carried out a diagnosis of the current situation of fish farming activities in the area. The biggest problems observed during this stage being the theft of fish and the inbreeding of carp in the Region. The latter is due to the fact that the breeders have not renewed their parents for a very long time. And, if they do, they trade with neighbors whose fish come from the same lineage (probably from Betafo). Thus, the project introduced 93 spawners into the area, including 60 males and 33 females. The ATDRM coordinated this operation from fishing to delivery of the carp broodstock. There were 16 beneficiary breeders.

Training sessions on fish rearing and fattening (with the setting up of demonstration sites) were carried out for technicians and Lead farmers of the project. These sessions provided them with the necessary bases to support fish farmers. Finally, monitoring and supervision missions were carried out regularly by the ATDRM team in order to reinforce the training provided.

In short, we started with 5 hatcheries in 2019/2020; and reached 16 accompanied fish farmers at the end of the project. Each of these breeders appreciated the results of the training received. But, currently, it is the delay of the rains at the beginning of the season that poses a huge problem. Indeed, the fry are already ready; while the rice fields are still dry. And, the extension of the duration of the rearing has an irreversible impact on the fattening of the fish; and increases the expenses of the breeders.

In June 2021, a yield survey was carried out by the project team and ATDRM technicians, with a few breeders. It was found that the average weight of the fish is 200 to 250g.

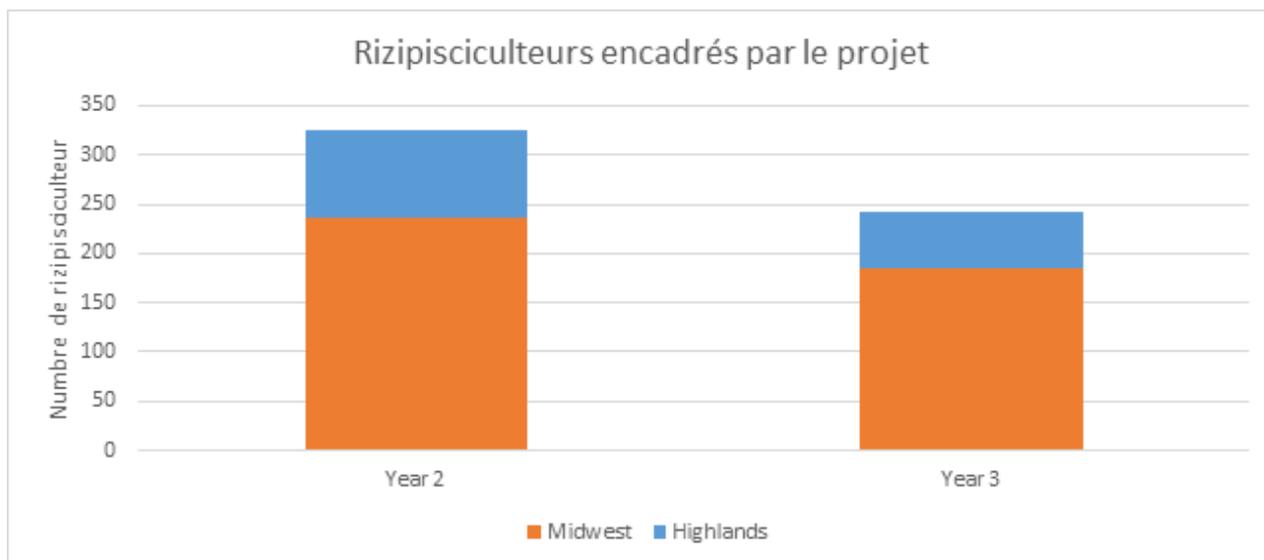
Table 38: Rice-fish farmers supervised by the project

Area/commune	Number of farmers		
	Year 2	Year 3	Overall
Highlands	88	59	147
Ambohibary	52	33	85
Ambohimandroso	11	2	13
Ampitatafika		3	3
Andranomanelatra	6	5	11
Andravola	1		1
Antanifotsy	16	4	20
Morarano	2		2
Soamanandrarinny		12	12
Midwest	237	184	421
Ambohimasina		18	18
Ankazomiriotra	40	22	62
Antohobe	51	18	69
Fidirana	96	66	162
Inanantonana		34	34
Soavina	26	3	29

Area/commune	Number of farmers		
	Year 2	Year 3	Overall
Vinany	24	23	47
Overall	325	243	568

On reading this table, we see that 568 farmers were supervised by the project team on the practice of rice-fish farming. Among them, 559 benefited from fry subsidies from the project. This result corresponds to 373% of the objective set in the project document.

Graph 21: rice-fish farmers supervised by the project



Picture 62 : Handling of genitors to prepare for a break (Photo taken by ATDRM at a breeder supervised by the project in Soavina)



Picture 63 : This year, the practice of rice-fish farming is made difficult by the random rainfall at the start of the year (LF RAKOTO Philipe in Tsinjoarivo-Soavina)

### III.1.5. Collect data on CSA in some strategic area at National level in a view to update data on upscaling of CSA and best practices in the Country

Table 39: collection and management of national data in agroecology

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
1.5.1	Contratc with a firm to conduct National survey in some strategic agro-écological areas	Number of national survey (with national data in CSA)	1	0	0	0	1	1	100%
1.5.2	Integrate data in MANAMORA database - and include database improvement by contratcing with CIRAD	Number of contract with CIRAD expertise to integrate data in MANAMORA database	1	0	0	0	1	1	100%
1.5.3	Train regional directorates of MAEP (DRAEP) in the use of the data base MANAMORA	Number of DRAE trained in the use of the data base MANAMORA	5	0	0	0	0	0	0%
1.5.4	National database transfert to DRAE (Ministry regional branch)	One database transfered	1	0	0	0	0	0	0%

#### III.1.5.1 Contrate with a firm to conduct National survey in some strategic agro-écological areas

For the collection of data on the national situation of agroecology, the GSDM juggled on 2 projects:

- A study on the national situation of agroecology carried out within the framework of the PAPAM project (AFD financing)
- A complementary study that we did as part of Manitatra 2

For this additional study, after taking the necessary steps to comply with the procurement rules, the project commissioned the “Rivo Rabarijohn” consulting group. It was carried out between September 2021 and December 2021. It was supported by the Manitatra 2 project; and consists of:

- Analyze the level of adoption of agroecological practices in pilot areas such as the Vakinankaratra, Atsimo Atsinanana, Fitovinany Regions;
- Document the importance of some initiatives of large farms or private companies;
- Provide information on elements of capitalization of the actions of rather specific agro-ecological practices.

The study does not claim to present a national situation of agroecology. The statistics that will be detailed therein are based on the results of the analyzes of the surveys carried out among 1,169 household farmers distributed in the Atsimo Atsinanana, Fitovinany and Vakinankaratra Regions.

In short, the comparative advantages of agroecology compared to conventional processes are manifested in terms of the profitability and sustainability of farms.



- In terms of farm profitability, the application of agroecological techniques is more economical insofar as the production costs for conventional processes are constantly increasing, the unit price of agroecological products is much more attractive than conventional products. ;
- The comparative advantages of agroecology find its great importance also on its remarkable positive effects for the sustainability of farms. Indeed, the appropriate development of sloping land upstream through reforestation, agroforestry and the establishment of protective live hedges, reduces erosion, thus stabilizing soil fertility. The use of organic manures considerably improves the permanent structure of the soil, thus improving its fertility over time. In addition, the hedging of the plots makes it possible to limit the damage caused by bad weather and the presence of many trees will bring positive effects, in the long term, on the microclimate, in order to find a regular and sufficient rainfall in the year.

III.1.5.2 Integrate data in MANAMORA database - and include database improvement by contracting with CIRAD

Then, once the data on the national situation of agroecology had been synthesized, MANITATRA 2 proposed in its project document to introduce them into the MANAMORA database with the support of CIRAD. But, the «manamora» database, being too heavy, is not filled in by the other stakeholders in the dissemination of agroecological practices. Thus, we will not be able to have an up-to-date situation of agroecology in Madagascar with this version.

Thus, an agreement relating to the modification of the MANAMORA database, with very detailed data at the scale of the production unit (plot, livestock unit, vermicompost production unit, etc.) that the other development partners would not necessarily have it, while a more aggregated database at the municipal level has been established with CIRAD. As the latter already has a database of this type, called BOOST AE, with data from the different countries in which it operates. So we decided to name the new base: “MANABOOST”.

The IT specialist responsible for setting up this database has already done a few demonstration and light training sessions on the tool with the GSDM headquarters team. The version is therefore validated in its current state. But, the huge challenge remains the animation of the other partners to update it. Indeed, the objective of this activity is to set up a database periodically fed by all stakeholders in the dissemination of agroecological practices at the national level.

III.1.5.3 Train regional directorates of MAEP<sup>16</sup> (DRAEP) in the use of the data base MANAMORA

The training of the branches of the Ministry of Agriculture and Livestock (MinAE), but also those of the environment and sustainable development (MEDD) should be organized very soon.

III.1.5.4 National database transfert to DRAE (Ministry regional branch)

And, it is once the training has been completed that this base will be transferred to these branches of the ministries and partners in the private sectors.

III.1.6. Purchase principal mean for upscaling activity

Table 40: Principal mean purchased or repaired for upscaling activity

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
1.6.1	Purchase of Equipments								
1.6.1.1	Purchase of motorcycles	Number of motorcycle	8	8	0	0	0	8	100%
1.6.1.2	Purchase of bicycles	Number of bicycles	50	50	0	0	0	50	100%
1.6.2	Fuel and repairs								

16 MAEP and DRAEP are old names of MINAE and DRAE

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
1.6.2.1	Fuel and repairs (spare parts) for motorcycle	Number of Motorcycle use month	297	72	96	123	11	302	102%
1.6.2.2	Car hiring for field backstopping and monitoring (all CSA: CA, Agroforestry and best practices)	Number of car hiring days	90	23	32	59	18	132	147%

For motorcycle, the budget is not sufficient for 8 new motorcycles. 5 new Motorcycles are purchased and 3 are repaired from Manitatra 1 motorcycle.

For bicycle, the budget is not sufficient for 50 new bicycles. 32 new bicycles are purchased and 18 are repaired from Manitatra 1 bicycles.

In the table above, reference is made to the indicators defined in the project document. Only, there had been 3 budget adjustments (at the beginning of year 2 and 3; and of the extension as well), declining with changes in indicators. In addition, in total, the period relating to the extension of the project lasted one year. This is why we have this overrun in expenses related to the operation of motorcycles, and the rental of cars for the monitoring missions of the GSDM headquarters team.

## III.2. Result 2 : Capacity on various stakeholders is built in Climate Smart Agriculture

### III.2.1. Train nurserymen in the technology of tree nurseries and in the choice of the appropriate tree species

Table 41: Trained nurserymen/women

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
2.1.1	Train Nurserymen/women	Number of Nursery men / women trained	50	27	57	47	17	72	144%

The training itself on the management of a nursery was carried out by the agents of the DREDD Vakinankaratra. The nurseries have been subdivided into 3 groups:

- Nurserymen in the highlands: September 20, 2019
- New nurseries in the middle west: October 04, 2019
- Nurserymen who have already participated in the Manitatra 1 project, without specific training: October 09, 2019

These 3 training sessions were carried out at the DREDD incubators in Mandaniresaka/Antsirabe. Each of them lasted 4 days. Then, the DREDD trainers carried out 2 field trips per group for practical training. And, at the start of each campaign, project technicians and DREDD agents carry out retraining sessions.

At the end of the project, other DREDD agents visited the reforested plots with young plants from these nurseries in order to assess the quality of service provided by each of them. A certificate signed by GSDM and DREDD Vakinankaratra was issued to them for their services under the project.

In short, since the beginning of the project, a total of 72 nurserymen have already worked with the project in the production of young forest plants. This corresponds to 144% of the final objective of the project.



Picture 64 : Reseal of pots by members of the Fanilo Cooperative in Amparihy

Picture 65 : Nursery monitoring by the central GSDM team

### III.2.2. Train lead farmers and farmers in CSA

Table 42: Achievements on lead farmers and farmers training

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
2.2.1	Train Lead farmers (by project Technicians and other stakeholders)	Number of Lead farmers	50	64	54	51	30	85	170%
2.2.2	Support cost of farmers training by Lead farmers (Farmer to farmer approach, based on man-day spent on training of their peer farmers)	Intervention of Lead farmers (man-day)	12 600	2 772	4 205	4 872	749	12 598	100%
	Training of adopters	Number of participants	5 000	1 279	2 523	1 689	369	5 860	117%

The MANITATRA 2 project has chosen to adopt the “farmer-to-farmer” approach. Indeed, farmers have been trained by the project and its partners to ensure the role of leaders in the dissemination of agroecological techniques by training their pairs. The proximity of these Lead Farmers to the surrounding producers makes it possible to correct the limits of the “technician to farmer” approach, which does not always guarantee the sustainability of the actions initiated by the projects. The fact that the leading farmers come from the area allows them to speak the same language; while the technicians generally come up against the barriers of peasant logic which can be difficult to break through. In addition, the “farmer to farmer” approach has a significantly reduced cost compared to the “technician to farmer” approach. Moreover, the leading farmers would still remain in their area, even after the withdrawal from the project. They will remain resource people, and will continue to give advice to the farmers around.

But, to facilitate the interventions of the leading farmers, they have adopted certain agroecological practices within their farms. These application plots of lead farmers have become Farmer Field Schools (CEP), serving as a place of training and exchange for their pairs. Moreover, the project has organized numerous visits inside and outside the

municipalities to allow participants to assess the performance of agroecological practices. These two types of visits are very complementary. Intermunicipal exchange visits are organized by the Farmer Leaders for farmers within the same municipality (or even the same Fokontany). Generally, these visits take place at the level of the farmer field schools of the lead farmers (CEP) and/or the plots of the farmers supervised by the project. This type of visit has the advantage of drawing the attention of producers to the performance of agroecological practices compared to conventional practices in the same ecosystem. Indeed, they will be able to observe throughout the year the relevance, accessibility and adaptability of the practices promoted by the project in their area.

These Lead Farmers receive a daily compensation of 10,000Ar<sup>17</sup> for their interventions within the framework of the implementation of the project. And, in order not to handicap them in their farms (because, above all, they are farmers), they only intervene in the project for 7 days a month.

In total, 85 peasants took on the costume of lead farmers with the Manitatra 2 project; even if for one reason or another, some made them during a period of the project. This result corresponds to 170% of the objective set in the project document.

As already mentioned, they received various training from the project team and its partners. Among others, we can cite:

- Training on agroecology in general by GSDM trainers ;
- Training on rice-fish farming by ATDRM technicians ;
- Training on family management advice, methods of preserving and processing fruits and vegetables, and legislation on fish farming by agents of the DRAE Vakinankaratra ;
- Training on market gardening, organic matter management and agroforestry by the CEFTEL Center.



Picture 66 : Training of lead farmers on the family budget (advice on family farming) by agents of the DRAEP Vakinankaratra



Picture 67 : Training of leading farmers on fruit and vegetable conservation and processing techniques by DRAEP Vakinankaratra agents



Picture 68 : Training of the lead farmers to use biocidal/repellent plants, with the CEFTEL center



Picture 69 : Capacity building of the lead farmers in agro-ecology by the GSDM trainers in Antsirabe

17 2,22€



Picture 70 : training of the lead farmer to use registering book of seeds provided by the project



Picture 71 : Capacity building of the lead farmers in technical of animation by the DRAEP Vakinankaratra in Antsirabe

At the end of the project, a document, signed by both GSDM and the DRAE Vakinankaratra, was distributed to the Lead Farmers to attest to their involvement in the implementation of the Maniatra 2 project.

Table 43 List of lead farmers in the end of the project

N°	Area	Lead Farmers	Gender	Location	Fokontany	Commune
1	MID- WEST	RAVAKINIAINA Valisoa Josephine Stephanson	Women	Ambohimasina	Ambohimasina	Ambohimasina
2	MID- WEST	RAMINOARIRINDRA Daniella	Women	Amboanjobe	Amboanjobe	Ambohimasina
3	MID- WEST	KANTONIRINA Fanoela	Women	Marovitsika	Belanitra	Ambohimasina
4	MID- WEST	RASOARILALAO Marie Louise Justine	Women	Antanety Sud	Antanety Sud	Inanantonana
5	MID- WEST	RAMAROKOTO André	Men	Bemasoandro	Bemasoandro	Inanantonana
6	MID- WEST	RAZAFINDRAKOTO Jean Michel	Men	Inanantonana Centre	Inanantonana	Inanantonana
7	MID- WEST	RAVOLATIANA Rivo Nicole	Women	Ambatomainty	Ambatomainty	Inanantonana
8	HIGHLAND	RANDRIANARISON Etienne	Men	Ihazolava	Ihazolava	Ambohiphaonana
9	HIGHLAND	RAMAMONJISOA Pierre	Men	Isody	Isody	Ambohimandroso
10	HIGHLAND	RAFALIMANANA Augustin	Men	Moraranokely	Ankidondona II	Ambatolampy
11	HIGHLAND	RANDRIAMAMPIADANA Pascal	Men	Ambodivona	Andriamigodana	Morarano
12	HIGHLAND	RAJAOSAFARA Lantosa Nirina Arlette	Women	Ampandraofana	Sambaina Gara	Ambohibary
13	HIGHLAND	RAFANOMEZANTSOA Jean de Dieu	Men	Ambondrona	Andranomanelatra	Andranomanelatra
14	HIGHLAND	RAIVOARISOA Marie Monique	Women	Merimitatra	Tsaramandroso gara	Andranomanelatra
15	HIGHLAND	RAZAFIARISOA Odette	Women	Fiadanana	Fiadanana	Andranomanelatra
16	HIGHLAND	RASOLONIAINA Marie Oméga	Women	Fiantsonana	Fiadanana	Andranomanelatra
17	HIGHLAND	VONIALA Saholintsoa Paulette Alice	Women	Antsoatany	Antsoatany	Antsoatany
18	HIGHLAND	RANDRIANARISOA Étienne	Men	Ampangabe	Antsoatany	Antsoatany
19	HIGHLAND	VONJISOA Lalaina Eric Arthur (Lalaina)	Men	Avaratsena	Ambohimandroso	Ambohimandroso
20	HIGHLAND	RAFIDIMANANTSOA Jaona (Rafidy)	Men	Soavina	Antsampandrano	Ambohimandroso
21	HIGHLAND	RAZAFINDRAVONY Laingo Maminirina	Women	Masoandro	Masoandro	Ampitatafika
22	HIGHLAND	TOJOARINAIVO Ambininjanahary Eric	Men	Ampitatafika	Ampitatafika	Ampitatafika
23	HIGHLAND	RAFENOMAMPIONONA Falimihoby Bien Aimé	Men	Antsapanimahazo	Andriantsilahy	Antanifotsy
24	HIGHLAND	RAHARIMALALA Berthe Clémence	Women	Fenoarivo Sud	Antsahamaina	Antanifotsy
25	HIGHLAND	RAZAFIARIJAONA Daniel	Men	Antemotra	Antemotra	Antanifotsy

N°	Area	Lead Farmers	Gender	Location	Fokontany	Commune
26	HIGHLAND	ANDRIAMIARANTSOA Aimé Jean Michel	Men	Antanety I	Antanety I	Soamanandrainy
27	MID- WEST	RAMANAMILANTO Richard Florent	Men	Mazoto	Mazoto	Vinany
28	MID- WEST	NIRINARIVELO Fanilo Tanteraka Hanitriniaina	Men	Ambohipoloalina	Ankazomiriotra	Ankazomiriotra
29	MID- WEST	RAHARIMANANA Marie Lucienne	Women	Beronono	Ankazomiriotra II	Ankazomiriotra
30	MID- WEST	ANDRIAMANJATO Philippe	Men	Bemasoandro	Ankazomiriotra II	Ankazomiriotra
31	MID- WEST	ANDRIANDRAINA Todisoa Omega	Men	Atsimotsena, Ankazomiriotra	Ankazomiriotra I	Ankazomiriotra
32	MID- WEST	RANDRIATRINA Jean Richard	Men	Soamafara	Belanitra	Ankazomiriotra
33	MID- WEST	RAZANAMARO Milantosoa Félistine	Women	Ivory Ambany	Ivory	Vinany
34	MID- WEST	RAKOTOARIMANANA Edmond	Men	Vinany	Vinany	Vinany
35	MID- WEST	RANDRIAMIHAJA Jean Clément	Men	Ankamory	Ankamory	Vinany
36	MID- WEST	RAKOTONIAINA Solomon	Men	Morafeno	Matieloana	Antohobe
37	MID- WEST	RANOAVOMANANA Morasata	Men	Tsaramasoandro	Korosovola	Antohobe
38	MID- WEST	RAKOTOMALALA Bernardin Emile	Men	Ambohidray	Antohobe	Antohobe
39	MID- WEST	RANDRIAMANANTENA Jules	Men	Antokofoana	Antanety	Soavina
40	MID- WEST	RAKOTO Philippe	Men	Tsianjoarivo	Soavina	Soavina
41	MID- WEST	ANDRIATSIFERANA Olivier	Men	Soavina 2	Soavina 2	Antohobe
42	MID- WEST	RAKOTOARIJONINA Alfred	Men	Fidirana	Fidirana	Fidirana
43	MID- WEST	ANDRIANIRINA William	Men	Soamananety	Soamananety	Fidirana
44	MID- WEST	RAKOTOMANANTSOA Modeste	Men	Ambohibolakely	Ambohibolakely	Fidirana
45	MID- WEST	RABEMANATSOA Augustin	Men	Ankily	Antampondravola	Fidirana
46	MID- WEST	RAVELOMANANJAFY Hanta Jeannot	Men	Mamoriomby	Mamoriomby	Fidirana
47	MID- WEST	RATOLOJANAHARY Simon André	Men	Andrefantrafo	Morafeno	Fidirana
48	MID- WEST	RABEBINIRINA Minompamonjy David	Women	Ambohitrinibe	Belanitra	Ankazomiriotra
49	HIGHLAND	RANDRIAMIHARIMBOLATSOA Norbert	Homme	Andriamingodana	Andriamingodana	Morarano
50	HIGHLAND	RABARISON Dauphin Ludovic	Homme	Sahabe Tetezana	Sahabe Tetezana	Ambohibary
51	HIGHLAND	RAKOTONIRAINY Leonard Jean Pierre (Léonard)	Homme	Fiadanana	Fiadanana	Andranomanelatra
52	HIGHLAND	RANAIVONJANAHARY Mana Tantely (Tantely)	Homme	Soafianarana	Mandritsarakely	Antsoatany
53	HIGHLAND	RAKOTOARIMANANA	Homme	Tsarazafy	Ambohimena	Antsoatany
54	HIGHLAND	RANDRIAMPARANY Jean Armand (Mparany)	Homme	Masoandro	Masoandro	Ampitatafika
55	MID- WEST	FANIRISOA Théodorette Marie Bienvenue	Femme	Amboniandrefana	Ankazomiriotra I	Ankazomiriotra
56	MID- WEST	RAKOTONDRAMANANA Thierry Johnson	Homme	Antanety	Antanety	Soavina
57	MID- WEST	MBOLATINA Tsilavina	Femme	Ambohimasikely	Ambohimasikely	Fidirana
58	HIGHLAND	RANDRIARIMANANA Jean Léon	Homme	Ambodivona	Ambanimaso II	Ambatolampy
59	HIGHLAND	RANDRIAMAHEFA Falimanana	Homme	Ihazolava sud	Ihazolava	Ambohimandroso
60	HIGHLAND	RAZAFINARIVO Fenosoa François	Homme	Ambondrona	Ambondrona	Ambohimpihahonana
61	HIGHLAND	HERIMANITRA Marie Rosette	Femme	Sahamadio	Sahamadio,	Ambohimpihahonana
62	HIGHLAND	RAKOTOZAFINDRASON Edmond	Homme	Antsimombary	Morarano III	Ambohibary
63	HIGHLAND	RAKOTOARISOA Jean Marie	Homme	Ambondrona	Andranomanelatra	Andranomanelatra

N°	Area	Lead Farmers	Gender	Location	Fokontany	Commune
64	HIGHLAND	RAIVONJANAHARY Perline Yvette	Femme	Tsararano	Tsarazazamandimby	Andranomanelatra
65	MID- WEST	RAZAFINDRAVONY Lala Christine	Femme	Ankazomanefa	Ankazomiriotra I	Ankazomiriotra
66	MID- WEST	RAMAMONJIVOKATSOA Fortunat	Homme	Ambohitrinibe	Belanitra	Ankazomiriotra
67	MID- WEST	RAKOTOMALALA Claude Jean Denis	Homme	Mazoto Ambany	Mazoto	Vinany
68	MID- WEST	RAKOTOARISOA Georges Albert	Homme	Fidirana	Fidirana	Fidirana
69	MID- WEST	ANDRIANARY Fikirizantsoa Mahefari-lanto	Femme	Ambohimasina	Ambohimasina	Ambohimasina
70	MID- WEST	RAKOTONIRINA Heritiana	Homme	Bemasoandro	Belanitra	Inanantonana
71	MID- WEST	RAZAFIMAHAFALY Anthime Dominique	Homme	Tsaratany	Antampondravola	Fidirana
72	HIGHLAND	RANDRIAMAMPIANINA Jean Victor	Homme	Marohisana	Marohisana	Ambohipihaonana
73	HIGHLAND	RANDRIATSITOHAINA Jean Jeremia	Homme	Ambinanibe	Ambinanibe	Andravola
74	HIGHLAND	RAHARIMALALA Marcelline	Femme	Ambohimandro-sokely	Andriamigodana	Morarano
75	HIGHLAND	RAZANAMASY Yvonne	Femme	Ambonindrana	Antsapanimahazo	Antsoatany
76	MID- WEST	RAKOTONDRAFARA	Homme	Antanety Sud	Antanety Sud	Inanantonana
77	MID- WEST	TOJONIRINA Rindrasoa Charlotte	Femme	Belanitra	Belanitra	Ambohimasina
78	HIGHLAND	RAMANANJATOVO Nirina Nambinina	Homme	Ambilona I	Ambilona I	Soamanandrainy
79	MID- WEST	IARIMALALA Marie Véronique	Femme	Bemasoandro	Ankazomiriotra II	Ankazomiriotra
80	HIGHLAND	RATOVONJANAHARY Vonjiniaina	Homme	Antsapana	Soamahavoky	Andranomanelatra
81	HIGHLAND	RAHERITIANA Lovasoa Yasmine	Femme	Antsoatany	Antsoatany	Antsoatany
82	MID- WEST	RAKOTOMALALA Herisoa	Homme	Inanantonana Est	Inanantonana	Inanantonana
83	HIGHLAND	RANDRIAMAHEFA Roger	Homme	Ambinanibe	Ambinanibe	Andravola
84	HIGHLAND	RANDRIAMITANTSOA Heritiana Victor	Homme	Fierenana	Fierenana	Morarano
85	MID-WEST	RAMANIRISOA Vincent de Paul	Homme	Ambohijatovo	Antanambe	Vinany

Finally, as part of the application of the “farmer to farmer” approach, the Lead Farmers are required to organize training sessions at their FFS or other surrounding farms. During the project, 5,860 participants, including 2,818 women (i.e. 48%) were able to benefit from it; i.e. 117% of the project objective. During these training sessions, the themes covered are different, depending on the needs of the farmers.

Table 44: Training of farmers carried out since the start of the project

Area/Commune	Number of sessions	Number of participants	Women	% Women
<b>Highlands</b>	<b>172</b>	<b>2542</b>	<b>1500</b>	<b>59%</b>
Ambatolampy	8	102	41	40%
Ambohibary	22	260	172	66%
Ambohimandroso	11	138	49	36%
Ambohipihaonana	25	264	148	56%
Ampitatafika	14	312	178	57%
Andranomanelatra	24	497	380	76%
Andravola	9	107	33	31%
Ankazomiriotra	2	43	27	63%
Antanifotsy	17	180	79	44%
Antsoatany	22	358	205	57%
Morarano	11	148	101	68%
Sambaina	1	28	22	79%
Soamanandrariny	6	105	65	62%

Area/Commune	Number of sessions	Number of participants	Women	% Women
<b>Mid-West</b>	<b>233</b>	<b>3318</b>	<b>1318</b>	<b>40%</b>
Ambohimasina	15	195	111	57%
Ankazomiriotra	30	543	181	33%
Antohobe	72	1070	443	41%
Fidirana	51	602	183	30%
Inanantonana	8	96	52	54%
Soamanandrarinny	2	47	38	81%
Soavina	43	489	216	44%
Vinany	12	276	87	32%
<b>Overall</b>	<b>405</b>	<b>5860</b>	<b>2818</b>	<b>48%</b>

### III.2.3. Train secondary school students in CSA

Table 45: Achievement on CSA training activity for secondary school students

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
2.3.1	Make Diagnosis to select beneficiary schools	Number of diagnosis to select beneficiary schools	1	1	0	0	0	1	100%
		Number of selected schools	12	12	0	0	0	12	100%
2.3.2	Organize Events (Commitment charte event, Tools delivery)	Number of Event	2	2	0	0	0	2	100%
2.3.3	Organize Training for Ministry Branch (OEMC/ DREMC/BEMC)	Number of session organized for training for Ministry Branch	1	1	0	0	0	1	100%
2.3.4	Organize Training for teachers (3 sessions of training in Vakinankaratra)	Number of session organized for training for teachers	3	2	2	0	0	4	133%
2.3.5	Training Tools (tarpauling, booklet, teacher guideline, langage-photo)- 6 new schools	Number of training tools pack	1	1	1	1	1	4	400%
2.3.6	Produce and edit Communication tools (tarpaulin, Roll up)	Number of communication tools pack	2	1	0	0	0	1	50%
2.3.7	Produce Film for communication	Number of film for communication produced	1	0	0	0	0	-	0%
2.3.8	Produce Cartoon strips for school children	Number of cartoon strips produced for school children	1	0	0	1	0	1	100%
2.3.9	Provide some kits and inputs for demonstration plot (Materials and tools, Teaching Tools, inputs) for 6 new school	Number of demonstration plot	12	12	12	12	12	12	100%
2.3.10	Accompany students in the implementation	Number of school children trained	6 000	1 895	3 047	6 439	3 234	11 381	190%
2.3.11	Organise competition of best school (demonstration plot and student knowledge)	Number of competition organized of best school	1	0	0	0	1	1	100%

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
2.3.12	Exchange visits between School	Number exchange visits between School	3	3	15	12	3	33	1100%
		Number of participants to the exchange visits between school	300	77	429	331	84	921	307%
2.3.13	Organize annual workshop (capitalisation, experiences exchange)	Number annual workshop days	3	1	1	1	0	3	100%
2.3.14	Car hiring for training, monitoring and other actions for secondary school	Number of car hiring days	60	21	16	26,0	5	68,2	114%

### Objectives of these activities:

- Sensitize and train CEG teachers, who are also in the majority of cases farmers, on agroecology and environmental protection.
- Sensitize and train students, whose current statistics show a high dropout rate at the CEG level, to love agricultural activities with the practice of agroecology and environmental protection.
- Involve students in raising awareness among their parents
- Involve schools in raising awareness among farmers in the surrounding area through the school garden and testimonials on the objectives of the practice of agroecology

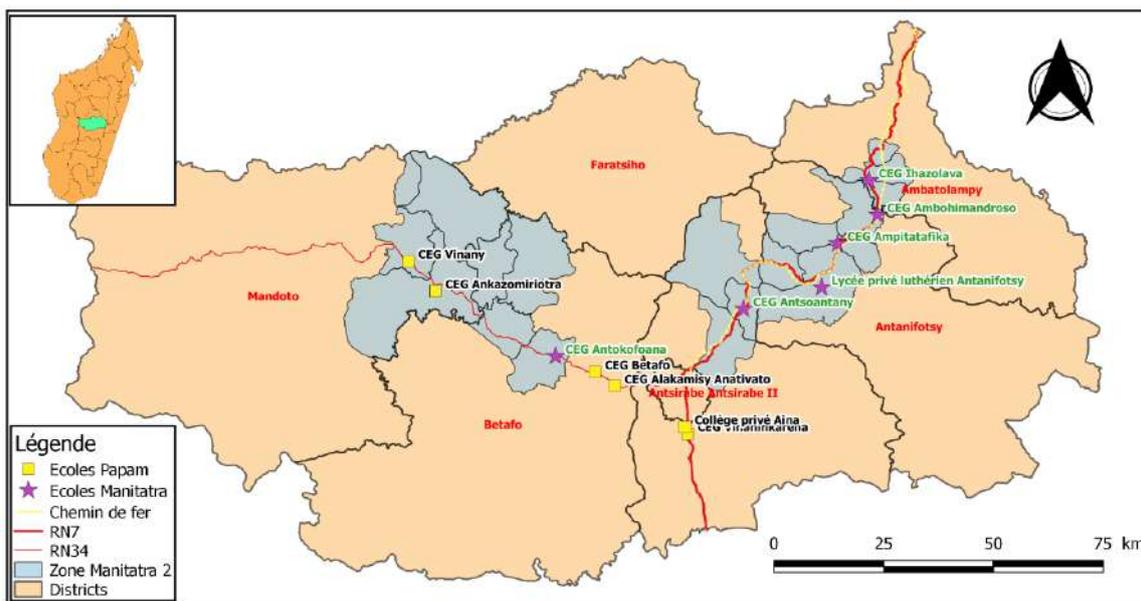
#### III.2.3.1 Make Diagnosis to select beneficiary schools

First of all, the GSDM team accompanied by the OEMC/MENETP carried out a diagnostic mission in order to determine the 06 new schools which will collaborate with the project within the framework of the introduction of agroecology in school. This took place from October 23 to 27, 2018. The support of the 06 schools concerned during the pilot project is also provided by Manitatra 2. Note that this collaboration is part of the extracurricular activity Lists of the 12 schools in collaboration with the project on the introduction of agro-ecology in schools.

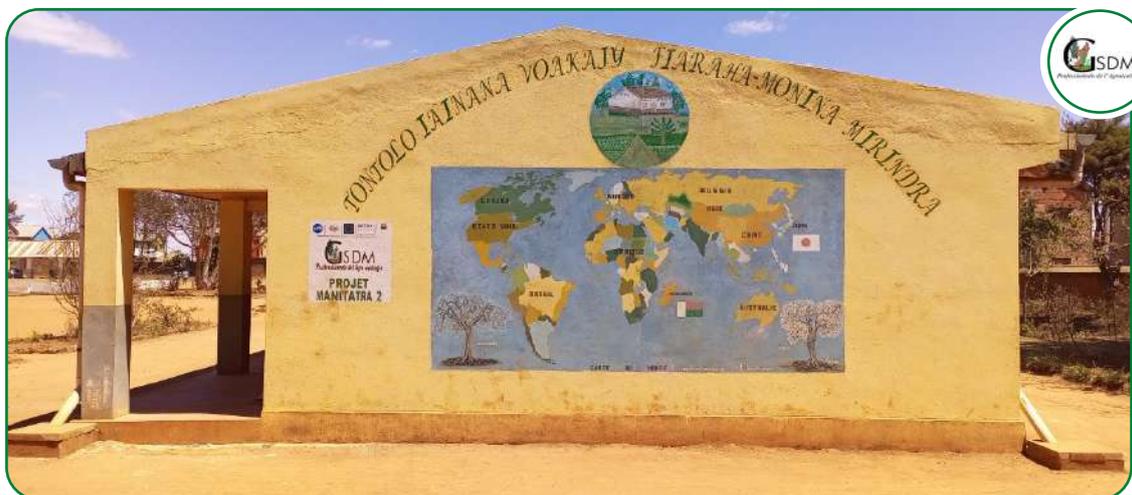
Table 46 : Lists of the 12 schools in collaboration with the project on the introduction of agroecology in schools

N°	Establishment Name	Establishment status	Adresses	Commune	CISCO	Zone
<b><i>New schools (05 establishments in the highlands and 01 in the Middle West)</i></b>						
1	CEG Ihazolava	Public	Ihazolava	Aambohipihaonana	Ambatolampy	Hautes-Terres
2	CEG Ambohimandroso	Public	Ambohimandroso	Ambohimandroso	Antanifotsy	Hautes-Terres
3	CEG Ampitatafika	Public	Ampitatafika	Ampitatafika	Antanifotsy	Hautes-Terres
4	Lycée Privée Loterana	Private	Antanifotsy	Antanifotsy	Antanifotsy	Hautes-Terres
5	CEG Antsoatany	Public	Antsoatany	Antsoatany	Antsirabe II	Hautes-Terres
6	CEG Annexe Soavina	Public	Antokofoana	Soavina	Betafo	Moyen-Ouest
<b><i>Former schools of the Pilot project (02 establishments in the highlands and 04 in the Middle West)</i></b>						
7	CEG Vinaninkarena	Public	Vinaninkarena	Vinaninkarena	Antsirabe II	Hautes-Terres
8	Collège Privée AINA	Private	Vinaninkarena	Vinaninkarena	Antsirabe II	Hautes-Terres
9	CEG Alakamisy Anativato	Public	Alakamisy Anativato	Alakamisy Anativato	Betafo	Moyen-Ouest
10	CEG Betafo	Public	Betafo	Betafo	Betafo	Moyen-Ouest
11	CEG Ankazomiriotra	Public	Ankazomiriotra	Ankazomiriotra	Mandoto	Moyen-Ouest
12	CEG Vinany	Public	Vinany	Vinany	Mandoto	Moyen-Ouest

Map 2: Location of the 12 schools supervised by the project as part of the introduction of agroecology in schools



Picture 72 : Eco-Code of CEG Antsoatany



Picture 73 : Eco-code of the CEG Ambohimandroso



Picture 74 : Eco-code of the CEG Antokofoana



Picture 75 : Eco-code of CEG Vinaninkarena



Picture 76 : Eco-code of the Private High School Loterana Antanifotsy

### III.2.3.2 Organize Events (Commitment charte event, Tools delivery)

The signing of the commitment charter with the 6 new schools was carried out on February 12 and 13, 2019. It is a tripartite commitment between each establishment, the OEMC/MEN and the GSDM. This event took place at the level of each school in order to involve all the staff of the establishment in this process. On the other hand, the delivery of the materials necessary for the establishment of a school garden was carried out on January 18, 2019.



Picture 77 : signing of the commitment chart in the CEG Ambohimandroso

Table 47 : list of materials delivered to each of the 06 new schools

Materials delivered to the 06 new schools	Unit	Quantity
16 liter sprayer	Unit	1
plastic watering can	Unit	1
Wheelbarrow	Unit	1
Shovel with handle	Unit	2
angady with handle	Unit	2
Rake with handle	Unit	1
Fork with handle	Unit	2
Plastic plate	Unit	4
50 liter plastic bottle	Unit	2
Annealed wire	Kg	0.5
6cm diameter nylon rope	Roll	1
2cm diameter nylon rope	Roll	1
Basket (local)	Unit	4

It should be noted that to replace damaged equipment, the project, during its extension period, delivered other additional equipment :

- a wheelbarrow
- 4 watering can
- 2 angady
- and, a 16 liter knapsack sprayer

### III.2.3.3 Organize Training for Ministry Branch (OEMC/DREMC/BEMC)

For a better coordination of activities monitoring, and also for information and sensitization, a training of the OEMC agents and DCI designers (curricula designer) was organized in February 2019. It's a technical training on Agroecology, followed by an exchange visit to the Ceffel center in Andranobe Antsirabe. The training lasted 4 days and saw the participation of 18 persons, including 8 OEMC agents and 10 DCI designers. This training allowed the project to provide the technical elements necessary for writing the new Sector Plan of Education. This is also an advocacy action aimed at integrating Agroecology and CSA into public policies, in particular taking it into account in the national education system

### III.2.3.4 Organize Training for teachers (3 sessions of training in Vakinankaratra)



Picture 78 : thirty training session of the teachers to introduce agro-ecology in schools

At the start of this process, 3 training sessions for teacher representatives from each institution were planned. But, in order to make up for the delay in the start of the project, we combined the first 2 sessions. This took place in Antsirabe from January 14 to 18, 2018. Then, the third session was carried out on April 24 to 27, 2019. In total, each establishment was represented by 4 teachers during these training sessions. They will ensure both the training of other teachers, but also of the students. During each intervention, the OEMC/MENETP ensured the animation of the themes on the protection of the environment; and the GSDM on agroecological practices.

From February 5 to 8, 2020, a training course for 17 teachers from CEG Betafo, 2 from CEG Ankazomiriotra and 2 from CEG Vinany was led by the central GSDM and OEMC team.

The three (3) sessions planned in the project document have already been carried out before. But, we organized this special session in order to replace the trained teachers of the CEG Ankazomiriotra and Vinany who were assigned to other regions; and to strengthen the teachers in the CEG Betafo which has a large number of students in 6th and 5th grades. This training was carried out within the CEG Betafo during the first three (3) days, before concluding with a visit to the farms supervised by the project along the RN34 axis and the Ivory training site.

### III.2.3.5 Training Tools (tarpauling, booklet, teacher guideline, langage-photo) - 6 new schools

Pedagogical tools have also been made available to the 12 supervised schools in order to facilitate the transmission of information to students. They were delivered to schools each school year.



Picture 79 : delivery of booklets to CEG Ampitatafika

Table 48 : List of educational supplies delivered to the 12 supervised schools

Educational tools	Number	Frequency
Notebook 200p Large Format	9	Each year
Pen 4 colors (black, blue, red, green)	4	Each year
Marker 4 colors (02 of each color)	8	Each year
Large Format Glue	2	Each year
Rule	4	Each year
Cat flip roll	1	Each year
Chisel	2	Each year
Masking tape	2	Each year
Pencil	4	Each year

### III.2.3.6 Produce and edit Communication tools (tarpaulin, Roll up)

Apart from the educational supplies developed above, the project has also published and distributed educational tools. These tools consist of training sheets with simple drawings illustrating the different stages of the practices in question. Then there are the language photos that have been distributed to make it easier for students to understand.

Table 49 : List of educational tools delivered to the 06 new schools

Educational tools	Number	Frequency
5 type of training tarpaulin (1 copy each)	5	Once (at the start of the project)
> <b>Comparison Conventional Agriculture / Agro-ecology</b>		
> <b>Association/Rotation system</b>		
> <b>Contour line (A-frame)</b>		
> <b>Agroforestry</b>		
> <b>Compost</b>		
Photolanguage	30	Once (at the start of the project)
A-frame	1	Once (at the start of the project)

### III.2.3.7 Produce Cartoon strips for school children

As planned in the project document, a 3D animated film based on the contents of the fun booklet was produced. It was produced by NOG'ONE. In February 2020, the Nog'One team presented, for validation of the GSDM Board of Directors, the characters of the film in 3D (appearance and voice). Then, a provisional version was submitted for CA validation at the end of June. On October 09, 2020, the official release of the film entitled «Agroecology for future generations» was made at the IFM Analakely. In addition, following the request of the Region and the DREDD of Vakinankaratra, another screening of this animated film was made at the Tranompokonolona of Antsirabe on November 05, 2021. Apart from the other partners, the 12 schools supervised by the project received the film in electronic format on a CD.



Picture 80 : Official release of the 3D animated film «agro-ecology for future generations» at Tranompokonolona Antsirabe

### III.2.3.8 Provide some kits and inputs for demonstration plot (Materials and tools, Teaching Tools, inputs) for 6 new school

The agricultural inputs and equipment needed to set up the application plots were delivered each year to each establishment. And, each of the 12 schools in collaboration with the project has an application plot for the students; and demonstration for parents and peasants around. The delivery of the materials has already been described above.



Picture 81: Intrants et matériels mis à la disposition des écoles pour faciliter la mise en place des parcelles d'application

### III.2.3.9 Accompany students in the implementation

The establishment of application plots is one of the steps among the processes proposed for the introduction of agroecology in schools. The pupils in the 6th and 5th grade (and 4th for the CEG Ihazolava) are the targets of this approach. These students receive both theoretical classroom training and practical training on application plots. The teachers trained by GSDM and the OEMC are primarily responsible for these trainings. However, they receive support from the project technicians on activities at the level of the application plots. It is up to the students, supervised by trained teachers and accompanied by project technicians who carry out all the activities on these plots.

Several CA systems have been installed on the application plots of the 12 schools supervised by the project. These application plots serve:

- First, as a place of practical training for students ;
- Demonstration plots for parents of students who meet regularly at school level; and visit these plots (they can thus assess the performance of the agroecological practices encountered by their children) ;
- Dissemination tools for farmers around schools; and who were able to observe the systems developed there throughout the year.



Picture 82 : application plots of CEG Vinany, Upland Rice on Stylosanthes mulch



Picture 83 : application plots of CEG Vinany, Upland Rice on Mucuna mulch and Maize + Cowpeas / Mucuna



Picture 84 : application plots of CEG Tsarasanandro - Antokofoana, fallow of Stylosanthes after Upland Rice + Stylosanthes



Picture 85 : application plots of CEG Tsarasanandro - Antokofoana, Upland rice on Mucuna mulch and on residues of Maize + cowpeas + Mucuna



Picture 86 : The students are very involved in all the activities carried out at the level of the application plots





Picture 87 : Crop residues (Maize + Mucuna) at the level of the CEG Antsoatany application plot

The following table summarizes the number of students who have benefited from the transfer of knowledge on the environment and agroecology since the start of the project

Table 50: Number of students trained

Establishment	College Status	Cisro	Number of teachers trained in AE	Number of beneficiary students				
				2017/18	2018/19	2019/20	2020/21	2021/22
CEG Ihazolava	Public	Ambatolampy	4		160	212	323	348
CEG Ambohimandroso	Public	Antanifotsy	4		291	319	366	363
CEG Ampitatafika	Public	Antanifotsy	4		146	168	179	190
Lycée Privée Loterana - Antanifotsy	Privée	Antanifotsy	4		63	60	50	48
CEG Antsoatany	Public	Antsirabe II	4		122	172	223	171
CEG Tsaramasoandro - Antokofoana	Public	Betafo	4		176	169	247	247
<b>Sous-total ECOLE MANITATRA</b>			<b>24</b>	<b>0</b>	<b>958</b>	<b>1100</b>	<b>1388</b>	<b>1367</b>
CEG Vinany	Public	Mandoto	6	253	200	165	226	280
CEG Ankazomiriotra	Public	Mandoto	5	160	179	179	259	247
CEG Betafo	Public	Betafo	25	200	126	1181	879	879
CEG Annexe Alakamisy Anativato	Public	Betafo	3	164	177	174	238	238
Collège Privé AINA	Privée	Antsirabe II	3	60	57	58	49	60
CEG Vinaninkarena	Public	Antsirabe II	3	170	198	190	166	163
<b>Sous-total ECOLE PAPAM</b>			<b>45</b>	<b>1007</b>	<b>937</b>	<b>1947</b>	<b>1817</b>	<b>1867</b>
<b>Gand total</b>			<b>69</b>	<b>1007</b>	<b>1895</b>	<b>3047</b>	<b>3205</b>	<b>3234</b>

Thus, since the beginning of the project, 11,381 students have benefited from this project to introduce agroecology in schools. This represents 190% of the final objective of the project.

### III.2.3.10 Organise competition of best school

From July 11 to 13, 2022, we held the competition for the best school among the establishments supervised by the project. For this, we visited for 2 days each of the 12 schools accompanied by Manitatra 2, in order to be able to rate them. Several factors were taken into account during these visits, but the quality of the application plots takes on a predominant coefficient. Then, we spent half a day in the meeting room at the social residence of Antsirabe, in order to appreciate the effectiveness of the transfer of knowledge from teachers to students. The combination of scores from school visits and student knowledge determined the schools' rankings. Prizes corresponding to this ranking were awarded at the end.



Picture 88 The effectiveness of knowledge transfer in environmental education and agroecology was among the criteria evaluated in the competition for the best school

### III.2.3.11 Exchange visits between School



The project organizes exchange visits each year for the 12 supervised schools. These visits are carried out in the project areas: school application plots and family farms adopting agroecological practices. To enrich the discussions and exchanges, we invited teachers, students and parents. In the Middle West, the GSDM training site in Ivory is also a preferred destination for these visits. Indeed, apart from visits to the application plots of their children, these exchange visits between schools remain a decisive tool to convince the parents of pupils.

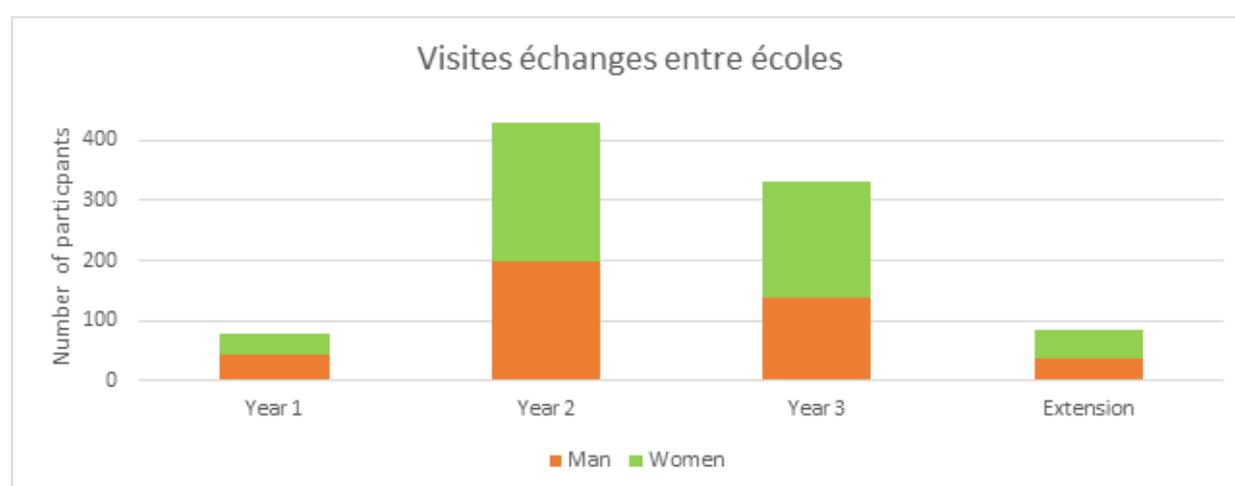
Picture 89 : Exchange visit between schools at CEG Vinaninkarena

Table 51: Exchange visits between schools

Year	Number of sessions	Number of participants	Women	% Women
Year 1	3	77	34	44%
Year 2	15	429	230	54%
Year 3	12	331	193	58%
Extension	3	84	48	57%
<b>Overall</b>	<b>33</b>	<b>921</b>	<b>505</b>	<b>55%</b>

According to this table, 33 visits were organized throughout the project. These visits saw the participation of 921 individuals gravitating around the schools supervised by the project. And, among them, we counted 505 women (i.e. 55%). The strong participation of women was also noted during these visits. The objectives set in the project document for these activities were largely exceeded.

Graph 22: Exchange visits between schools carried out during the project



### III.2.3.12 Organize annual workshop (capitalisation, experiences exchange)

At the beginning of each school year, the project organizes a workshop to assess the activities carried out with the supervised schools. Apart from the representatives of each school (teachers, pupils and parents of pupils), local

authorities and development partners are also invited to participate in this workshop. Thus, the event serves both as a reorientation of the next activities organized at the school level; but also an opportunity for the GSDM to insist on the necessary advocacy for more consideration of agroecology in the current activities of everyone.



Picture 90 : Testimony of students during the review workshop of activities at the level of schools supervised by the project as part of the introduction of agroecology in schools



Picture 91 : Workshop of school activity review in Antsirabe



Picture 92 : Workshop of school activity review in Antsirabe



Picture 93 : Parents' testimony during the workshop of school activity review in Antsirabe



Picture 94 : Children's testimony during the workshop of school activity review in Antsirabe



Picture 95 : Group work during the workshop of school activity review in Antsirabe

In addition, from October 11 to 16, 2021, a mission organized with a team from GSDM headquarters provided a brief overview of the achievements at the level of the 12 schools supervised by the project. Indeed, we consulted with representatives of each school (teachers, students, parents of students) on:

- The changes observed at the level of each school following the completion of this project,
- The motivation of the schools to continue the actions related to the transfer of knowledge in environment and agroecology after the start of the project,
- Any difficulties in sustaining these actions after the project

In general, each of the 12 supervised schools has seen a huge change brought about by this project.

For teachers:

- We have found an extracurricular activity that really interests the students ;
- The experiences acquired during this project will be very useful to enrich the discussions with the students ;
- As they are also peasants. Notions on agroecology allow them to improve their farms; and to multiply points of reference in terms of agroecology for other farmers ;
- ...

**Framed 10 : Agroecology has been well established at the level of the pilot schools through its multiple positive impacts (testimony of Ms. RINDRA)**



RINDRA Harimino Faraso  
Director of CEG Vinany  
District Mandoto  
Région VAKINANKARATRA

*“This project has had many positive impacts for the schools. This has brought many clearly visible changes, especially for those who have seen and known the school before this collaboration with the project and GSDM.*

*Even if there will be no more project to accompany us, we have already agreed to continue. Whether it is the students, the teachers, and especially the parents of students who represent in a way the purpose of the project, we have all gained a few things with this project. Even if the project in its current form ends here, we will continue, because agroecology has become a full-fledged activity of the school. We will continue, both the transfer of knowledge with new students ; and the establishment of application plots each year. Our goal is to train all students from this college on the notion of agroecology... this will make us stand out from other CEGs. It’s too important ! Currently, the soils here are very degraded. We must continue environmental education for the future generation... so that there will still be some things to inherit ! »*

For the students :

- This project opened their eyes to the continual degradation of the environment due to human actions,
- The practices carried out at the level of the application plots at the school allowed them to assess the performance of agroecological practices despite climate change and the current strong degradation of the soil,
- Agroecology is a very relevant solution to increase agricultural production and income. They tried, each in their own way, to educate their parents.
- ...

**Framed 11 : The interest brought by the students on this project has far exceeded expectations (testimony of Mickaël)**

NOMENJANAHARY Mickaël

14 years old

4ème at CEG Antsoatany

District Antsirabe II

Région VAKINANKARATRA



*“Previously, our ancestors and even the generations of my parents, did agriculture with conventional practices with strong pressures on the environment, and in particular the soil; such as slash and burn crops, monocultures on ploughing, etc. And, Agroecology makes it possible to gradually restore the fertility of the soil. It makes it possible to increase production to aim, in addition to food self-sufficiency, the sale of agricultural products in order to improve our quality of life.*

*... I really enjoyed studying Agroecology at school. We also practiced it, for the first time, here at school. We immediately noticed that the yield is much higher. On a plot of one are, we obtained 57.5 kg of paddy. I convinced my parents of the relevance of these techniques. And, since I started studying agroecology in grade 5, we hadn't plowed our tanetys. With my parents, we started by installing the Mucuna. And, this year, we put in rainfed rice.*

*... Currently, the environment is very badly degraded. There is no more forest. And we continue to deforest. However, these remaining lots of forests should no longer be exploited; on the contrary, we must reforest! The rainfall is very random. The rain comes very early or too late. We also see heavy rain for a short time; and rain holes very harmful to agriculture. The solution to these problems is to practice agroecology and to insist much more on reforestation. If we really have to cut down a few trees; they must be replaced.*

*So, for all Malagasy people, we can clearly see the degradation of the environment. We must organize ourselves and mobilize our forces to carry out reforestation and opt for agroecology for all our agricultural activities for more than substantial advantages”*

**Framed 12 : The interest brought by the students on this project has far exceeded expectations (testimony of Gaël)**



RIANTSOA Pierrot Jean Gaël

15 Years old

3ème CEG Ankazomiriotra

District Mandoto

Région VAKINANKARATRA

*“I started studying agroecology in 6th grade. At first, I told my parents what we do in class. They didn’t believe me at all...! But one day, my father accompanied me to school; and asked me to show it our application plots. He was amazed by the good vegetation of rainfed rice, maize and other crops that we put in place. And he said it’s really interesting... Since then, we’ve been practicing agroecology at home. We started with the production of compost and conservation agriculture (voly rakotra). We have extended the practice to other plots, and our rainfed rice yield is around 4T/ha each year. And, we have even developed other practices such as agroforestry.*

*Even though I am still small, with soil degradation, climate change, and other major constraints, I am convinced that the training on agroecology that I received would be useful to me. It helps me a lot so that I can direct my future. »*

For parents of students:

- At first, it was difficult to take their children's word for various agroecological practices. Indeed, cultivating without plowing on crop residues goes completely against farming habits ;
- The trigger was above all the visits to the crops at the level of the school's application plots ;
- The adoption of these innovations on their farms was met with mockery from neighbors at first. But once they saw a significant difference in crop fields (during the vegetative phase, adaptation to water stress, resistance to pest pressures, and especially in terms of agricultural yield), they started to be taken seriously. They thus became leaders for their peers ;
- ...

**Framed 13 : l'Agroécologie a été bien implantée au niveau des écoles pilotes par ses impacts positifs multiples (témoignage de M. Pierre)**

RAKOTONDRAVONY Jean Pierre

58 years old

Parent of student at CEG Antokofoana

District Betafo

Région VAKINANKARATRA



*"I have a child in 5th grade here where he is studying agroecology. Arrived at home, he told me about this new activity in their school. He also showed me a small booklet summarizing these new agricultural practices.*

*...At first, I was very reluctant. I told him that even with deep plowing, the addition of organic elements, and several passages of women for weeding, it is difficult to produce these days. Cultivate without tillage; and in addition, by inserting other plants that will compete with rice, corn, and other food crops... it's a joke!*

*Immediately, the my son cries when I didn't follow him. To avoid this inconvenience, I granted him a small piece of land for his nonsense! Then I came to his school for a parent-teacher meeting. At the entrance to the establishment, he immediately pulled me towards a small, very green plot surrounded by quickset hedges. He looked at me; and told me to take good care of my crops in my own way... but that I would never have such good yields as the work of schoolchildren. I was left speechless by his audacity; but also by the quality of their plots.*

*...once I got home, I offered to work with me in the fields; and to bring me all these new practices that he studies at school. We have a plot that is on the edge of a busy little road. It was already very degraded. Last year, we installed Mucuna. This year, we plowed it more; and rainfed rice was put on vegetation residues. All passers-by are amazed by the quality of my upland rice. No passer-by passes by without asking questions: "but what is Ra-Jean Pierre doing with you"? I don't even have time to work! Moreover, this plot, I had already left it for a few years for lack of fertility. And, there are many who know it. It's still normal if people are surprised by the vegetation of my rice! But I always tell them that conservation agriculture (voly rakotra), and agroecology in general, can restore soil fertility; and to produce despite the current random rainfall. So, I also raise awareness for the people around. And, I became a leader in agroecology in the village. »*

For the establishment:

- With reforestation activities and the establishment of application plots, the school has become a green space ;
- The application plots have become reference sites for the parents of pupils and the surrounding farmers ;
- Products at the application plot level generate income to maintain the school, and set up other infrastructure;
- ...

However, each of the supervised schools requested continued collaboration with GSDM on this subject. But, they remain motivated to continue activities related to the transfer of knowledge in agroecology and environment to students if the project withdraws. Indeed, these activities have become good habits at school level, which should be continued. Moreover, they are of great interest to the pupils; and vocabularies specific to agroecology have become common language at school, especially during recess. The testimonies that follow make it possible to appreciate these motivations of everyone at the level of the establishments supervised by the project.

III.2.4. Organize training sessions targeting development actors such as farmer’s organizations, NGO and services providers

Table 52: Achievement for training sessions on CSA for development actors

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
2.4.1	Organize training sessions targeting development actors as farmers organizations, NGO, local service provider	Number of participants from development actor trained	60	0	0	20	0	20	33%
2.4.2	Organize exchange visit in the training sites of GSDM	Number of participants to exchange visit in the training sites of GSDM	2 400	1 306	658	1 336	576	3 876	162%
2.4.3	Car hiring during training sessions (6 days per session)	Number of car hiring days	18	0	0	6	0	6	33%

III.2.4.1 Organize training sessions targeting development actors as farmers organizations, NGO, local service provider

GSDM has already carried out training sessions for local development actors, farmers’ organizations, NGOs and agricultural input suppliers, but within the framework of the PAPAM project. However, at the request of the Director of Economic and Social Development (DDES) of the Vakinankaratra Region, a training session targeting development actors such as NGOs, local service providers was carried out from July 21 to 24, 2021. The Vakinankaratra Region (14 peoples), the NGO Cœur des Forêts (02), APDRA (02), and representatives of member farmers’ organizations of FIFATA (02) are invited to participate in this training session. The first three days took place in the Meeting Room of the Vakinankaratra Region, with exchanges and sharing of experiences between each participant around agroecology. The last day was devoted to a visit to the farms supervised by the project on the RN7 axis. This visit made it possible to reinforce the various themes developed during the classroom training.

III.2.4.2 Organize exchange visit in the training sites of GSDM

The installation of direct seeding cropping systems under plant cover at the Ivory site began in 1998 on land which at the time had already been abandoned by its owner due to attacks by *Striga asiatica*<sup>18</sup>. After more than 20 years of

18 *Striga asiatica* is an invasive weed for cereals when soils are highly depleted

cultivation under plant cover, essentially “maize rotation associated with legumes” with “rainfed rice intercropped or not with legumes” this parasitic plant no longer has an impact on maize and rice.

This site welcomes many visitors from all over Madagascar: farmers, researchers, students, technicians, teachers, trainers, parents of students, journalists, etc. And, within the framework of the Manitra 2 project, 12,598 people have been recorded having visited the site. Which corresponds to almost 100% of the project objective. The exchanges are not only made at the level of this site. Indeed, we also use the plots of farmers supervised by the project near the national road RN34 axis in order to be able to draw a parallel between a controlled environment and a traditional practices.

It should be noted that the performance of these activities was severely disrupted during the period of the strong Covid-19 pandemic.



Picture 96 : Exchange visit of TFNAC<sup>19</sup> members to the GSDM training site in Ivory

### III.2.5. Involve regional Directorate of Meteorology in Climate Smart Agriculture Conservation Agriculture and Agroforestry

Table 53: Achievements for DGM involvement

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
2.5.1	Organize Information/sensitization of local stakeholders	Number of local stakeholders sensitized on Climate change by regional Meteorology officer	3	0	2	1	0	3	100%
2.5.2	Organize Training workshop for local stakeholders	Number of training workshop session	3	0	0	7	0	7	233%
		Number of participants trained on Climate Change and information bulletins	75	0	0	75	0	75	100%

19 TFNAC : National Task Force on Conservation Agriculture under M

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
2.5.3	Provide regional Meteorological information bulletins (quarterly)	Number of information bulletins provided	800	0	343	410	0	753	94%
2.5.4	Provide perdiem for meteorological officer	Number of METEO officer man-day intervention	12	0	16	32	0	48	400%

In this context of climate change, the valorization of agrometeorological information is very important in order to adapt interventions in agricultural development. For this, a collaboration agreement was signed between GSDM and the Regional Meteorological Service (branch of the Inter-Regional Direction of Transport, Tourism and Meteorology).

### III.2.5.1 Organize Information/sensitization of local stakeholders

Thus, 3 awareness workshops on the use of agro-meteorological data in agricultural development activities in the Region were organized with the SRM/DIRTTM of Vakinankaratra. A first workshop that took place on October 29, 2019 at the Social Residence of Antsirabe. Thirty-five participants, made up of local authorities and technical partners, took part.



Picture 97 : Awareness workshop on the promotion of agrometeorological data organized at the Antsirabe social residence

A second workshop with the same theme was also carried out on February 12, 2020 for the benefit of farmers' organizations, CDRs, CirAEP officials, local partners and project technicians. 40 participants, including 10 women (25%) attended this session.

Finally, on April 14, a workshop on "Ocean, Weather and Climate" was organized in the Meeting Hall of the Vakinankaratra Prefecture as part of the celebration of "World Meteorological Day". A total of 26 participants from different officials (CTDs and STDs) in the Region took part in this event. Five presentations were made:

- Meteorology in Madagascar.
- The Water Cycle and the climate.
- The MANITATRA 2 Project in response to climate change and food insecurity.
- Climate variability and change in Madagascar.

- Malagasy topoclimatology declined at District level

### III.2.5.2 Organize Training workshop for local stakeholders

Then, 7 training sessions on the valorization of agrometeorological data were carried out in the 2 project areas. Particular emphasis was placed on the method of interpretation of the quarterly bulletin designed within the framework of the agreement established with the Regional Service of Meteorology Vakinankaratra. During these training sessions, 75 participants were registered.

### III.2.5.3 Provide regional Meteorological information bulletins (quarterly)

Finally, the design and distribution of quarterly agro-meteorological bulletins were carried out regularly within the framework of this collaboration with the SRM/DIRTTM of Vakinankaratra. A total of 756 newsletters were distributed to rural development individuals/organizations. This corresponds to 94% of the final objective of the project.

### III.2.6. Involve the Ministry of Agriculture and livestock (MAEP) and Ministry of Environment and Forestry (MEDD) or regional directorates

Table 54: Achievements by involving MAEP and MEDD

Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
			Year 1	Year 2	Year 3	Extension	Achievement	%
2.6.1 Organize field collaboration and exchange by MPAE + MEEF	Number of mission	3	0	0	0	0	-	0%
2.6.2 Organize field collaboration and exchange by regional directorates ( DRAEP + DREDD)	number of signed agreements	2	1	1	2	2	2	100%

#### III.2.6.1 Organize field collaboration and exchange by MinAE+ MEED

We have not carried out specific missions for this activity. Indeed, the agents of the ministries in question participated in many events organized by the project: agroecology days, exchange visit co-organized with the TFNAC, events around activities undertaken at school level, etc.

#### III.2.6.2 Organize field collaboration and exchange by regional directorates (DRAEP + DREDD)

The project proposed various activities in order to solicit the effective involvement of the 2 branches of the ministry in the Vakinankaratra: the DRAE and the DREDD.

The signature of the collaboration agreement within the framework of the involvement of the DREDD was carried out during the first year of the project. Overall, this agreement sets the method of execution of the DREDD for the evaluation of the reforestation activities of Manitra 2; and the training and support of nurserymen in collaboration with the project.

For its part, that of the DRAEP could not be carried out until the beginning of year 2 of the project. The change of the Regional Director was the cause of this delay. It also contains the mode of execution of the DRAEP of the periodic evaluation of the Manitra 2 project; and the training and support of lead farmers in collaboration with the project.

Thus, the implementation of these agreements led the project team and the agents of the DRAE and the DREDD to organize regular joint missions.



Picture 98 : Carrying out monitoring missions for CirAEP Antsirabe II agents in the commune of Andranomanelatra

### III.2.7. Participate to CSA integration into public policies

Table 55: Achievements on advocacy through workshop participation

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
2.7.1	Participate to workshops or meeting to advocate CSA (no cost)	Number of workshop on CSA in which the GSDM take part	3	2	1	0	0	3	100%
2.7.2	Participate to workshops or meeting on climate change to advocate CSA (no cost)	Number of workshop on climate change in which the GSDM take part	3	0	1	2	0	3	100%

For CSA integration into public policies, the principal activity is to participate to workshops or meeting to advocate CSA.





Picture 99 : During the Vakinankaratra Showcase, the Stand of the MANITATRA 2 project attracted many visitors





Picture 100 : During the Vakinankaratra Showcase, thematic photos and specific inputs in agroecology were presented to illustrate the different practices developed by the MANITATRA 2 project.

### III.2.7.1 Participate to workshops or meeting to advocate CSA (no cost)

During the second quarter of the project, the GSDM were participated in the seminar on climate change organized by ABC Mention (Antananarivo University). The GSDM will try to participate to a meeting for CSA advocacy for each opportunity.

On February 13, 2019, GSDM participated in a MAPROOM update workshop organized by the General Directorate of Meteorology.

Finally, on November 22, 2019, an exchange workshop on Climate-Smart Agriculture was carried out on the initiative of MAEP and TFNAC at CNEAGR-Tananarive. Many technical and financial partners of MAEP attended this workshop. And note that GSDM and the PAPAM Project operator made a presentation of their activities related to the CSA, including the case of the MANITATRA 2 project.

Note that various events already mentioned above, or would be described later, also fall within this activity but have not been mentioned here. Among other things, the “research-development interface” workshop, the annual review workshops of activities at school level, the Field days of agroecology, etc.

### III.2.7.2 Participate to workshops or meeting on climate change to advocate CSA (no cost)

On December 16 and 17, 2020, GSDM organized a «Research and Development Interface» workshop which includes researches, developments actors, public entities and NGOs, farmers ... The aim of the workshop was to put on the same table research organizations and those working in the dissemination of innovations in order to optimize the interventions of each. But we also invited farmers so that they could relate the context in which they find themselves, their constraints and their views on the work of each of the organizations.

From September 30 to October 02, 2021, the project participated in a regional fair “Showcase of Vakinankaratra”, organized by FIVOY. A stand was set up to present the different agroecological practices promoted by the project. Two beneficiary farmers provided the presentation and some testimonials on the positive impacts of each practice. Moreover, as the questions that often come up are the availability of seeds and post-project technical support, we took advantage of this opportunity to promote the Leader Farmers. Indeed, the latter already have significant baggage, theoretical and practical, on the various agro-ecological practices adapted in the Region. In addition, as they supervised many farmers who benefited from the project; so they have important information about the different seeds available in their areas.

In addition, from August 04 to 08, 2021, GSDM participated in the international rural economy fair («Proud Mada»). A farmer supervised by MANITATRA 2, member of the FANILO Cooperative, represented the project.

As for the previous activity, some project activities developed in other paragraphs in their place in this activity. For example, there are the 3 workshops organized with the SRM/DIRTTM Vakinankaratra.

But, apart from these, it should be noted that GSDM regularly participates in reflections around the CSA. The GSDM was, for many years, the focal point of the TFNAC. It also participates in monthly GTCC (Climate Change Thematic Group) meetings. And recently, the GSDM joined the NAT CAP network under WWF including public entities, private sectors, NGOs, universities on the valuation of Natural Capital.

### III.3. Result 3 : Farmer organizations are supported and linked to various stakeholders in Agriculture

#### III.3.1. Participate to sharing experiences at the regional level (COMESA and other regions) integrating political actors and development actors

The activities in paragraph 2.4.1 “Organise training sessions targeting development actors as farmers organizations, NGO, local service provider” were similar to this action. In addition, the Covid-19 has greatly disrupted the planning of the project team. Thus, it was proposed to use the budget allocated to this activity for other actions that do not require gatherings of people.

Table 56: Awareness raising realized at the regional level

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
3.2.1	Organize exchange visits targeting policy makers, development actors (technicians) and farmers in COMESA and other regions	Number of exchange visits in COMESA and other regions	1	0	0	0	0	0	0%
		Number of exchange visits participants	5	0	0	0	0	0	0%

The health crisis linked to the Covid-19 pandemic prevented this activity from being carried out for the first 2 years. Then, being constantly in doubt about the evolution of this crisis, GSDM proposed in the budget reallocation of the budget line corresponding to this activity to support certain important actions, such as interventions at school level.

#### III.3.2. Support FOs to maintain continuous exchange with FDA and FDAR in order to make a link between farmers and agricultural services

Table 57: Activity for permanent link with FDA and FDAR

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
3.3.1	Ensure Permanent exchange with FDA (state promoted development device in national level) in order to make a link with government development orientations	Number of concerned FDA	1	1	2	0	0	1	100%

3.3.2	Ensure Permanent exchange with FDAR (state promoted development device in regional level) in order to make a link with government development orientation	Number of concerned FDAR	1	1	1	1	0	1	100%
		Number FOs benefiting finance from FDAR	90	0	0	25	0	25	28%

In result 1, the project adopts individualized support for farmers adopting agroecological practices. And, in terms of sustainability of its actions, the project proposed to put these farmers in contact with other technical and financial operators. The most appropriate approach is to group farmers according to their needs. The FDA is a device promoted by the State as a financial tool for the development of agricultural activities in the Region. Thus, with a view to this sustainability of the actions already implemented, the project has supported farmers' groups to set up and submit funding requests to the FDA. Since the beginning of the project, 141 applications integrating agroecology in each micro-project have been submitted to the FDA for funding. Among them, 83 requests were put together and submitted to the FDA during the year 2021. As a result, 5 and 20 micro-projects were funded by the FDA successively in 2020 and 2021.

Table 58: Microprojects funded by the FDA Vakinankaratra

N°	Name of project leader	District	Project title	Total project amount (Ar)	FDA Grant (Ar)	MANITATRA 2 grant (Ar)	Beneficial contribution (Ar)
1	NARINDRA	BETAFO	Rizipisciculture durable (en agro-écologie)	8 892 400	8 075 400		817 000
2	MITSIRY	BETAFO	Riziculture pluvial suivant les pratiques agroécologiques	10 495 600	9 512 600		983 000
3	MAMIRATRA	BETAFO	Riziculture pluvial suivant les pratiques agroécologiques	6 954 400	6 275 400		679 000
4	TANTSAHA MIAVOTRA	ANTSIRABE II	Rizipisciculture durable (en agro-écologie)	5 026 800	4 572 800		454 000
5	FITIA	ANTSIRABE II	Application de l'agro-écologie en élevage laitier	16 318 100	15 428 600		889 500
Sub-Total Year 2020				47 687 300	43 864 800	-	3 822 500
6	VEHIVAVY MIHARY	ANTSIRABE II	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	11 770 600	11 124 000		646 600
7	MANANTENASOA	ANTSIRABE II	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	11 770 600	11 124 000		646 600
8	SANDRATRA	ANTSIRABE II	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage de poulet "gasy" suivant les pratiques agroécologiques	11 325 600	10 661 000		664 600
9	MIRINDRA	ANTSIRABE II	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage de poulet "gasy" suivant les pratiques agroécologiques	11 888 600	10 661 000		1 227 600
10	FIOMBONANA	ANTSIRABE II	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	11 770 600	11 124 000		646 600
11	FIAVOTANA	BETAFO	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	18 663 100	17 729 000		934 100

N°	Name of project leader	District	Project title	Total project amount (Ar)	FDA Grant (Ar)	MANITATRA 2 grant (Ar)	Beneficial contribution (Ar)
12	AVOTRA MIRAY	BETAFO	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	18 663 100	17 729 000		934 100
13	LOVASOA	BETAFO	Acquisition d'intrants et matériels pour l'amélioration des techniques de grossissement des poissons en rizière	11 496 400	10 411 400		1 085 000
14	COOPERATIVE FANILO	MANDOTO	Acquisition des matériels (dont le rouleau de Stylosanthes) pour l'amélioration des techniques riz pluvial en AC	19 565 700	14 986 000	3 000 000	1 579 700
15	FANOITRA	ANTANIFOTSY	Acquisition des matériels et formation pour l'amélioration des techniques de production en cultures maraîchères suivant les pratiques agroécologiques	14 239 600	12 970 000		1 269 600
16	FIAVANANTSOA	MANDOTO	Acquisition des matériels (dont le rouleau de Stylosanthes) pour l'amélioration des techniques riz pluvial en AC	15 234 250	11 164 000	3 000 000	1 070 250
17	MANDRESY	BETAFO	Acquisition des matériels (dont le rouleau de Stylosanthes) pour l'amélioration des techniques riz pluvial en AC	14 585 700	10 504 000	3 000 000	1 081 700
18	TANJONA	BETAFO	Acquisition des matériels (dont le rouleau de Stylosanthes) pour l'amélioration des techniques riz pluvial en AC	12 995 700	9 073 000	3 000 000	922 700
19	FANEVA	BETAFO	Acquisition des matériels pour l'amélioration des techniques riz pluvial en AC	5 313 100	4 826 000		487 100
20	FANILO	MANDOTO	Acquisition des matériels et formatio en AC pour l'amélioration des techniques riz pluvial en AC	15 182 950	13 817 000		1 365 950
21	FANIRY	MANDOTO	Acquisition des matériels et formation en AC pour l'amélioration des techniques riz pluvial en AC	14 998 100	13 625 000		1 373 100
22	FANOITRA	ANTANIFOTSY	Acquisition des matériels et formation pour l'amélioration des techniques d'élevage de poulet "gasy" suivant les pratiques agroécologiques	14 082 600	12 827 000		1 255 600
23	FVOARANA	ANTANIFOTSY	Acquisition des matériels et formation pour l'amélioration des techniques de production en cultures maraîchères suivant les pratiques agroécologiques	12 749 600	11 629 000		1 120 600
24	FIVROY	MANDOTO	Acquisition des matériels et formation pour l'amélioration des techniques d'élevage de poulet "gasy" suivant les pratiques agroécologiques	13 082 600	11 927 000		1 155 600
25	MIRAY	ANTANIFOTSY	Acquisition des matériels et formation pour l'amélioration des techniques de production en cultures maraîchères suivant les pratiques agroécologiques	13 569 600	12 367 000		1 202 600
Sub-Total Year 2022				272 948 100	240 278 400	12 000 000	20 669 700
TOTAL (en Ar)				320 635 400	284 143 200	12 000 000	24 492 200
TOTAL in € (conversion rate listed in the project document: 1€ = 3800Ar)				84 378	74 775	3 158	6 445

In short, the total cost of implementing these 25 micro-projects is €84,378, divided into:

- Vakinankaratra FDA funding: €74,775
- contribution of beneficiary FOs: €6,445

Thus, in relation to the financing scheme of the MANITATRA 2 project included in the project document; currently, we are successively at 150% of the funding planned for the FDA and 129% of the contribution of the beneficiaries.

Table 59: Financing scheme included in the MANITATRA 2 project document

Schéma de financement	Fonds TOTAL (Euros)	Financement COMESA/UE (Euros)	TAXES (Euros)	FDAR (Euros)	Contribution des bénéficiaires en nature (Euros)
Forecast	821 090.01	727 271.27	38 816.52	50 000.00	5 000.00
Achievements	847 307,63	727 271,27	38 816,52	74 774,53	6 445,32
<b>Completion rate</b>	<b>103%</b>	<b>100%</b>	<b>100%</b>	<b>150%</b>	<b>129%</b>

### III.3.3. Ensure that the FOs obtain permanent utilization of the Agricultural Service Provider to make a link between the farmers and the agricultural services

Table 60: Number of concertation with CSA Agricultural Service Center

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
3.4.1	Ensure Permanent utilization of CSA or Agricultural Service Center (state promoted development mechanism in District level) to make a link between farmers and agricultural service	Number of concerned CSA (Agricultural Service Center)	6	5	5	0	0	5	83%

During the first year of the project, consultation with the agents of the CSA (Ag Service Center) in the 5 districts of intervention of the project is done regularly. But during this period, the CSAs were already operating in slow motion. Indeed, they depended a lot on the operability of the FDA Vakinankaratra. However, at this time, the FDA did not yet have a service fund. Thus, it could not yet assume its role as a financial tool in the field of agricultural development.

Afterwards, the CSA changed status. They are no longer interfaces between FOs and their requests, to technical and financial partners. Currently, have become agricultural service providers, particularly at the level of FDA Vakinankaratra. Thus, the CSA/FDA development mechanism as described in the project document no longer exists.



Picture 101 : Exchange visit for the farmers of Inanantonana



Picture 102 : Exchange visit for CSA representatives

### III.3.4. Support FOs on their collaborative contracting with various partners

Table 61: Activities for supporting collaborative contract with various partners

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
3.5.1	Built capacity of FOs on rice/fish ecosystem by contracting with APDRA	Support from APDRA (2 Years of support for technicians an lead farmers) 0	2	0	1	1	1	2	100%
3.5.2	Built capacity of FOs on dairy cattle and forages by contracting with FIFAMANOR	Support from FIFAMANOR (2 Years of support for technicians an lead farmers)	2	0	1	1	1	2	100%
3.5.5	Built capacity of FOs on Best practices, biopesticides and fruit trees by contracting with CEFFEL	Support from CEFFEL (2 Years of support for technicians an lead farmers)	2	1	0	0	0	1	50%

#### III.3.4.1 Built capacity of FOs on rice/fish ecosystem by contracting with APDRA

The experience of organizations specializing in fish farming, such as APDRA, has shown that rice-fish farming can increase rice yields, while having another source of income, which is fish. In this sense, a collaboration agreement was established with the ATDRM, an association of APDRA technicians who implemented a project called AMPINA in the Region of Analamanga and Itasy. But the ATRDM will be accompanied by the APDRA during the collaboration with GSDM. The objective of this collaboration is to strengthen the project team.

This agreement was signed between the 2 parties for a period of 2 years, in accordance with what was provided for in the project document. At the beginning of their interventions, the ATDRM carried out a diagnosis of the current situation of fish farming activities in the area. The biggest problems observed during this stage being the theft of fish and the inbreeding of carp in the Region.

Training sessions on fish rearing and fattening (with the setting up of demonstration sites) were carried out for technicians and Lead farmers of the project. These sessions provided them with the necessary bases to support fish farmers.

Finally, monitoring and supervision missions were carried out regularly by the ATDRM team in order to reinforce the training provided.

After having acquired the basics in rice-fish farming, the project began to support farmer organizations oriented in this rice-fish farming activity. Three (3) FOs were thus supported by the project in order to set up and file a funding request with the FDA Vakinankaratra. After having approved this financial tool, these FOs implemented their project.

Table 62: FOs beneficiaries of FDA funding for the implementation of a rice-fish farming micro-project

N°	Name of project leader	District	Project title	Total project amount (Ar)	FDA Grant (Ar)	MANITATRA 2 grant (Ar)	Beneficial contribution (Ar)
1	NARINDRA	BETAFO	Sustainable rice-fish farming (in agroecology)	8 892 400	8 075 400		817 000
2	TANTSAHA MIAVOTRA	ANTSIRABE II	Sustainable rice-fish farming (in agroecology)	5 026 800	4 572 800		454 000
3	LOVASOA	BETAFO	Acquisition of inputs and materials for the improvement of fish fattening techniques in rice fields	11 496 400	10 411 400		1 085 000
<b>TOTAL (en Ar)</b>				25.415.600	23.059.600		2.356.000

### III.3.4.2 Built capacity of FOs on dairy cattle and forages by contracting with FIFAMANOR

As part of the improvement of milk production in the Region, the project has undertaken a collaboration with FIFAMANOR. The idea was to train the project management system on dairy farming management; to set up different pilot farms that can illustrate the improvements to be made on livestock management in the peasant environment; and to supervise GSDM technicians in their support activities for dairy farmers. The agreement was signed for 2 years

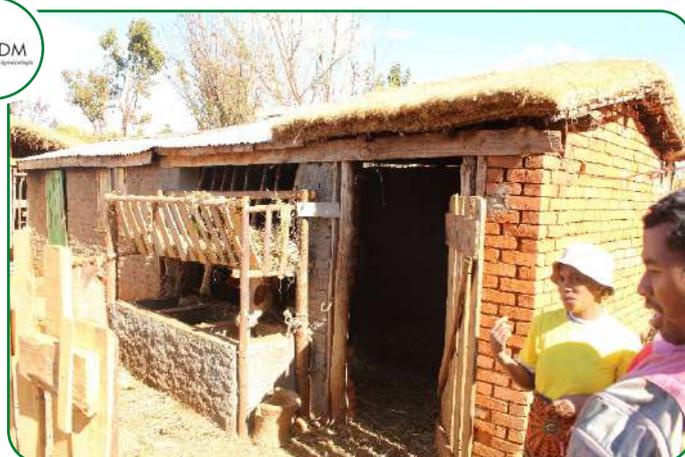
This collaboration began with an inventory of dairy farming in the communes where the project operates. Then, two training sessions were carried out for the project technicians. Finally, demonstrations on fodder crops were made in 3 communes distributed in the 2 project intervention areas.

The project also supported farmers' organizations in preparing and filing funding requests for dairy farming projects with the FDA Vakinankaratra. Five (5) FOs supported by the project obtained funding for the implementation of a dairy micro-project from the FDA Vakinankaratra.

Table 63: OP bénéficiaires du financement du FDA pour la mise en œuvre d'un microprojet de production laitière

N°	Name of project leader	District	Project title	Total project amount (Ar)	FDA Grant (Ar)	MANITATRA 2 grant (Ar)	Beneficial contribution (Ar)
1	VEHIVAVY MIHARY	ANTSIRABE II	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	11 770 600	11 124 000		646 600
2	MANANTENASOA	ANTSIRABE II	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	11 770 600	11 124 000		646 600
3	FIOMBONANA	ANTSIRABE II	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	11 770 600	11 124 000		646 600
4	FIAVOTANA BETAFO		Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	18 663 100	17 729 000		934 100

N°	Name of project leader	District	Project title	Total project amount (Ar)	FDA Grant (Ar)	MANITATRA 2 grant (Ar)	Beneficial contribution (Ar)
5	AVOTRA MIRAY	BETAFO	Acquisition d'intrants et matériels pour l'amélioration des techniques d'élevage laitier suivant les pratiques agroécologiques	18 663 100	17 729 000		934 100
TOTAL (en Ar)				72.638.000	68.830.000		3.808.000



Picture 103 : The Vakinankaratra FDA-funded Dairy Farming Improvement Micro-Project is progressing well in the Village of Ankofafa/CR Andranomanelatra (FO VEHIVAVY MIHARY)

### III.3.4.3 Built capacity of FOs on Best practices, bio-pesticides and fruit trees by contracting with CEFFEL

Finally, to strengthen the capacities of the project team in terms of market gardening, management of organic matter, agroforestry and other good agricultural practices, another agreement was signed with the CEFFEL center on April 01, 2019. A theoretical training accompanied by a tour of the activities undertaken by the center was carried out. Three practical training sessions were then held at the two demonstration sites set up as part of this collaboration. Each of these sites was subsequently the subject of 2 monitoring sessions by the CEFFEL team.

Three (3) FOs supported by the project also benefited from FDA funding for the implementation of micro-projects to improve market gardening techniques.

Table 64: FOs beneficiaries of FDA funding for the implementation of a market gardening micro-project

N°	Name of project leader	District	Project title	Total project amount (Ar)	FDA Grant (Ar)	MANITATRA 2 grant (Ar)	Beneficial contribution (Ar)
1	FANOITRA	ANTANIFOTSY	Acquisition of equipment and training for the improvement of production techniques in market gardening according to agroecological practices	14 239 600	12 970 000		1 269 600

N°	Name of project leader	District	Project title	Total project amount (Ar)	FDA Grant (Ar)	MANITATRA 2 grant (Ar)	Beneficial contribution (Ar)
2	FVOARANA	ANTANIFOTSY	Acquisition of equipment and training for the improvement of production techniques in market gardening according to agroecological practices	12 749 600	11 629 000		1 120 600
3	MIRAY	ANTANIFOTSY	Acquisition of equipment and training for the improvement of production techniques in market gardening according to agroecological practices	13 569 600	12 367 000		1 202 600
<b>TOTAL (en Ar)</b>				<b>40.558.800</b>	<b>36.966.000</b>		<b>3.592.800</b>

### III.4. Communication and visibility

#### III.4.1. Organization of regional field days targeting government authorities and development actors

Table 65: Achievements on visibility and communication events organization

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
4.1.1	Organization of regional field days targeting government authorities and development actors	Number of regional field days	1	0	1	0	0	1	100%
		Number of participants (Authorities, donors, local stakeholders, lead farmers, researchers, development actors, unions farmer and journalist)	150		167	0	0	167	111%
4.1.2	Conception of other Communication tools as streamers, roll up and mass communication	Number of streamer	6	2	1	0	0	3	50%
		Number of roll up	6	1	1	2	0	4	67%
4.1.3	Car hiring for all communication and visibility action	Number of car hiring days	60		28	12	0	40	67%

On March 19 and 20, 2020, two (2) agroecology days were organized by GSDM in the Vakinankaratra Region. A day and a half was devoted to visits to the project's achievements. While the remaining half-day had made it possible to make a restitution in the room. These days of agroecology were carried out in order to strengthen advocacy actions in Agroecology at the national level. 167 people participated in this event as follows :

- Representatives of the Ministry of Environment and Sustainable Development (MEDD), representatives of the Ministry of Agriculture, Livestock and Fisheries (MAEP);
- Representatives of the Ministry of National Education and Technical and Vocational Education (MENETP);
- Representatives of the Ministry of Transport, Tourism and Meteorology); representatives of local authorities (Vakinankaratra Region);
- Representatives of the branches of the ministry (DRAEP, DRENTP, DREDD);
- Local partners (CASEF project, PAPAM project, AGRIVET, VERAMA, FIFAMANOR, WHH, CFFAMMA, FIFATA, GIZ, FOFIFA, ATASEF project, AKF-OSDRM, GRET, APDRA, MALTO, Conservation International, AVSF, FDA

Vakinankaratra, etc.);

- Representatives of each of the 12 schools supervised by the project (teachers, pupils and parents of pupils);
- Journalists ;
- And, the GSDM team,

The strong participation and during these two (2) days shows the interest brought by the guests to the activities of the project in the area.



Picture 104 : Two Field days of agro-ecology organized in the Vakinankaratra Region on March 19 and 20, 2020

### III.4.2. Publications and broadcasting

Table 66: Communication activities related to publications and broadcasting

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
4.2.1	Broadcasting on national TV	Number of TV broadcasting	2	1	6	4	0	11	550%
4.2.2	Broadcasting on national Radio	Number of Radio broadcasting	30	10	12	18	6	46	153%
4.2.3	Expenses related to attendance of journalists or reporters in events for publication on TV or newspapers	Man-day of reporters (20 reporters x 5events)	120	32	17	16	0	65	54%
		Number of newspapers' publication	8	9	3	3	0	15	188%
		Number of publication type (online & social media)	2	2	7	55	0	64	3200%
		Number of TV events broadcasting	6	1	11	4	0	16	267%
		Number of Radio events broadcasting	6	1	6	4	0	11	183%

It should be noted that communication is a transversal activity at the level of GSDM. In general, communication activities are regularly carried out to support activities in the field. This mainly involves the production of documentary films (detailed below), broadcast on **Malagasy National Television through the E-see Magazine** program and widely distributed on the GSDM YouTube channel. It is also an advertorial on the achievements in terms of reforestation. Translated by various press articles, television / radio, let us underline the involvement of journalists in the various events organized.

In addition, the sharing of achievements and experiences in Agroecology, NICTs are dissemination channels widely used by the GSDM. This concerns in particular the website, the online digital library and social networks. These different channels form the GSDM portal which puts it in direct contact with the general public both nationally and internationally.



For publications on the Facebook page/account: <https://web.facebook.com/GSDM-838300569533063/> , many news have been published and shared



For the website: <https://gsdm-mg.org/>, many documents related to Agroecology have been published.

Climat et changement climatique

**RAPPORT DE MISSION DE RECONNAISSANCE ET DE DIAGNOSTIC DU PROJET SOHAVELO ASARA PROGRAMME EUROPEEN DE SECURITE ALIMENTAIRE ET NUTRITIONNELLE DANS LES REGIONS SUD ET SUD-EST DE MADAGASCAR ASARA / AINA**

La mission de reconnaissance et de diagnostic a abouti aux principales conclusions suivantes : le projet SOHAVELO, dans le district de Tshomba travaille dans un milieu très difficile. La zone étant très sèche en effet, selon les relevés locaux avec des techniques simplifiées, la pluviométrie annuelle ne dépasse pas 200 mm pour les deux premières campagnes du projet et était très faible durant les 3 dernières années à dire d'acteurs. Les sols sont pauvres notamment sur le littoral et sur socle cristallin. L'effet d'El Niño 2015/2016 a aggravé cette situation entraînant des déplacements de population et de la famine. Parmi les actions du projet, les haies vives et les mini-forêts du Cajanov ont assuré en partie la sécurité alimentaire pour quelques paysans qui les ont bien maîtrisées. De même, les puits installés par l'UNICEF et les cantines scolaires du PAM ont été d'un grand secours pour la population. Ces conditions extrêmes ont bien démontré les performances de certaines espèces utilisées en agroécologie en couverture végétale ou en brise-vent : Pois d'Angole, mucuna, dolique, konoko, niébé et les plantes à tubercules, essentiellement la patate douce et le manioc. Ce sont souvent les variétés locales qui performant le mieux. Pourtant les espèces bien connues pour leur performance en zone sèche dans le Sahel comme le mil et le sorgho ne sont pas visitées dans le paysage. Des expérimentations ont toutefois été menées dans quelques champs écoles au cours de la campagne 2014-2015 mais le résultat n'a pas convaincu les paysans et les acteurs n'ont pas été poursuivies en deuxième année.

**BULLETIN AGROMETEOROLOGIQUE Valable pour la période Octobre-Novembre-Décembre 2019 Région : Vakinankaratra**  
N°15/2019/CONV/GSDM Valable pour la période Octobre-Novembre-Décembre 2019 Région : Vakinankaratra Convention N°15/2019/CONV/GSDM entre le Service Régional de la Météorologie de Vakinankaratra et le GSDM, Professionnels de l'Agro-écologie, dans le cadre du projet MANITATRA 2

**BULLETIN AGROMETEOROLOGIQUE Valable pour la période Janvier-Février-Mars 2020 Région : Vakinankaratra**  
N°15/2019/CONV/GSDM Valable pour la période Janvier-Février-Mars 2020 Région : Vakinankaratra Convention N°15/2019/CONV/GSDM entre le Service Régional de la Météorologie de Vakinankaratra et le GSDM, Professionnels de l'Agro-écologie, dans le cadre du projet MANITATRA 2

**BULLETIN DE PREVISION CLIMATIQUE SAISONNIERE AOÛT 2017**  
L'ensemble des trois derniers mois Avril-Mai-Juin 2017 a été marqué par des précipitations abondantes sur les régions ANALANJIRAO, ATSIANANA et la partie sud de DIANA et de SAVA. Tandis que les régions SOFIA, la partie Nord des régions DIANA, SAVA et ALAOTRA MANGORO ainsi que les versants orientales des régions VATOVAVY FITOVINANY, ATSIMO ATSIANANA et ANOSY ont reçu des précipitations inférieures à la normale. Ailleurs, les précipitations observées sont au voisinage des valeurs normales saisonnières à légèrement supérieures. D'autre part, le territoire malgache a généralement constaté des températures plus chaudes que les normales saisonnières depuis ces périodes écoulées.

Fiches techniques pour paysans version française

**REGISTRE DES ESPECES ET VARIETES EXPOITEES DANS LE « SYSTEME DES SEMENCES DE QUALITE DECLAREE » DANS LE SUD DE MADAGASCAR - Deuxième édition**

Cette seconde édition actualisée du registre régional des Semences de Qualité Déclarée pour les régions Androy et Anosy est le fruit de l'effort de tous les partenaires du développement dont le Ministère de l'Agriculture, les URCA Androy et Anosy, l'ANGOS, le FOFIFA, la FAO, le GRET, le CTAS, l'USCP ASARA, les membres des groupements de paysans semenciers et les associations paysannes des régions Androy et Anosy. Ce travail a été principalement financé par l'Union Européenne dans le cadre des projets SOA et ASARA et en partie par CRS. Le travail de transcription et caractérisation des variétés a été effectué par le FOFIFA. Ce registre est une compilation des variétés améliorées de semences exploitées dans le Sud dont certaines sont issues de la recherche nationale ou internationale (inscrites ou non au Catalogue National des Espèces et Variétés Cultivées, le CNEV) et des variétés locales produites par les agriculteurs ayant fait l'objet de caractérisation et de validation par le Comité Régional Consultatif d'Inscription des Variétés (CRGIV) avant leur transcription définitive. Les procédures permettant l'inscription des variétés figurent dans le "MANUEL DES PROCEDURES POUR L'INSCRIPTION DES VARIETES AU REGISTRE DES ESPECES ET VARIETES CULTIVEES A EXPLOITER SELON LE SYSTEME DE SEMENCES DE QUALITE DECLAREE DANS LES REGIONS DE L'ANDROY ET DE L'ANOSY" publié en février 2016. Les variétés décrites dans ce registre visent à être exploitées dans le système des Semences de Qualité Déclarée (SQD) des régions Androy Anosy.

**Fiche technique, Culture d'Arachis sous verges GSDM\_TFNAC**  
AGRICULTURE DE CONSERVATION, Zones humides à Madagascar

**Fiche technique, Rotation sur tanety à base de Mucuna GSDM\_TFNAC**  
AGRICULTURE DE CONSERVATION, Zones sèches de Madagascar

**Fiche technique, Technologie de Système de Micro-Irrigation (SMI) GSDM\_TFNAC**  
AGRICULTURE INTELLIGENTE FACE AU CLIMAT, Toute zone de Madagascar

**Fiche technique, Riz ou Maïs ou Sorgho associé au Stylosanthes GSDM\_TFNAC**  
AGRICULTURE DE CONSERVATION, Zones Moyenn Ouest de Madagascar

**Fiche technique, LE SORGHO IRAT 204 GSDM\_TFNAC**  
CULTURE ADAPTEE AU CHANGEMENT CLIMATIQUE ET CONTRIBUANT A LA SECURITE ALIMENTAIRE, Zones sèches de Madagascar

In addition, the GSDM collaborates with the Malagasy National Radio on the FIVOHY program. This program also helps to strengthen awareness-raising actions on the challenges of agroecology in this context of climate change. It constitutes an efficient and effective communication medium for the dissemination of Agroecology at the national level. It has a loyal following that follows news broadcasts on the benefits of adopting good agricultural practices. This monthly program was broadcast every 3rd Saturday of the month.

To support the scaling up of the dissemination of Agroecology, the GSDM publishes information/awareness tools and materials for wide distribution. This is essentially the design, editing and publication of the Journal of Agroecology

In short, the objectives set in the project document have been largely exceeded.

### III.4.3. Documentaries conception and edition

Table 67: Activities for documentaries conception and edition

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
4.3.1	Edition documents and tools for technicians and farmers	Number of document and tools pack edited	1	1	0	1	0	2	200%
4.3.2	Editing of films for each project events	Number of films	5	0	6	4	0	10	200%
4.3.3	Capitalization leaflets	Number of capitalization leaflets	1	2	1	1	0	4	400%

#### III.4.3.1 Edition documents and tools for technicians and farmers

The project has a few training sheets that have been designed and edited by the Communication team at headquarters. They are available at the GSDM office in Antsirabe. And the project technicians can mobilize them during their activities.

In addition, these different training sheets were printed on A4 paper before being laminated. This version was distributed to lead farmers so that they could familiarize themselves with the tool, and bring more quality to their services.

### III.4.3.2 Editing of films for each project events

GSDM worked with the E-see Magazine team to produce 10 films on different agroecological themes.

- *The documentary film on agroecology produced in the different areas of intervention of GSDM in Madagascar, including in Vakinankaratra as part of the Manitatra 2 project*



The services were entrusted to the E-see magazine team of TVM. A documentary film on the dissemination activities of Agroecology in the Alaotra Region is also produced during this year. This is a film reflecting the agricultural practices of the Region, but above all testimonials on the advantages of good agricultural practices. Three (3) shoots, scheduled at different times are scheduled for the production of the film, namely a shoot in January, a shoot in March and another in July. The service was entrusted to the TVM Esee magazine team and the first filming was carried out in January 2020, in close collaboration with the local GSDM technician in Ambatondrazaka.

- *A film on the two (02) days of agroecology of Vakinankaratra*



This film was made in March 2020, illustrating the course of the two agroecological days, raising awareness of the benefits of conservation agriculture and agroecology in the broader sense. Some systems are notably shown during these days, namely systems based on Mucuna, as well as the different types of compost including classic compost and vermicompost. In this film, farmers, school officials and various actors were able to testify on the strengths/benefits of these agroecological practices.

- *Vermicompost manufacturing techniques,*



Dans Région de Vakinankaratra, compte tenu de l'insuffisance de surface de riziculture irriguée, le riz pluvial est en forte expansion. La riziculture pluviale est conduite principalement en système traditionnel, entraînant la dégradation du sol. Les fumiers n'arrivent plus à couvrir les besoins et les rendements sont faibles. Le GSDM a produit le film sur la fabrication de lombricompost dans ce contexte pour augmenter la disponibilité de fertilisation pour les sols, avec des témoignages de paysans sur les atouts de ces pratiques.

- *Two films devoted to reforestation: "reforesting for future generations"*



Faced with the challenges of desertification, the depletion of natural resources, environmental degradation and climate change, GSDM proposes in this film the urgency of reforestation in Madagascar with fast-growing species (acacia) and *Eucalyptus citriodora* used for lumber and whose leaves can be used for essential oil. This film mainly shares the achievements of previous projects in different regions, particularly the South-East and Vakinankaratra and the awareness of farmers on the need for reforestation.

- *Two technical films on Conservation Agriculture: “to fertilize the soil”*



Faced with soil degradation due to an unevolved traditional cultivation and mining practice, GSDM proposes in this film techniques to improve soil fertility. The examples illustrate the actions carried out through the Manitatra 2 project and in collaboration with the schools and farmers benefiting from the Project (initiated by the PAPAM Project) in the Vakinankaratra region. It is a talkie about Conservation Agriculture highlighting the advantage of using cover crops such as Mucuna, Stylosanthes and Cajanus in the first place, but also the importance of countour lines. These leguminous plants can be used in rotation or in association of crops, followed by testimonials from school officials and farmers in the region showing the impressive yields obtained.

- *Ricefish farming*



Rice-fish farming is a theme proposed as part of the MANITATRA 2 project in the Vakinankaratra Region. This is a good agricultural practice disseminated to support the increase in irrigated rice production, but also to generate additional income for farmers through the sale of fish. This theme has thus been the subject of a technical film on the production process from nursery to fattening in the rice field.

- *Improved milk production*



This film is essentially about raising dairy cows and the opportunities offered by the adoption of Agriculture-livestock integration within a farm. A reliable source of income, dairy cow breeding requires respect for 3 fundamental elements, such as food, health and taking into account the hygiene aspect (housing, etc.).

- *“Ady Gasy” or biological control to prevent diseases and insects*



Faced with insects and diseases that harm crops, a film entitled *The Ady Gasy or biological control to prevent diseases and insects* was created by the GSDM in May 2020. This documentary film is instructive in which farmers realize difficulties in using pesticides, their toxicity to soils and human health. In addition, they are expensive; hence the proposal of other alternatives. GSDM thus contributes by highlighting the empirical knowledge of farmers. Also, it is a documentary on which farmers in the Vakinankaratra Region can use locally available plants or seeds to make “Ady Gasy” treatment products.

These films were shown a few times on national television (TVM) as part of the E-see Magazine program. Currently, we are seeing an increase in solicitation from people who have been able to watch this program.

### III.4.3.3 Capitalization leaflets

In total, capitalization sheets in 4 agroecological zones of Madagascar have been produced by the GSDM, in particular under the guidance of its Executive Director and its Agroeconomist:

- Highlands and Southeast of Madagascar in 2020;
- Middle West and South of Madagascar in 2021

Beyond the technical aspects, quite widely provided in previous capitalization reports made by GSDM and which served as a basis for reflections during the development of these capitalization documents, it was considered important to integrate the results of the different socio-economic reflections and on approaches to disseminating other experiences.

*Framed 14: The Highlands of Madagascar, the opportunities of Agroecology in a context of demographic pressure, GSDM, 2020*



The highlands zone is a country of rice-growing civilization where the lowlands and their near borders are most intensely developed. The increase in population density, agricultural intensification and land pressure have led to the colonization of the tany. However, these lands are sensitive to erosion and have led to significant soil degradation as well as damage to lowland rice fields. The GSDM proposes agroecological practices to respond to these contexts.

This sheet is also designed to reflect knowledge of the environment and the most recent data on production systems and constraints. Appropriate technical responses are proposed based on long-standing experience and recent developments in the area.

This booklet is based on the experiences of the GSDM and development projects (BVPI SE/HP, Manitatra, PAPAM, ASA, etc.), territorial agroecological diagnosis (Agrisud-SDMad), as well as research results (dP SPAD) in terms of accompaniment of Agroecology with farmers in the Highlands of Madagascar, largely in Vakinankaratra.

**Framed 15: Southeastern areas of Madagascar, coping with vulnerability through agroecological practices, GSDM, 2020**



In this zone, the aggressiveness of the climate results in very advanced chemical alteration and intense leaching giving rise to ferral soils on all the hills. In addition, there are annual cyclone periods. This difficult environment, combined with strong demographic pressure in certain areas, leads to the vulnerability of agricultural households. GSDM proposes more resilient agroecological practices in order to reduce this vulnerability.

This booklet integrates the evolutions of the agrarian landscape, the current situations of the physical and human environment, the various constraints and specific proposals adapted to the physical and socio-economic environments of the South-East resulting from the experiences of many years and recent experiences in the area.

This booklet is the result of the experiences of GSDM and development projects (BVPI SE/HP, Manitatra 1, PAPAM, etc.), territorial agroecological diagnosis (Agrisud-SDMad), In terms of supporting Agroecology with farmers in the South East (Vatovavy Fitovinany and Atsimo Atsinanana regions).

**Framed 16: The Middle West of Madagascar is a potential area for agricultural extension, GSDM, 2021**



This is a large area affecting eight Regions (sixteen Districts) in Madagascar where the population density is still low and areas are available for agricultural extension. Valorization of this area following conventional practices leads to initially rich land degradation. GSDM proposes agroecological practices for a better valorization of this area.

The booklet contains the evolution of the agrarian landscape and the current situation, the constraints of the physical and socio-economic environment, the agro-ecological proposals tested and adapted in the peasant environment and responding to the different contexts.

This booklet is based on the experiences of GSDM and development projects (BVPI SE/HP, Manitatra, PAPAM, etc.), the territorial agroecological diagnosis (Agrisud-SDMad), as well as research results (DP SPAD) in terms of support of Agroecology with farmers in the Middle West of Vakinankaratra, in the district of Mandoto.



**Framed 17: The South of Madagascar, a difficult area: opportunities are offered by agroecology, GSDM, 2021**



Given the various constraints of the environment and the low productive capacity of the family farms, the population of the South must face food difficulties that are often long and severe, even famines known locally as *kere*. This area is considered to be “away from development” (Morlat, Castellanet, 2012). Many people think it is doomed to receive emergency aid. Agroecology is the option proposed by GSDM and its partners (GRET, CTAS) for a sustainable improvement of production and the resilience of production systems.

This booklet also talks about the specific constraints of the South, whether physical or socio-economic constraints, explains the current production systems based on the surveys and evaluation carried out by GSDM as well as the technical proposals resulting from recent experiences.

This booklet is the result of the experiences of GRET and CTAS, with the support of GSDM since 2005 (Objective Sud Program, FASARA Project, PSASA Project, SOA Project, AINA and HOBA/ASARA Projects), as well as a few years of development By the NGO Tafa in the Mahafaly plateau and in the South-West. The elements of the proposal have been disseminated and validated mainly at the level of farmers in the Androy region over several years (since 2010).

**III.5. Project administration (human and equipment)**

**III.5.1. PMU officials recruited**

Table 68: PMU staff recruited

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
5.1.1	National Technical Assistant (Project Leader)	Months	33	10	12	18	7	46,5	141%
5.1.2	Assitant of project leader	Months	33	9	12	13	0	34,0	103%
5.1.3	Technician Agroecology (Highland+Middle West) (6 technicians)	Months	198	57	72	108	5	242,0	122%

The local project team was composed for 3 months by:

- An agricultural engineer : Project manager
- An agricultural engineer : Assistant to the project manager
- Six full-time Technicians, supported by the project
- A part-time technician, supported by the PAPAM project

Agricultural engineers are based in Antsirabe city. While the technicians are installed in the municipalities of intervention. About fifty peasant leaders help them accomplish their missions.

And, during the extension period, this device was reduced to:

- An agricultural engineer : Project manager
- A full-time technician
- Leader peasants have also been reduced to 15.

### III.5.2. GSDM Backstopping fully implemented by his key staff

Table 69: GSDM backstopping

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
5.2.1	Director (2 months per year)	Months	6	2	2	3,0	1	8,0	133%
5.2.2	Agronomist (2 months per year)	Months	6	2	2	3,0	1	8,0	133%
5.2.3	Trainers agronomists (2 months per year per trainer): 2 trainers (Martin and Hasina)	Months	12	4	4	6,0	2	16,0	133%
5.2.4	Agro economist (2 months per year)	Months	6	2	2	3,0	1	8,0	133%
5.2.5	Communication Officer (2 months per year)	Months	6	2	2	3,0	1	8,0	133%
5.2.6	Agronomist Vakinankaratra (2 months per year)	Months	6	2	2	3,0	1	8,0	133%

These staff from GSDM headquarters are partially involved in the project. They bring their experience and expertise to ensure the achievement of the objectives set in the project document. Their intervention times are 2 months per year.

### III.5.3. Local missions

Table 70: Per-diem for GSDM and project staff

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
5.3.1	Per diem for GSDM national staff	Days	600	160	114	179	40	493	82%
5.3.2	Per diem for local staff	Days	300	46	83	52	21	202	67%

During the missions of the local project team outside the Vakinankaratra Region, a fixed per-diem which covers accommodation and catering is granted to them. The same goes for the GSDM headquarters team, which comes on a mission to support local staff.

### III.5.4. Mean and equipment implementation

Table 71: Mean and equipment

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
<b>5.4.3</b>	<b>Offices renting and communication</b>								
5.4.3.1	Regional office renting	month	36	11	12	18	7	48	133%
<b>5.4.4</b>	<b>Equipments</b>								
5.4.4.1	PC/laptop	Unit	4	3	2	0	0	5	125%
5.4.4.2	Printers/scanner/photocopiers	Unit	2	2	0	0	0	2	100%
5.4.4.3	Digital camera	Unit	2	2	0	0	0	2	100%
5.4.4.4	Videoprojectors + screens	Unit	2	2	0	0	0	2	100%
5.4.4.5	Hard disks	Unit	1	1	0	0	0	1	100%
5.4.4.6	Other equipments (flat rate per technician)	Per technician	6	6	0	0	0	6	100%
5.4.4.7	Communication/courier and other coordination expenses	Unit	3	2	1	2	7	12	383%
<b>5.4.5</b>	<b>Spare parts for hard ware and other office machineries</b>								
5.4.5.1	Spares (hard ware, photocopiers etc.)	year	3	1	1	2	1	4	133%

The project has an equipped office in Antsirabe. But, the extension of the implementation also entailed the extension of the rental of the office compared to what was planned in the initial document.

Computer equipment was purchased during year 1 and 2 of the project. Note only the purchase of a laptop in addition to the 4 initially planned. Expenses related to the purchase of miscellaneous supplies were incurred as project implementation progressed.

## III.6. Project oversight

### III.6.1. Steering committee

Table 72: Steering committee planning

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
6.1.1	Steering committee establishment	Steering committee established	1	0	1	0	0	1	100%
6.1.2	Steering committee meetings to give strategic orientation and advice during all phases of the project	Number of steering committee meetings	3	0	1	1	0	2	67%

The establishment of a project Steering Committee has been somewhat delayed. Indeed, the start of the project coincided with the period of the presidential election. Thus, upheavals at the ministry level were to be expected. And, the GSDM had immediately opted for a postponement of the establishment of this committee, when this situation stabilizes a little.

Finally, the steering committee was set up at the beginning of year 2 of the project. In the process, the first meeting was piloted on August 13, 2019 in Antananarivo. With the participation of the Director General of Agriculture (Chairman of the steering committee of the Manitra 2 project), the Scientific Director of FOFIFA and Chairman of the Board of Directors of GSDM, the Chief of Staff of MEDD, the Regional Director of Environment and Sustainable Development, the Coordinator of AVSF and Vice-Chairman of the Board of Directors of the GSDM, the Representative of the Director of Regional Development (DDR) Vakinankaratra, the Representative of the Regional Director of Agriculture, Livestock and

Fisheries, and GSDM staff. At this meeting, the committee was briefed on the progress of the project during its first year. A reorientation for year 2 has been proposed.

Then, on September 24, 2020, a second meeting with the member of the project steering committee was organized at the Hotel Le Pavé in Antaninarenina / Antananarivo. The points exchanged during this meeting are:

- Approval of the COPIL Minutes dated August 13, 2019;
- Review of the Activity Report, Year 2;
- Review of the AWPB Year 3 of the MANITATRA II project

The members of the steering committee present during this meeting are made up of :

- **Mr. Lantonirina RAMAROSON**, General Director of Agriculture and Chairman of the Steering Committee of the Manitatra 2 project,
- **Mrs. Jacqueline RAKOTOARISOA**, Scientific Director of FOFIFA and President of the Board of Directors of GSDM,
- **Mr. Herrick ANDRIAMITAHA**, member of the Cabinet of the Ministry of Environment and Sustainable Development, member of the Cabinet of the Ministry of Agriculture, Livestock and Fisheries,
- **Ms. RAKOTOARISAONA Mitia**, Regional Director of Agriculture, Livestock and Fisheries-Vakinankaratra,
- **Mrs. Tojotsara RATEFASON**, Regional Director of Environment and Sustainable Development,
- **Mr. Paulin HYAC**, AVSF Coordinator and Vice-Chairman of the GSDM Board of Directors,
- **Mr. Nicolas RAZAFIARISON**, Director of Economic and Social Development, representing the Governor of the Vakinankaratra Region

### III.6.2. Monitoring and Evaluation of the project

Table 73: Monitoring and evaluation program

	Planned Activities	Indicator	Project targets	Achievement during the project				Cumulative achievements	
				Year 1	Year 2	Year 3	Extension	Achievement	%
6.2.1	Base line study through external expertise	One base line study	1	1	1	0	0	1	100%
6.2.2	Financial auditing	Financial auditing (one per year by COMESA)	3	1	0	0	0	1	33%
6.2.3	Bi-annual reportings	Semestrial report (1st : 1 per year)	3	1	1	1	1	4	133%
6.2.4	Annual reportings	Annual report (including semestrial 2 report)	3	1	1	1	0	3	100%
6.2.5	Mid-term evaluation through external expertise	One Mid-term evaluation	1	0	0	1	0	1	100%
6.2.6	Final evaluation through external expertise	One Final evaluation	1	0	0	0	1	1	100%
6.2.7	Car hiring for monitoring and evaluation	Number of car hiring days	90	0	11	21	2	34	38%

#### III.6.2.1 Establishment of the project baseline

It should be recalled that at the start of the MANITATRA 2 Project, GSDM called on the “GEOSYSTEMS & Development” firm to establish the reference situation for the area of intervention. A consultancy contract was therefore signed on 09/10/2018 for the execution of this expertise. Unfortunately, the latter did not fulfill his mission in accordance with the clauses of the contract (quality of the report, personal replacement, delay) and the requirements of the ToRs (methodology and aberrant results). This is why the report provided was not approved by the GSDM Board of Directors

as a basic document for the evaluation of the Project.

At this time, redoing the baseline situation at the start of the Project through a survey seems inadequate despite the need for a baseline document. This is why, as an alternative, GSDM has established an internal reference situation. The starting point being the census, made at the beginning of the project, by the local team among farmers who practiced Conservation Agriculture during MANITATRA 1. And, to complement it on the basis of several socio-economic surveys of agricultural households in Vakinankaratra Region and cross-checking with information collected from development actors in the Region.

III.6.2.2 Technical and financial monitoring of the project by COMESA and the European Union

A first project monitoring and evaluation mission was carried out by a COMESA team during the week of September 15, 2019. Apart from the financial monitoring carried out at the level of GSDM headquarters in Antananarivo; a visit to the 2 project intervention areas was organized on 17 and 18 September. This visit allowed the COMESA monitoring and evaluation team to have an overview of the progress of activities in general; and particularly, agroecological practices promoted by the project in Vakinankaratra.



Picture 105: COMESA Supervision mission by Cissy K., GSDM office in Antsirabe



Picture 106: Visit to CEG Antokofoana – COMESA monitoring mission



Picture 107: Installation of contour line for protection for erosion control at the CEP of RAKOTO Philippe, lead farmer in Soavina – COMESA Supervision mission



Picture 108: Reforestation realized during Manitatra 1 in Belanitra/Ankazomiriotra – COMESA supervision mission



Picture 109: Visit of the Private Loterana Antanifotsy High school – COMESA supervision mission



Picture 110: Visit of a vermicompost production unit in Antemotra/ Antanifotsy – COMESA supervision mission



Picture 111: Visit of an off-season forage plot (oats) at LALAINA, lead farmer in Ambohimandroso

But, in 2020, the Covid-19 made its appearance. Flights entering and leaving Malagasy territory have been suspended for very long periods. COMESA could not redo another technical and financial monitoring mission. Thus, they had hired a photo-reporter to give a vision of the evolution of the activities carried out by the project in the Vakinankaratra Region. For this, a field visit with this consultant was organized in the 2 project areas on March 16 and 17, 2020. Similarly, the financial audit was done at distance for this year. However, it should be noted the follow-up mission in Vakinankaratra carried out by the representative of the European Union in Madagascar on February 4 to 6, 2020.



Picture 112: A photo-reporter has been appointed by COMESA for a service in the project intervention areas



Picture 113: Visit of a representative of the European Union to the intervention areas of Manitatra 2

Finally, a last supervision mission was carried out by a COMESA team during the week of May 02, 2022. As during its first visit, COMESA had both financial and technical follow-up. Financial monitoring was done at the GSDM office in Antananarivo. And, a visit to some schools and farmers supervised by the project in the highlands of Vakinankaratra was carried out on May 03 and 04, 2022.



Picture 114: The entire farm of RAIVOARISOA Marie Monique, one of the lead farmers of the project, is currently in agroecology





Picture 115: The students of CEG Vinaninkarena, one of the public schools supervised by Manitra 2, worked well, with beautiful application plots



Picture 116: With a view to producing quality organic manure with different composting methods, the project offered technical and financial support to improve the barns: hard paving, building with roof, with a manure collector and manure pit under -shelters like that of RAHARIMANANA Victoire, \* a dairy farmer supported by the project



Picture 117: The integration of agroecology in schools, like the visitors of the day, was well received by students, teachers and parents of students at the Private College AINA-Vinaninkarena.



Picture 118: With the support of the project, the FO SANDRATRA received funding from the FDA Vakinankaratra to implement a project to improve gasy chicken farming with agroecological practices



Picture 119: In the same village as the FO SANDRATRA, the FO VEHIVAVY MIHARY for its part set up a project to improve dairy farming, also financed by the FDA; and takes advantage of park manure to develop several vermicompost production units and correct the low fertility of crop fields





Picture 120: The FIADANANTSOA center has plots that are already very degraded, but whose fertility is improving year after year with systems based on *Cajanus cajan* and *mucuna*, and other agroecological practices in general.





Picture 121: In 4 years, Mrs RASOANANTENAINA Theodile obtains an average rainfed rice yield of 4T/ha by applying different agroecological practices. It becomes a real reference, welcoming the visit of many farmers in the area

### III.6.2.3 Mandated external experts for the mid-term evaluation and the final evaluation of the project

Finally, GSDM, after taking the necessary steps to comply with the procurement rules, commissioned the «Rivo Rabarijohn» consulting group to carry out the mid-term evaluation and the final evaluation of the project.

The two studies have the general objective of examining the results of the project in terms of the achievement of the objectives set in the project document in relation to the periods of implementation. They were scheduled in order to have an assessment of the relevance, effectiveness, efficiency, impact, as well as the sustainability of the project. These assessments will make it possible to conclude whether the project delivered the expected benefits and optimized resources in the implementation of actions. They dealt with the themes addressed as the main orientations of the project, namely the consideration of the alternative for the current practices of rainfed rice, the gender issue, the environmental aspect and adaptation/mitigation of climate change.

The final evaluation was carried out from September 2021. The expected results for this study were:

- The values of the activity and result framework indicators compared to the initial values are measured ;
- Specific analyzes are provided on the consideration of the main orientations of the project, namely the

- support of rainfed rice and the consideration of the environment and climate change aspect ;
- The gender aspects and in particular the place given or taken by women in the intervention of the project and its impact are analyzed within the framework of this mandate ;
  - An evaluative analysis of project implementation based on the five (5) key monitoring-evaluation criteria (relevance, effectiveness, efficiency, impact, and sustainability) is carried out ;
  - The effects and impacts of the strategies adopted on the support systems (lead farmers, farmer field schools, nurserymen, seed suppliers, links with key players, links with decentralized services) are analysed ;
  - The progress achieved in achieving the expected outputs by highlighting the strengths and weaknesses are reviewed ;
  - The factors that positively or negatively affected the achievement of results are analysed ;
  - The experiences and lessons learned from the Project on the conditions for carrying out the activities are informed and capitalized ;
  - The sustainability of the expected results (institutional and technical strengthening, recurrent cost support, ownership of the change by the beneficiaries, etc.) is assessed ;
  - The partnership strategy for achieving project results is analyzed ;
  - The lessons learned from the implementation of the project and the proposal of recommendations for other future projects are formulated ;
  - The impacts of the Project on the target farmers and the area of intervention are measured



## IV. LESSONS AND CHALLENGES

### IV.1. Lessons learned

#### *The relevance of the “farmer to farmer” approach in the dissemination of agroecological practices*

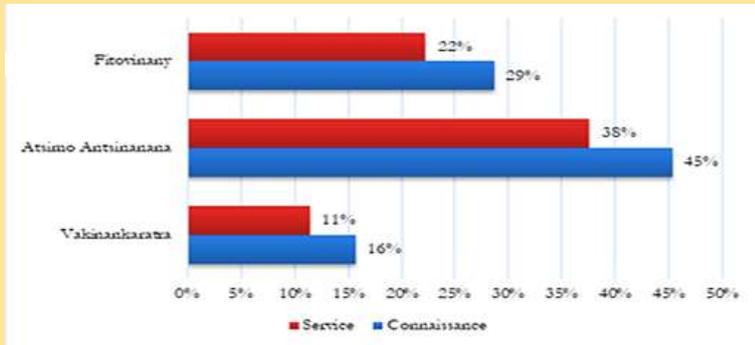
This approach has already been adopted during Manitatra 1; and its effectiveness was again verified during this second phase. In summary, the project trained a few farmers (in this case about fifty for Manitatra 2) to train, in turn, their peers on the different practices promoted by the project. But, going into a little more detail, this approach brings together several complementary and coherent actions with respect to each other.

First, the establishment of farmer field schools (FFS). It is carried out by the Lead farmers, within their own respective farms. These dissemination tools provide a good illustration of the themes developed during the numerous training sessions organized by the lead farmers.

Secondly, the exchange visits are real opportunities for sharing experiences in agroecology for the beneficiaries of the project. Indeed, the FFSs are also used as a basis for discussions between farmers during exchange visits. Several types of exchange visits have been adopted by the project in this sense, with complementary impacts on the appropriation of practices by farmers. Exchange visits within each communes of intervention make it possible to draw the attention of producers to the performance of agroecological practices compared to conventional practices in the same ecosystem. Indeed, they will be able to observe throughout the year the relevance, accessibility and adaptability of the practices promoted by the project; while maintaining productive natural resources. They are organized by the lead farmers at the level of their FFS; but, also, at the farms of the surrounding peasants in order to enrich the debates.

To strengthen intra-communal exchange visits, the project also organized exchange visits requiring participants to travel outside their commune of residence. This type of exchange visit is organized at the beginning of the agricultural campaign to illustrate the awareness raising; and just before the harvest period to allow participants to assess the performance of CA systems and other agroecological practices. Inter communal exchange visits allow participants to broaden their horizons in relation to the dynamics in other communes.

Framed 18: Knowledge and access to services of lead farmers (Group of consultants RABARIJHON Rivo, Complementary study on agroecology in certain strategic areas of Madagascar, 2021)



In general, even if the leading roles of Lead farmers in the dissemination of agroecology have been proven, the coverage rate of these peasants is still insufficient, in the order of:

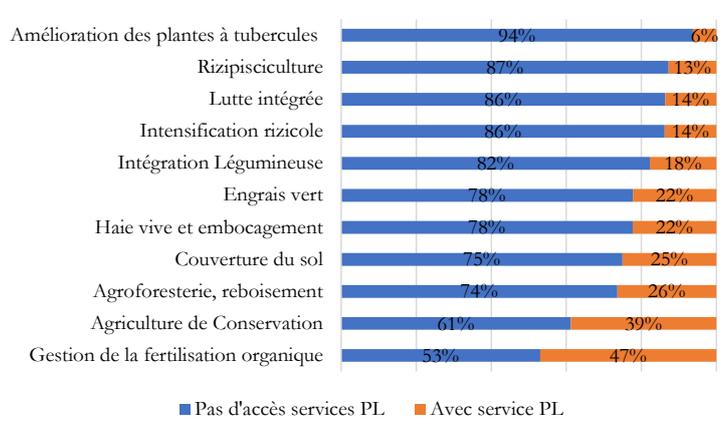
- 11% for the Vakinankaratra Region,
- 22% for Fitovinany
- and 38% for Atsimo Atsinanana.

Lead Farmers duty frequency (% duty)	Vakinankaratra	Fitovinany	Atsimo Atsinanana
If needed	61%	23%	11%
Per month	2%	25%	26%
per week	2%	24%	52%
Very rarely	35%	29%	11%

Lead Farmers are mobilized differently depending on the areas:

- As needed in the majority of cases, or mobilized very rarely in the Vakinankaratra region;
- A fairly homogeneous distribution according to the different frequencies (if necessary, per month, per week, or very rarely) for the Fitovinany region;
- Per week in the majority of cases, or per month for a relatively large part of the farmers in the Atsimo Atsinanana region.

Framed 19: Adoption rate of agroecological practices according to accessibility to LF services (RABARIJHON Rivo consulting group, Complementary study on agroecology in certain strategic areas of Madagascar, 2021)



In Vakinankaratra, the following figure shows the rate of adoption of different practices according to the accessibility of producers to the services of Lead Farmers (LF). The interventions of the LF essentially favored the adoption of certain practice on the farms, in particular the production of organic manure (composting), conservation agriculture based on mucuna and Stylosanthes, the living hedge.

It should be noted that a large number of the LFs who had collaborated with Manitatra 2 are currently mobilized by other structures : SANUVA project financed by the European Union, the NGO VAHATRA (microfinance institute), FDA (Fonds de développement agricole, a financial tool set up by the State in each Region of Madagascar). This further justifies the relevance of this approach ; because after the departure of the project, these LFs remain in their areas to continue to share the experiences that they have received during the project.

**The Maize + Mucuna association in rotation with Rainfed rice intercropped with Cajanus becomes the most adopted system on tanety**

First of all, Mucuna is an excellent preceding crop to upland rice. Even with an average biomass, the yield of upland rice is still higher than that of conventional systems. But, with good biomass, the plots are clean (no weeds) ; and requires very little overhead for plot preparation and/or weeding. Currently, Mucuna is positioned as the cover crop most appreciated by farmers in the Region. In addition, the mucuna, if introduced early in the maize plots, manages to repel the butterflies responsible (*Spodoptera frugiperda*) for the attack of the fall armyworms (FLA). Thus, these moths can no longer lay their eggs on the corn plants. And, the observations made on plots side by side allowed us to observe a much lower attack of army worms on plots with a Maize + Mucuna association, compared to other maize plots in pure stand.

Then, the Rainfed rice + *Cajanus cajan* association has significant advantages on poor and compacted soils. When the Cajanus is installed early (during the first weeding), good biomass can be obtained. Thus, just like the plots with good biomasses of Mucuna, the Cajanus also presents plots without weeds.

Thus, during these years of implementation of the project, many farmers have been observed to adopt these two systems by associating, during the first year, maize with Mucuna; followed in the second year by upland rice (+ *Cajanus cajan*) on dead covers of maize and mucuna. With the continuous increase in the price of synthetic fertilizers, many farms are moving towards improving organic manures. For this, the most adopted practice is compost (or recycled manure) mixed with 20% vermicompost.

### The relevance of individual village reforestation, installed according to agroforestry systems

Each year, there have always been reforestation actions carried out by various entities in Madagascar. Normally, these should already have been clearly visible on the Malagasy landscapes. But no ; this is currently not the case. On the contrary, the loss of forest cover increases over the years. Indeed, we have always opted for community reforestation. And, after the plantations, there was no more monitoring and maintenance of the plantation fields. The success rate is very low. In contrast to this, individual village reforestation is well maintained. Family farms, aware of the need to plant trees, have invested their time and money in reforestation. They, therefore, need to have results ; and carry out more frequent monitoring of their woodlots. Thus, there has been a decrease in cases of bush fires in the communes where the project operates.

Success is still high when starting with agroforestry systems. Indeed, the association Trees + Food crops (peanuts, ground peas, cassava) makes it possible to restore land that has just been afforested for two (02) seasons. Farmers are much more motivated to maintain a plot where there are food crops compared to pure reforestation plots. Thus, the Acacia also benefits from these treatments to grow even faster. The plots are also much more protected against wandering zebus and bush fires.

#### Framed 20: Survival rate of reforested plants (RABARIJHON Rivo consulting group, Final evaluation of the Manitatra 2 project, 2021)

The survival rates of the plants vary according to the zones and according to the species. Generally, they are more important in the Highlands and more homogeneous (with a lower coefficient of variation except for Liquidambar which is a little higher). They are weaker in the Middle West with higher variability. These findings are normal given the size of the plots (easier maintenance in the Highlands in small areas than in the Middle West in large areas). Sunburns in case of drought are more important in the Middle West.

Overall, the survival rates are generally acceptable at more than 70% at the end of the project except for *Eucalyptus camaldulensis* in the Middle West (below 70%). Note that these figures include those recently installed up to 3 years of installation. The years were not specified during the investigations.

Table 74: Survival rates of reforested plants at the end of the project

Survival rate	Highlands			Mid West			Overall avg		
	Mean	CV	Median	Mean	CV	Median	Mean	CV	Median
<i>Acacia sp</i>	77,0%	24%	75,0%	66,6%	34%	70,0%	67,4%	33%	70,0%
<i>Eucalyptus camaldulensis</i>	80,0%	21%	80,0%	54,2%	42%	67,0%	64,4%	37%	68,3%
<i>Eucalyptus citriodora</i>	76,9%	21%	80,0%	54,0%	47%	70,0%	65,0%	37%	70,0%
<i>Liquidambar sp</i>	74,9%	36%	80,0%	-	-	-	74,9%	36%	80,0%

It should be remembered that the Manitatra 1 project was already working in 4 of the 17 municipalities of intervention of Manitatra 2. This first phase was implemented during the 2014/2015 reforestation campaign. And, 5 years later, we have seen the impacts of the reforestation actions carried out by the GSDM as part of this first project. Since these 4 municipalities are located in the middle west of Vakinankaratra, we have especially favored acacia mangium. It is a legume ; therefore, we can always re-cultivate the plots with rainfed food crops, if the farm decides so. This is not the case with very acidifying essences such as eucalyptus and Pinus. Their seeds are spread naturally by winds and the roar of rainwater to increase forest cover around woodlots.



Picture 122 : With its specific color, the Acacia mangium reforestation carried out by GSDM as part of the MANITATRA 1 and 2 project is beginning to redraw the landscape in the commune of Vinany.

« *Conversely education* », a very complementary approach to the “farmer-to-farmer” approach

As part of this Maniatra 2 project, the GSDM proposed to collaborate with 12 secondary schools with the aim of introducing agroecology in schools. The evaluations made allow us to conclude that the students benefiting from this approach manage to convince their parents. At the beginning, the majority of them show a lot of reluctance following the sharing made by the students. However, the educational tools at their disposal (fun booklet, 3D animated film) and the visit to the application plots during meetings organized at school level allow them to see the performance of agroecological practices in the context current.

Many of the students trained come from villages far from the school. In general, the support systems put in place by the projects do not manage to reach these remote places. Thus, it is the practices adopted by the students that become dissemination tools, references for other farms in these areas.

### ***Broadcasts of technical films are effective in broadening the scope of the project***

Finally, the broadcasts of technical films on Malagasy National Television have accentuated awareness-raising actions on agroecological practices. Indeed, since the broadcast of these films, many people have asked for information from the agents of GSDM and the MANITATRA 2 project (possibilities of technical support, supply of seeds, etc.). Sometimes, those interested come directly to certain peasants who appear in these films to obtain more information.

## **IV.2. Challenges**

### ***How to scale up?***

During its implementation, the Manitatra 2 project has already taken various steps to ensure maximum sustainability of the actions undertaken. And, last year, corresponding to the extension of the project, has already given some indications. We have nevertheless observed many family farms that have continued to apply different agroecological practices without the support of project technicians. However, improving implementation approaches to further ensure the sustainability of dissemination activities is still a major challenge.

In total, the project supported 14,205 family farms ; i.e. 94.7% of the target set in the project document. However, this number of agricultural households affected is still very marginal compared to the total population in these communes where the project operates. Initially, the densification of adopters of agroecological practices in these communes is important. Then, we should also extend the actions to scale up agroecological practices to other new areas within the same communes but also in other regions ! Still much to do then !

### ***Which methodologies to adopt?***

It is important to maintain the mechanism «Farmer Leaders (LF) - Field Schools Farmers (FFS) - Exchange visits (EV)» in the dissemination of CSA practices and to further analyze their operation, results and impacts to improve support. The aim is to change the scale of the dissemination of agroecological practices.

During this Manitatra 2 project, we were able to observe the positive impacts of the introduction of agroecology in schools on scaling up. GSDM, as part of the implementation of advocacy actions to introduce agroecology into the school curriculum, is beginning to reach the goal. However, the methodology adopted within the framework of the Manitatra 2 and Prosol project (project implemented in the Boeny Region and financed by the GIZ) is quite expensive. Thus, we should, again, put in place another approach allowing implementation at the level of all secondary schools ; without losing quality.

### ***Huge stakes for advocacy***

Yes, GSDM has already been able to make progress in its advocacy actions with the Ministry of National Education (MEN); reinforcements in this direction are still to be expected from the other ministries. Indeed, agroecology is included everywhere in various strategic documents in Madagascar. But, for the moment, GSDM should continue to capitalize on the various experiences in agroecology ; in order to further enrich the arguments for effective implementation with other ministries and their branches at regional level (Regional Management, FDA, etc.), and other partners (FOs, Associations, NGOs, Projects/Programs) concerned on rural development actions.

Finally, GSDM, as part of the Manitatra 2 project, has set up an online database called «MANABOOST» in collaboration with CIRAD. It was set up so that we could have reference data on the adoption of agroecological practices in Madagascar. But, for this, all the organizations undertaking actions on the dissemination of these practices should feed it periodically.

Thus, the animation of all these organizations, in this sense, would still be an important challenge for the GSDM.

### IV.3. Recommendations

#### *Find better strategies for the availability of seed providers in the area*

Overall, 4 systems are the most adopted by farmers in terms of conservation agriculture: systems based on mucuna, Stylosanthes, *Cajanus cajan* and food legumes. The project introduced the seed of mucuna, *Cajanus cajan* and Stylosanthes. For mucuna and Stylosanthes, it can be said that the seeds are already available in the project areas. However, they are scattered among the farmers benefiting from the project. And, in the event of requests from other farmers, especially those from other communes, the LFs position themselves as the most credible resource persons. Indeed, they have them, or know the peasants who have them. Thus, a grouping of these LFs into a “union of LFs” is necessary. Because good communication between these LFs could enable them to respond easily to important requests. Thus, the actions of this “union of LFs” could complement those of the FANILO Cooperative, which is currently the main supplier of Stylosanthes seeds in the area.

Indeed, the LFs are first and foremost farmers. But, given their position in relation to the training they have received and the information they have, they have the ability to develop the services demanded by producers near their homes (basic veterinary care, agricultural advice coupled with sale of tree seedlings or seeds, more specialized nurseries, sale of organic fertilizer, support in the field of nutrition with the ORN, etc.). Sometimes, for more sustainability, it is the LFs who have to evolve in order to diversify their service offers.

“Agricultural training” services are a little less developed everywhere in Madagascar. Very often, they are linked to DRAEs or integrated as service providers to FDA so that agricultural advice and training are paid for through external funding. The analysis of the impact of these local service providers is often not right away, at the end of the projects; but a little more a posteriori to the actions of the project.

Moreover, despite the enthusiasm of farmers for *Cajanus*-based systems, we are still faced with the problem of unavailability of seed. Indeed, this shrubby legume is heavily attacked by pod miner caterpillars. And, without appropriate sanitary protection, we could not produce seeds. The main supplier of this type of seed is still the NGO CTAS in the Androy Region. Exchange visits to this organization are necessary to analyze the practices it adopts to obtain quality seeds (with a germination rate of over 90%).

#### *Advocate with research organizations to increase efforts around the promotion of biocidal or repellent plants for the protection of plants against bioaggressors*

It must be said that many farmers are already adopting various practices, with homemade recipes based on biocidal or repellent plants, in order to reduce the pressure of pests. Only, there has not been much study done in order to have a scientific basis on these peasant practices. The case of the use of mucuna to fight against the invasion of Fall Armyworms falls into this area. During the Manitatra 2 project, the observations made show a marked reduction in attacks on maize plots associated with mucuna. But, there has never been a study done on it.

Similarly, many pesticides are currently prohibited. However, we do not yet have biological control methods positioned as an effective alternative to these synthetic products. Products such as «Gaucho» or «Insect» based on Imidacloprid that have been used for seed treatments of upland rice and maize are the perfect example. These products are currently banned. However, the natural treatments used by farmers to limit the attacks of white grubs are not very effective. This also requires significant research.

#### *Continue reforestation and reforestation actions with the individual Village Reforestation IVR*

In this context of loss of very significant forest cover in Madagascar, water sources are drying up from year to year. The impact on agricultural production activities is enormous, whether on “tanety” or in the lowlands.

The relevance of individual village reforestation (IVR) has already been confirmed during the implementation of the Manitatra 2 project. Many reforestation actors are currently adopting this approach. But, to meet the wood needs of the

population, reforestation efforts with fast-growing species should be further intensified. At the same time, reforestation with endemic species to cover the *tanety* is essential.

***Find other strategies adapted to the situation of the majority of farms for the development of fruit growing and agroforestry***

Fruit trees should provide family farms with significant periodic income. Installed with agroforestry systems, we manage at the same time to diversify agricultural production. It is in this sense that the project proposed to subsidize fruit seedlings at half price. However, the installation of young fruit plants coincides with the lean season. Farms generally take the option of investing in food crops (especially irrigated rice), instead of buying seedlings. A strategic change to develop this practice is necessary.

***Increase research on fish farming techniques to deal with climate change***

Faced with the delay in the rain at the start of the agricultural season, rice-fish farming is one of the hardest hit workshops. The fry are near; while the rice fields are still dry. However, spawning occurs naturally when the water temperature begins to rise. These usually produce around August/September. APDRA, a project partner in the dissemination of this practice, is currently trying to study farmers' innovations to shift the fish spawning period and/or to carry out multiple spawnings. Support for this type of initiative is very important to sustain the practice of rice-fish farming on farms.

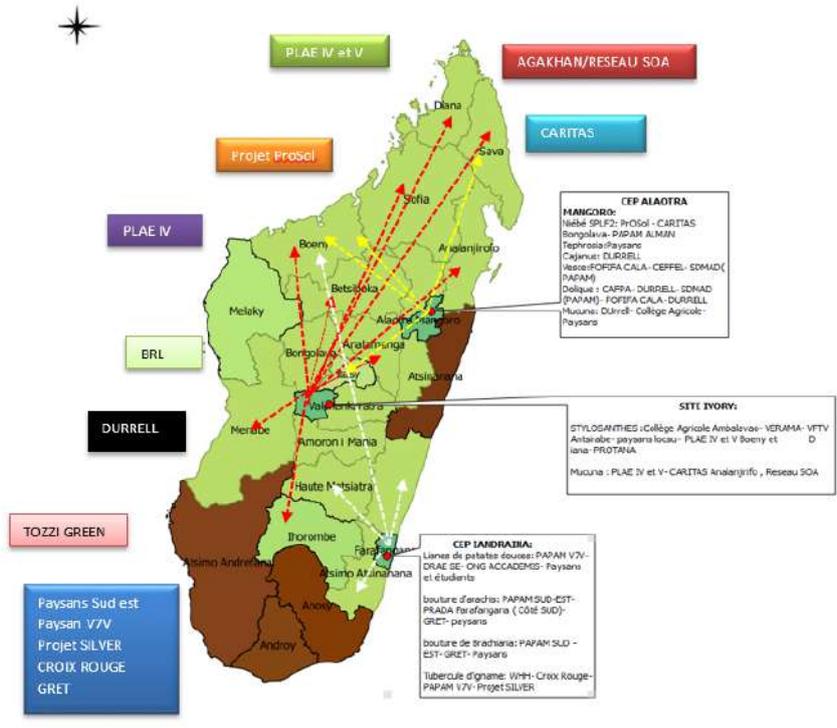
***Valorization of the GSDM reference and training site in Ivory***

Maintaining the Ivory site is one of the strengths of GSDM for (1) exchanges of experience between the various stakeholders, (2) for training and also (3) to show the importance of CSA practices in response to the problems middle West (presence of Striga). The themes developed are chosen in such a way as to offer solutions to the main problems of farmers in the Middle West on the fight against Striga and the diversification of crops. At the site level, there is also the setting up of varietal collections.

24 years after crop installations following different CA systems, this site is positioned as a reference in CSA/AE in the Vakinankaratra Region, and globally for Madagascar. Indeed, several visitors of all kinds had already visited there. And, the continuation of its maintenance and the animation around are to be recommended.

[Map 3: Impacts of the actions carried out at the level of the 3 GSDM training sites on the dissemination of new varieties \(seeds of service plants, seeds of upland rice, etc.\)](#)





**CEP ALAOTRA**  
**MANGORO:**  
 Niébé SPIFO: ProSci - CARITAS  
 Songailava: PAFAM ALMIN  
 Tephrosia/Paysans  
 Cajanus: DURRELL  
 Réseau FORPA CALA - CEPFEI - EDMAD (PAPAM)  
 Dolique: CAFPA - DURRELL - SDIAD (PAPAM) - FOFIPA CALA - DURRELL  
 Mousoni: Diava - Collège Agricole - Paysans

**SITI IVORY:**  
 STYLOANTHES: Collège Agricole Ambalavao - VERUMA - V7V  
 Antanarivo: paysans locaux - PLAE IV et V Bony et Iena - PROTANA  
 Mucuna: PLAE IV et V - CARITAS Andranjito, Réseau SOA

**CEP IANDRAIMA:**  
 Liens de parcelles sousses: PAFAM V7V - DRAE SE - ONG AOKADREGE: Paysans et étudiants  
 Bouture d'arachide: PAFAM SUD - EST - PRADA Ferofangana (CÔTÉ SUD) - GREY - paysans  
 Bouture de bracharia: PAFAM SUD - EST - GREY - Paysans  
 Tubercule d'igname: WHI - Croix Rouge - PAFAM V7V - Projet SILVER

## V. CONCLUSIONS AND DISCUSSIONS

The Manitatra 2 project was implemented by GSDM in the Vakinankaratra Region, following a successful experience of the pilot phase called «Manitatra 1» which covered 2 Regions of Madagascar (Vakinankaratra and Atsimo Atsinanana) between 2014 to 2016. In the initial document, the project is planned for a duration of 3 years (2018 - 2021) in accordance with the sub-grant agreement N ° CC0004/18 between COMESA and GSDM signed on July 20, 2018. It is funded by the EU under the Global Climate Change Alliance plus (GCCA+) program of African, Caribbean and Pacific (Intra ACP) countries. But, in order to be able to finalize certain priority activities, in particular the complementary study to the establishment of the national situation of agroecology in certain agroecological zones of Madagascar, GSDM received the approval of COMESA in order to extend the implementation implementation of the project until July 2022.

The project is part of a Climate-Smart Agriculture (CSA or Climate-Smart Agriculture) pilot program coordinated by the Common Market for Eastern and Southern Africa (COMESA) which is part of an action regional involving five Member States (Uganda, Madagascar, Seychelles, Swaziland and Zimbabwe).

Manitatra 2 is a project to scale up climate-smart agriculture through ecosystem-based adaptation with the aim of mitigating climate change and improving food security in the Region of VAKINANKARATRA in Madagascar. The project covers two different ecosystems : (i) the Middle West (600 to 1000 m altitude) which aims to increase the experiences of Manitatra 1 and (ii) the Highlands (1200 to 1800 m altitude) which is a new area with no activity during the Manitatra 1 project but with strong upland rice expansion.

**Regarding expected result 1** of the project, “Climate-Smart Agriculture (CSA) and Good Agricultural Practices (GAP) are scaled up in two ecosystems in the VAKINANKARATRA region, covering the Highlands and Mid West regions”, we can say that the achievements of the activities exceed, overall, the objectives set in the initial document. On this occasion, the project allowed us to confirm the effectiveness of the “farmer to farmer” approach following a combined effect of Lead Farmers - Farmer field schools - Visits and exchanges. At the end of the project, 2,058.7ha of *tanety* had been developed according to the different conservation agriculture systems. More and more farmers are moving towards a Maize + Mucuna//Upland rice + Cajanus system fertilized with a mixture of compost and vermicompost at 20%. Similarly, project support made it possible to plant 2,464,050 young forest seedlings (with a survival rate of over 70%), and 16,434 fruit trees.

For other good agricultural practices, the project has initiated many family farms on different agro-ecological practices such as: the promotion of biocidal (and/or repellent) plants, the improvement of barns in order to produce quality organic manures with the different composting techniques, improved milk production, rice-fish farming practices, and the use of new varieties of orange-fleshed sweet potato rich in vitamin A. But one of the practices that has caught the attention of many supervised producers remains vermicompost. The rise in the price of synthetic fertilizers; and the observation made by these farmers of the quality of vermicompost are the main causes of this change.

Finally, by combining the resources of the 2 projects implemented by GSDM, the Manitatra 2 project and the PAPAM project, we were able to set up the national situation of agroecology in the main agroecological zones of Madagascar. The data collected at the end of these studies should still be entered into the new online database “MANABOOST” which has been created as part of a collaboration with CIRAD. It should be noted that the achievements of the Manitatra 2 project are already introduced there. Only, it will still be necessary to ensure a good awareness and advocacy campaign with all development partners, so that they too can introduce their data into this database, in order to have a global vision of agroecology in Madagascar. .

**The 2nd expected result** of the project consists of “capacity building of stakeholders is ensured in Climate Smart Agriculture, Conservation Agriculture, Agroforestry and more generally in Agroecology”. The Manitatra 2 project was able to carry out training at different levels. There was training for local service providers (Lead farmers, nurserymen, etc.) and regional development partners in addition to those organized under the PAPAM project.

However, one of the successes of the project remains the introduction of agroecology in schools. A total of 12 secondary schools have benefited from this approach. We appreciated the interest shown by the direct beneficiaries of this approach: establishments, teachers and students. All have noted a positive change in their ways of seeing the concept





## VI. APPENDIX

### Appendix 1. Financial achievements since the start of the project

Budget acc.	Planned Activities	Budget (€)		Budget (€) PROJECT REALLOC	Budget (€) after extension	TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED EURO (AUGUST 22 - OCT 22)	TOTAL DISBURSED € (JULY 18 - OCT 22)	% DISBURSED / Budget Realloc
		PROJECT DOC	PROJECT REALLOC						
1.	RESULT 1 : CSA and best practices are up scaled in two ecosystems of the VAKINANKARATRA region, covering the Highland and Middle West regions in Madagascar	280 039,47	329 552,89	313 427,53	287 428,07	-	-	287 906,33	87,36%
Activity 1.1	Conduct awareness raising, advocacy, exchanges visits and field days to facilitate experiences sharing and learning between beneficiaries	19 736,85	21 157,55	23 219,92	23 229,61	-	-	23 707,87	112,05%
1.1.1	Inception workshop and other advocacys (TFP, journalists,...)	10 526,32	2 197,70	4 411,94	4 411,94	-	-	4 411,94	100,00%
1.1.2	Exchanges visites between & inside communes	1 315,79	12 008,01	11 999,62	12 592,79	-	-	12 592,79	104,94%
1.1.3	Car hiring and other expenses during awareness raising	7 894,74	6 951,84	6 808,36	6 224,88	-	-	6 703,14	98,45%
Activity 1.2	Upscale Conservation Agriculture to support the growing of up land rice and other crops	26 315,79	46 037,48	41 193,58	39 693,58	-	-	39 693,58	86,22%
1.2.1	Provides seeds of cover crops (mucuna, stylosanthes, cowpea...)	19 736,84	42 090,11	37 050,40	37 050,40	-	-	37 050,40	100,00%
1.2.2	Support for Stylosanthes rollers	6 578,95	3 947,37	4 143,17	2 643,17	-	-	2 643,17	63,80%
Activity 1.3	Upscale agroforestry and forestation (equipment and seed support to nurseryman and adopting farmers)	113 552,63	123 242,07	112 972,43	112 758,78	-	-	112 758,78	91,49%
1.3.1	Support tree nurserimen (potting bags, other materials...)	7 894,74	1 339,04	4 167,99	3 954,33	-	-	3 954,33	94,87%
1.3.2	Support adopting farmers in tree plantlets for reforestation (Acacia, Eucalyptus...)	78 947,37	109 896,51	100 662,69	100 662,69	-	-	100 662,69	100,00%
1.3.3	Support adopting farmers in fruit plantlets	16 447,36	6 585,20	4 277,56	4 277,56	-	-	4 277,56	100,00%
1.3.4	Provides seeds of hedgerow (Cajanus, Tephrosia...)	10 263,16	5 421,31	3 864,19	3 864,19	-	-	3 864,19	100,00%

Budget acc.	Planned Activities	Budget (€)		Budget (€) PROJECT REALLOC	Budget (€) after extension	TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED EURO (AUGUST 22 - OCT 22)	TOTAL DISBURSED € (JULY 18 - OCT 22)	% DISBURSED / Budget Realloc
		PROJECT DOC	PROJECT REALLOC						
Activity 1.4	Promote other best practices (bio-pesticides and repellent plants, technology of composting, improved organic fertilizers, forages, species for food safety as orange flesh sweet potatoes..., regenerative income activity as vegetables...)	27 421,05	29 378,54	25 592,66	23 135,67	-	23 135,67	78,75%	
1.4.1	Provide seeds of mucuna, crotalaire, others plants used as bio-pesticides/ repellent plants (based on the experiences of BVPI, GSDM, CEFTEL)	5 789,47	2 161,23	2 061,69	2 061,69	-	2 061,69	100,00%	
1.4.2	Provide worms for composting	1 052,63	1 024,49	1 024,49	1 024,49	-	1 024,49	100,00%	
1.4.3	Participate to improve cowsheds for quality manure and composting	7 894,74	13 895,58	9 437,49	7 099,44	-	7 099,44	75,23%	
1.4.4	Provide seeds of forage (grasses and legumes and off season forage...) and food safety plants (orange flesh potatoes) based on experiences of FIFAMANOR	10 315,79	9 928,82	11 101,23	10 982,29	-	10 982,29	98,93%	
1.4.5	Provide fry and other equipment for farmers for fish raising in the paddy field or in ponds (based on the experiences of APDRA and CIRAD)	2 368,42	2 368,42	1 967,77	1 967,77	-	1 967,77	100,00%	
Activity 1.5	Collect data on CSA in some strategic area at National level in a view to update data on upscaling of CSA and best practices in the Country	39 000,00	40 052,63	39 851,17	20 851,17	-	20 851,17	52,06%	
1.5.1	Contract with a firm to conduct National survey in some strategic agro-écological areas	20 000,00	21 052,63	20 851,17	20 851,17	-	20 851,17	100,00%	
1.5.2	Integrate data in MANAMORA database - and include database improvement by contracting with CIRAD	15 000,00	15 000,00	15 000,00	-	-	-	0,00%	
1.5.3	Train regional directorates of MPAE (DRAE) in the use of the data base MANAMORA	-	-	-	-	-	-	-	
1.5.4	National database transfert to DRAE (Ministry regional branch)	4 000,00	4 000,00	4 000,00	-	-	-	0,00%	
Activity 1.6	Purchase principal mean for upscaling activity	54 013,15	69 684,62	70 597,77	67 759,26	-	67 759,26	97,24%	
1.6.1	Purchase of Equipments	25 000,00	26 318,53	26 318,53	26 318,53	-	26 318,53	100,00%	
1.6.1.1	Purchase of motorcycles	21 052,63	22 125,68	22 125,68	22 125,68	-	22 125,68	100,00%	

Budget acc.	Planned Activities	Budget (€)		Budget (€) PROJECT REALLOC	Budget (€) after extension	TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED EURO (AUGUST 22 - OCT 22)	TOTAL DISBURSED € (JULY 18 - OCT 22)	% DISBURSED / Budget / Realloc
		PROJECT DOC	PROJECT REALLOC						
1.6.1.2	Purchase of bicycles	3 947,37	4 192,85	4 192,85	4 192,85	-	-	4 192,85	100,00%
1.6.2	Fuel and repairs	29 013,15	43 366,09	44 279,24	41 440,73	-	-	41 440,73	95,56%
1.6.2.1	Fuel and repairs (spare parts) for motorcycle	19 539,47	37 102,95	38 939,88	38 301,38	-	-	38 301,38	98,36%
1.6.2.2	Car hiring for field backstopping and monitoring (all CSA: CA, Agroforestry and best practices)	9 473,68	6 263,14	5 339,35	3 139,35	-	-	3 139,35	58,80%
2.	RESULT 2 : Capacity of various stakeholders is built in Climate smart Agriculture Conservation Agriculture and Agroforestry	103 022,11	88 857,87	89 821,86	84 971,08	-	-	84 971,08	95,63%
Activity 2.1	Train nurserymen in the technology of tree nurseries and in the choice of the appropriate tree species	2 302,63	-	-	-	-	-	-	
2.1.1	Train Nurserymen/women	2 302,63	-	-	-	-	-	-	
Activity 2.2	Train lead farmers and farmers in CSA (CA, agroforestry and forestation, other good practices)	33 157,89	32 827,94	33 253,29	33 271,70	-	-	33 271,70	101,35%
2.2.1	Train Lead farmers (LF) by technicians and other stakeholders	-	1 769,06	1 769,06	1 769,06	-	-	1 769,06	100,00%
2.2.2	Support cost of farmers training by Lead farmers (Farmer to farmer approach, based on man-day spent on training of their peer farmers)	33 157,89	31 058,88	31 484,23	31 502,63	-	-	31 502,63	100,06%
Activity 2.3	Train secondary school students in CSA (CA, Agroforestry and forestation, other good practices)	46 117,63	41 492,71	48 981,32	44 963,61	-	-	44 963,61	108,37%
2.3.1	Make Diagnosis to select beneficiary schools	185,26	150,92	150,92	150,92	-	-	150,92	100,00%
2.3.2	Organize Events (Commitment charte event, Tools delivery)	370,53	2 033,74	2 033,74	2 033,74	-	-	2 033,74	100,00%
2.3.3	Organize Training for Ministry Branch (OEMC/DREMC/BEMC)	131,58	355,13	355,13	355,13	-	-	355,13	100,00%
2.3.4	Organize Training for teachers (3 sessions of training in Vakinankaratra)	5 292,63	2 676,91	2 676,91	2 676,91	-	-	2 676,91	100,00%
2.3.5	Training Tools (tarpaulin, booklet, teacher guideline, language-photo)- 6 new schools	3 806,05	8 012,29	7 905,39	7 305,39	-	-	7 305,39	92,41%
2.3.6	Produce and edit Communication tools (tarpaulin, Roll up)	210,53	205,21	99,95	99,95	-	-	99,95	100,00%



Budget acc.	Planned Activities	Budget (€)		TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED EURO (AUGUST 22 - OCT 22)	% DISBURSED / Budget / Realloc
		PROJECT DOC	PROJECT REALLOC			
2.3.7	Produce Film for communication	3 684,21	487,26	487,26	-	100,00%
2.3.8	Produce Cartoon strips for school children	10 000,00	18 567,36	18 430,56	-	99,26%
2.3.9	Provide some kits and inputs for demonstration plot (Materials and tools, Teaching Tools, inputs) for 6 new school	3 857,89	3 244,84	3 100,52	-	95,55%
2.3.10	Accompany students in the implementation	-	-	-	-	
2.3.11	Organise competition of best school (demonstration plot and student knowledge)	421,05	526,32	596,92	-	113,41%
2.3.12	Exchange visits between School	5 526,32	2 619,50	2 532,31	-	96,67%
2.3.13	Organize annual workshop (capitalisation, experiences exchange)	6 315,79	5 143,51	3 343,51	-	65,00%
2.3.14	Car hiring for training, monitoring and other actions fo secondary school	6 315,79	5 170,49	3 850,49	-	74,47%
Activity 2.4.	Organise training sessions targeting development actors such as farmers organisations, NGO and services providers	5 842,11	949,78	597,36	-	15,12%
2.4.1	Organize training sessions targeting development actors as farmers organizations, NGO, local service provider	3 947,37	627,80	275,37	-	43,86%
2.4.2	Organize exchange visit in the training sites of GSDM	-	-	-	-	
2.4.3	Car hiring during training sessions (6 days per session)	1 894,74	321,98	321,98	-	100,00%
Activity 2.5	Involve regional Directorate of Meteorology in Climate smart Agriculture Conservation Agriculture and Agroforestry	7 707,11	1 684,48	1 684,48	-	62,60%
2.5.1	Organize Information/sensitization of local stakeholders	789,47	614,34	614,34	-	100,00%
2.5.2	Organize Training workshop for local stakeholders	4 497,64	121,98	121,98	-	100,00%
2.5.3	Provide regional Meteorological information bulletins (quarterly)	421,05	579,20	579,20	-	100,00%

Budget acc.	Planned Activities	Budget (€)		TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED EURO (AUGUST 22 - OCT 22)	TOTAL DISBURSED € (JULY 18 - OCT 22)	% DISBURSED / Budget Realloc
		PROJECT DOC	PROJECT REALLOC				
2.5.4	Provide perdiem for meteorological officer	1 998,95	489,89	368,95	-	368,95	100,00%
Activity 2.6	Involve the Ministry of Agriculture and livestock (MPAE) and Ministry of Environment and Forestry (MEEF) or regional directorates	7 894,74	6 315,79	4 193,91	-	4 193,91	66,40%
2.6.1	Organize field collaboration and exchange by MPAAE + MEEF	2 368,42	789,47	-	-	-	
2.6.2	Organize field collaboration and exchange by regional directorates (DRAE + DREEF)	5 526,32	5 526,32	4 193,91	-	4 193,91	89,37%
Activity 2.7	Participate to CSA integration into public policies	-	1 578,95	260,02	-	260,02	16,47%
2.7.1	Participate to workshops or meeting to advocate CSA (no cost)		789,47	-	-	-	
2.7.2	Participate to workshops or meeting on climate change to advocate CSA (no cost)		789,47	260,02	-	260,02	100,00%
3.	RESULT 3 : Farmers organisations are supported and linked to various stakeholders in the Agriculture to support sustainability of the project results	32 512,20	25 614,84	11 167,54	-	11 167,54	43,60%
Activity 3.1.	Support FOs to participate in the development of National Action Plan for Climate Change as well as other Climate Change Frameworks	3 692,47	1 491,89	141,60	-	141,60	9,49%
3.1.1	Organize awareness raising on Climate Change targeting development actors as farmers organizations, NGO, local service provider	3 060,89	1 161,89	141,60	-	141,60	100,00%
3.1.2	Car hiring during training sessions (2 days per session)	631,58	330,00	-	-	-	
Activity 3.2	Sharing experience at the regional level (COMESA and other regions) integrating political actors and development actors	9 161,84	11 478,26	-	-	-	0,00%
3.2.1	Organize exchange visits targeting policy makers, development actors (technicians) and farmers in COMESA and other regions	9 161,84	11 478,26	-	-	-	



Budget acc.	Planned Activities	Budget (€)		TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED EURO (AUGUST 22 - OCT 22)	TOTAL DISBURSED € (JULY 18 - OCT 22)	% DISBURSED / Budget Realloc
		PROJECT DOC	PROJECT REALLOC				
Activity 3.3.	Support FOs to maintain continuous exchange with FDA and FDAR (state promoted development mechanisms in national level) in order to make a link between farmers and agricultural services	-	-	-	-	-	
3.3.1	Ensure Permanent exchange with FDA (state promoted development device in national level) in order to make a link with government development orientations	-	-	-	-	-	
3.3.2	Ensure Permanent exchange with FDAR (state promoted development device in regional level) in order to make a link with government development orientation	-	-	-	-	-	
Activity 3.4.	Ensure that the FOs obtain permanent utilization of the Agricultural Service Provider (state promoted development mechanisms in national level) to make a link between the farmers and the agricultural services	1 500,00	953,37	453,37	-	453,37	47,55%
3.4.1	Ensure Permanent utilization of CSA or Agricultural Service Center (state promoted development mechanism in District level) to make a link between farmers and agricultural service	1 500,00	953,37	453,37	-	453,37	100,00%
Activity 3.5.	Support FOs on their collaborative contracting with various partners such as APDRA, FIFAMANOR, CEFFEL, AVSF, AGRISUD and PAPAM in various interventions	18 157,89	11 691,31	10 572,57	-	10 572,57	90,43%
3.5.1	Built capacity of FOs on rice/fish ecosystem by contracting with APDRA	3 421,06	3 706,71	3 394,49	-	3 394,49	91,58%
3.5.2	Built capacity of FOs on dairy cattle and forages by contracting with FIFAMANOR	5 263,16	6 159,77	5 353,25	-	5 353,25	86,91%
3.5.3	Built capacity of FOs on market gardening and livestock by contracting with AVSF (targeting mainly women)	3 157,89	-	-	-	-	

Budget acc.	Planned Activities	Budget (€)		TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED EURO (AUGUST 22 - OCT 22)	% DISBURSED / Budget Realloc
		PROJECT DOC	PROJECT REALLOC			
3.5.4	Built capacity of FOs on FFS School approach as developed by PAPAM project by AGRISUD	3 157,89		-	-	
3.5.5	Built capacity of FOs on Best practices, bio-pesticides and fruit trees by contracting with CEFFEL	3 157,89	1 824,84	1 824,84	1 824,84	100,00%
4.	COMMUNICATION AND VISIBILITY	50 235,86	36 807,93	39 638,99	39 638,99	107,69%
Activity 4.1.	Visibility and communication events organization	19 483,86	14 449,66	14 550,74	14 550,74	100,70%
4.1.1	Organization of regional field days targeting government authorities and development actors	12 493,43	6 633,50	6 909,36	6 909,36	100,00%
4.1.2	Conception of other Communication tools as streamers, roll up and mass communication	168,66	2 610,71	2 686,92	2 686,92	100,00%
4.1.3	Car hiring for all communication and visibility action	6 315,79	5 036,79	4 783,75	4 783,75	105,61%
Activity 4.2.	Publications and broadcasting	5 363,84	1 971,49	1 263,63	1 263,63	64,10%
4.2.1	Broadcasting on national TV	3 165,00	-	-	-	
4.2.2	Broadcasting on national Radio	999,47	-	-	-	
4.2.3	Expenses related to attendance of journalists or reporters in events for publication on TV or newspapers	1 199,37	399,79	-	-	
Activity 4.3.	Documentaries conception and edition	25 388,16	20 386,78	23 824,62	23 824,62	116,86%
4.3.1	Edition documents and tools for technicians and farmers	2 368,42	4 163,57	6 050,31	6 050,31	111,96%
4.3.2	Editing of films for each project events	12 493,42	5 696,89	8 513,00	8 513,00	113,18%
4.3.3	Capitalization leaflets	10 526,32	10 526,32	9 261,31	9 261,31	91,65%
5.	PROJECT ADMINISTRATION (HUMAN AND EQUIPEMENTS)	168 093,87	165 057,26	185 304,18	112,43	112,33%
Activity 5.1.	PMU officials recruited	89 447,37	92 515,31	98 967,20	-	106,97%
5.1.1	project Leader	21 710,53	22 685,71	28 091,63	-	98,82%
5.1.2	Assitant of project leader	15 631,58	18 386,64	15 731,71	-	100,00%
5.1.3	Technicians (Highland+Middle West) (6 technicians)	52 105,26	51 442,96	55 143,86	-	100,04%



Budget acc.	Planned Activities	Budget (€)		TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED € (JULY 18 - OCT 22)	% DISBURSED / Budget / Realloc
		PROJECT DOC	Budget (€) PROJECT REALLOC			
Activity 5.2.	GSDM Backstopping fully implemented by his key staff	43 240,04	39 799,86	46 860,08	46 860,08	117,74%
5.2.1	Director (2 months per year)	11 126,53	11 076,79	13 761,55	13 761,55	102,17%
5.2.2	Agronomist (2 months per year)	5 352,25	5 328,33	6 619,71	6 619,71	102,17%
5.2.3	Trainers agronomists (2 months per year per trainer): 2 trainers (Martin and Célestin)	10 704,51	7 409,76	6 619,71	6 619,71	89,80%
5.2.4	Agro economist (2 months per year)	5 352,25	5 328,33	6 619,71	6 619,71	102,17%
5.2.5	Communication Officer (2 months per year)	5 352,25	5 328,33	6 619,71	6 619,71	102,17%
5.2.6	Agronomist Vakinankaratra (2 months per year)	5 352,25	5 328,33	6 619,71	6 619,71	102,17%
Activity 5.3.	Local missions	15 789,48	10 845,85	11 226,30	11 226,30	103,51%
5.3.1	Per diem for GSDM national staff	11 842,11	8 095,37	8 183,84	8 183,84	88,73%
5.3.2	Per diem for local staff	3 947,37	2 750,48	3 042,46	3 042,46	81,17%
Activity 5.4.	Mean and equipments implementation	19 616,98	21 896,25	28 250,60	28 363,03	129,53%
5.4.3	Offices renting and communication	3 315,79	2 604,51	3 402,77	3 402,77	130,65%
5.4.3.1	Regional office renting	3 315,79	2 604,51	3 402,77	3 402,77	99,43%
5.4.4	Offices renting and communication	15 227,51	18 825,14	23 445,41	23 557,84	125,14%
5.4.4.1	PC/laptop	4 210,53	6 268,48	6 268,48	6 268,48	100,00%
5.4.4.2	printers/scanner/photocopiers	552,63	604,38	730,21	730,21	120,82%
5.4.4.3	Digital camera	947,37	852,10	852,10	852,10	100,00%
5.4.4.4	videoprojectors + screens	2 105,26	1 405,72	1 405,72	1 405,72	100,00%
5.4.4.5	hard disks	97,37	75,80	75,80	75,80	100,00%
5.4.4.6	Other equipments (flat rate per technician)	552,63	993,97	1 012,71	1 012,71	100,00%
5.4.4.7	Communication/courier and other coordination expenses	6 761,72	8 624,69	13 100,39	13 212,82	101,77%
5.4.5	Spare parts for hard ware and other office machineries	1 073,68	466,59	1 402,42	1 402,42	300,57%
5.4.5.1	Spares (hard ware, photocopiers etc.)	1 073,68	466,59	1 402,42	1 402,42	99,68%
6.	PROJECT OVERSIGHT	45 789,27	37 583,60	40 560,44	40 673,77	108,22%
Activity 6.1.	Steering committee	789,27	999,68	1 063,97	1 063,97	106,43%
6.1.1	Steering committee establishment	-	-	-	-	-

Budget acc.	Planned Activities	Budget (€)		TOTAL DISBURSED € (JULY 18- JULY 22)	TOTAL DISBURSED EURO (AUGUST 22 - OCT 22)	TOTAL DISBURSED € (JULY 18 - OCT 22)	% DISBURSED / Budget Realloc
		PROJECT DOC	PROJECT REALLOC				
6.1.2	Steering committee meetings to give strategic orientation and advice during all phases of the project	789,27	999,68	1 063,97	-	1 063,97	100,00%
Activity 6.2.	Monitoring and Evaluation of the project	45 000,00	34 616,21	37 169,36	-	37 169,36	107,38%
6.2.1	Base line study through external expertise	15 789,47	4 426,46	2 177,59	-	2 177,59	100,00%
6.2.2	Financial auditing	-	-	303,02	-	303,02	100,00%
6.2.3	Bi-annual reportings	-	-	-	-	-	-
6.2.4	Annual reportings	-	-	-	-	-	-
6.2.5	Mid-term evaluation through external expertise	7 894,74	13 213,27	16 483,27	-	16 483,27	100,00%
6.2.6	Final evaluation through external expertise	11 842,11	13 547,37	13 122,00	-	13 122,00	101,31%
6.2.7	Car hiring for monitoring and evaluation	9 473,68	3 429,11	5 083,48	-	5 083,48	100,13%
Activity 6.3.	Project achievements capitalization	-	1 967,71	2 327,12	113,33	2 440,44	124,02%
6.3.1	Project capitalization report	-	1 967,71	2 327,12	113,33	2 440,44	97,07%
July 2018 to Oct 2022		679 692,79	683 474,40	649 070,29	225,75	649 774,31	95,07%
7.2.1	Administrative charges	47 578,49	43 796,88	43 753,12	2 251,06	46 004,18	100,79%
<b>YEAR 4 TOTAL</b>	<b>REALLOC BUDGET (EUROS)</b>	<b>727 271,28</b>	<b>727 271,28</b>	<b>692 823,41</b>	<b>2 476,81</b>	<b>695 778,49</b>	<b>95,67%</b>



Appendix 2. Technical achievements compared to the project targets

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the			Achievements during the extension (since jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Year 1	Year 2	Year 3	Ach.	%	Ach.	%	
1.	RESULT 1 : CSA and best practices are up scaled in two ecosystems of the VAKINANKARATRA region, covering the Highland and Middle West regions in Madagascar										
Activity 1.1	Conduct awareness raising, advocacy, exchanges visits and field days to facilitate experiences sharing and learning between beneficiaries										
1.1.1	Inception workshop	Number of workshop	1	1	0	0	0	0%	1	100%	L'atelier de lancement officiel du projet a été effectué le 15 novembre 2018. Il a permis d'informer et de s'échanger sur les objectifs, les méthodologies d'intervention et les résultats attendus du projet.
		Number of participant	120	110	0	0	0	0%	110	92%	Les visites échanges intra-communales permettent aux paysans dans les zones d'intervention du projet d'apprécier les performances des pratiques agroécologiques. Généralement, ces visites sont organisées au niveau des CEP et/ou des parcelles des paysans encadrés par le projet. Contrairement aux sites de démonstration, les paysans ont pu observer tout au long de l'année les pratiques faites au niveau de ces CEP. Et ces pratiques sont :
1.1.2	Exchanges visites between & inside communes	Number of participants in exchanges visits inside communes	8 000	1 781	4 104	5 230	101	1%	11 216	140%	<ul style="list-style-type: none"> <li>&gt; pertinentes (par rapport aux contraintes de la zone ou de l'exploitation)</li> <li>&gt; adaptées (par rapport aux conditions agropédologiques de la zone)</li> <li>&gt; accessibles (car, à part les semences spécifiques, il n'y a pas de subvention faite par le projet. Les autres paysans peuvent donc le reproduire au niveau de leurs exploitations)</li> <li>&gt; et, maintient les ressources naturelles</li> </ul> Depuis le début du projet, 11 115 personnes ont participé au visites échanges organisées par les paysans leaders. Parmi eux, on a comptabilisé 5 724 femmes (soit 51,5%). Ce qui représente 139% de l'objectif fixé dans le document de projet.
		Number of participants exchanges visits between commune	500	518	437	881	322	64%	2 158	432%	Les visites échanges intercommunales accélèrent la mise à l'échelle des pratiques agroécologiques. En effet, les visites à l'extérieur de la commune d'habitation des paysans leur ouvre sur d'autres horizons. Ils aperçoivent les dynamismes dans d'autres communes ; et les adaptations faites par les autres paysans. Ainsi, depuis le démarrage du projet, 2.158 paysans ont participé à ces visites. Parmi ces participants, on a recensé 843 femmes, soit 39%. La participation à ces visites dépasse largement l'objectif final du projet.

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the Year 1		Achievements of the Year 2		Achievements of the Year 3		Achievements during the extension (since jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	%	Ach.	%	Ach.	%	Ach.	%			
	Awareness, information and communication about project activities	Number of participants	7 000	2 242		3 900		1 713		16	0%	7 871	112%	De même, les réunions d'information et communication sur les activités du projet au début de la saison de pluie sont indispensables pour permettre aux paysans cibles d'avoir une première indication sur les thématiques qui les intéressent. Mais en fonction des calendriers culturaux, d'autres réunions devraient encore être organisées.
1.1.3	Car hiring and other expenses during awareness raising	Number of car hiring days	100	27		25		30		12	12%	94	94%	
Activity 1.2	Upscale Conservation Agriculture to support the growing of up land rice and other crops													



Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the			Achievements during the extension (since jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Year 1	Year 2	Year 3	Ach.	%	Ach.	%	
1.2.1	Provides seeds of cover crops (mucuna, Stylosanthes, cowpea...)	Quantity of Mucuna seeds provided (kg)	18 112	1 850	9 862	5 950	0	0%	17 662	98%	Malgré la rareté soudaine des semences de plantes de couverture à Madagascar, on peut dire que les besoins du projet ont généralement été satisfaits. Depuis le début de MANITATRA 2, 6,434 bénéficiaires des semences de plantes de couverture subventionnées ont été comptabilisés. Ceci correspond à 129% de l'objectif final.  On peut également dire, qu'en terme de surface en agriculture de conservation, l'objectif final du projet est atteint à 103%. Les paysans accompagnés par le projet sur cette thématiques sont chiffrés à 4,378 ; dont 1.812 femmes (soit 41,4%). Ces paysans ont adoptés l'Agriculture de conservation sur 2,058,7ha de tanety, dont : > AC à base de Mucuna : 648,64ha > AC à base de légumineuses arbuscules : 576,23ha > AC à base de Stylosanthes : 456,75ha > et, AC à base d'Avoine : 6,91ha  Au final, 4 OP ont pu bénéficier du financement tripartite OP-FDA Vakinankaratra-Projet MANITATRA 2 afin de s'acquies un rouleau de Stylosanthes. Ce matériel est nécessaire pour faciliter la maîtrise de la biomasse de Stylosanthes après l'année de jachère.
		Quantity of Stylosanthes seeds provided (kg)	2 097	260	1 087	492	0	0%	1 839	88%	
		Quantity of Cowpea cv David seeds provided (kg)	1 400	1 000	50	0	0	0%	1 050	75%	
		Quantity of Oat seeds provided (kg)	1 800	0	600	1 200	0	0%	1 800	100%	
		Quantity of Vigna seeds provided (kg)	150	150	0	0	0	0%	150	100%	
		Quantity of Cajanus cajan seeds provided (kg)	9 875	0	6 375	2 900	0	0%	9 275	94%	
		Number of farmers provided seeds of cover crops	5 000	1 824	3 119	1 491	0	0%	6 434	129%	
		Acreege of full Conservation Agriculture (ha of CA)	2 000	603,49	1 520,96	2 058,70	1 699	85%	2 058,70	103%	
		Number group farmer provided Stylosanthes rollers	5	0	0	4	0	0%	4	80%	
		Activity 1.3	Upscale agroforestry and afforestation (equipment and seed support to nurseryman and adopting farmers)								
1.3.1	Support tree nurserimen (po-tting bags, other materials...)	Number of tree nursery man supported	50	27	58	47	17	34%	72	144%	Depuis le début du projet, on a enregistré 72 pépiniéristes ; soit 144% par rapport à l'objectif final de MANITATRA 2

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the			Achievements during the extension (since jan 2022 from july 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	Ach.	Ach.	Ach.	%	Ach.	%	
1.3.2	Support adopting farmers in tree plantlets for reforestation (Acacia, Eucalyptus...)	Number of trees plantlets for reforestation	1 500 000	557 351	1 095 051	728 468	83 180	6%	2 464 050	164%	La perte de la couverture forestière se fait à une très grande vitesse à Madagascar. C'est pourquoi cette activité du projet est très importante. Au total, 2.464.050 jeunes plants forestiers ont été mis en terre dans le cadre du projet. Ce qui correspond à 164% de l'objectif du projet. Pour y arriver, le projet a appuyé 6.748 reboiseurs, dont 1.542 femmes (soit 22,9%)
				6 527	6 929	2 978	0	0%	16 434	33%	
1.3.3	Support adopting farmers in fruit tree plantlets	Number of fruit plantlets of farmers adopting	50 000	1 000	1 169	1 000	0	0%	3 169	100%	A la fin du projet, 16 434 jeunes plants fruitiers subventionnés par le projet ont été mis à la disposition des paysans encadrés par le projet. Ceci représente 33% de l'objectif final du projet.
				350	2 000	2 900	0	0%	5 250	148%	
1.3.4	Provide seeds of hedgerows (Cajanus, Tephrosia...)	Quantity of Tephrosia seeds provided (kg)	168	168	0	0	0	0%	168	100%	Pour les haies vives et embocagements, le projet a opté pour le Cajanus cajan, Tephrosia vogelii, et durant l'année 1, le Crotalaria gramimhana. Au final, 5.250 paysans ont pu bénéficier des semences de haies vives venant du projet. Ceci représente 78% de l'objectif final du projet.
				1 468	2 452	1 132	0	0%	5 052	78%	
Activity 1.4	Promote other best practices (biopesticides and repellent plants, technology of composting, improved organic fertilizers, forages, species for food safety as orange flesh sweet potatoes..., regenerative income activity as vegetables...)	length of hedgerow (en ml)	1 000 000	239 877	699 873	369 289	5 640	1%	1 314 679	131%	Depuis le début du projet, 1.314.679m de dispositifs antérosifs ont été installés par les paysans dans la Région. Ces dispositifs sont constitués par des haies vives, embocagements de parcelles et des canaux d'infiltration suivant les courbes de niveau.
				1 607	2 233	1 326	0	0%	5 166	94%	
1.4.1	Provide seeds of mucuna, crotalaire, others plants used as biopesticides/repellent plants (based on the experiences of BVPI, GSDM, CEFFEL)	Number of farmers provided seeds of mucuna, crotalaire, others plants used as biopesticides/repellent plants	5 500	1 607	2 233	1 326	0	0%	5 166	94%	Ainsi, depuis le début du projet, on a recensé 5.166 bénéficiaires de ces matériels végétaux ; soit 94% par rapport à l'objectif final du projet.





Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the Year 1		Achievements of the Year 2		Achievements of the Year 3		Achievements during the extension (since Jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	%	Ach.	%	Ach.	%	Ach.	%			
1.4.2	Provide worms for composting	Quantity of provided worms for composting (kg)	10	10	0%	0	0%	0	0%	0	0%	10	100%	Lors de la première année, le projet a doté 10kg de vers décomposeurs 13 exploitations pour s'initier à la pratique du lombricompost. Aucun autre approvisionnement n'a, ensuite, été fait. L'équipe a assuré le rôle de facilitateur afin que les vers puissent se transmettre d'un paysan à l'autre
				46	6%	261	6%	401	6%	14	6%	722	289%	
	Compost 7 days	Number of adopters	200	60	0%	52	0%	9	0%	0	0%	121	61%	Le lombricompost est l'une des pratiques qui intéresse beaucoup de paysans dans la zone. A la fin du projet, on a pu enregistré 722 adoptants en lombricompost. Mais, il faut noter que des nombreux paysans ne passent plus par les paysans leaders, mais s'échangent directement auprès des autres paysans. Ce qui rendait difficile le recensement des adoptants à cette pratique
				63	32%	115	32%	74	32%	63	32%	315	158%	
				202	19%	438	19%	221	19%	115	19%	976	163%	
				65	10%	153	10%	85	10%	24	10%	327	131%	
Liquid compost	Number of adopters	250	1	18%	152	18%	5	18%	54	18%	212	71%	Avec la difficulté à trouver le jus de rumen, indispensable pour la production du compost 7 jours, l'adoption de cette pratique est très limitée.  La pratique du compostage intéresse les paysans afin de fertiliser les tanety, notamment le riz pluvial et la culture de maïs. Cette pratique permet de compenser l'insuffisance et la mauvaise qualité des matières organiques dans les deux zones.  Dans le cadre de cette pratique, le projet a valorisé les expériences du centre CEFEL à Andranobe/Antsirabe. Elle permet à la fois d'apporter des éléments fertilisants sur les parcelles, et de repousser les insectes nuisibles.  Depuis le début 2012 éleveurs ont bénéficié de la subvention du projet pour l'amélioration des étables. Ce qui représente 71% de l'objectif du projet.	
			300	18%	152	18%	5	18%	54	18%	212	71%		

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the Year 1		Achievements of the Year 2		Achievements of the Year 3		Achievements during the extension (since Jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	%	Ach.	%	Ach.	%	Ach.	%			
1.4.4	Provide seeds of forage (grasses and legumes and off season forage...) and food safety plants (orange flesh potatoes) based on experiences of FIFAMANOR	Quantity of Oat seeds provided (kg)	1 620	0	0	1 470	0	0	0	0	0	1 470	91%	Dans le cadre de cette activité qui est beaucoup plus axée à la réduction de l'insécurité alimentaire, le projet a fourni divers matériels végétaux aux paysans encadrés. Depuis le début du projet, 1.563 paysans ont bénéficié de ces matériels végétaux ; soit 78% de l'objectif final.
		Quantity of Ryegrass seeds provided (kg)	635	0	485	0	150	0	0	0	0	635	100%	
		Quantity of Chloris seeds provided (kg)	150	0	0	0	0	0	0	0	0	-	0%	
		Quantity of Brachiaria seeds provided (Cutting)	125 000	0	0	0	30 000	0	0	0	0	30 000	24%	
		Quantity of Pennisetum seeds provided (Cutting)	6 250	0	0	0	36 250	0	0	0	0	36 250	580%	
		Quantity of Fodder radish seeds provided (kg)	160	0	10	0	150	0	0	0	0	160	100%	
		Quantity of Corn cv panner seeds provided (kg)	75	0	0	0	0	0	0	0	0	-	0%	
		Quantity of Orange-fleshed sweet potato creoper provided (Cutting)	16 300	1 900	6 400	7 000	4 000	25%	19 300	118%				
		Number farmers provided seeds of forage and food safety plants	2 000	285	578	700	0	0%	1 563	78%				
		1.4.5	Provide fry and other equipment for farmers for fish raising in the paddy field or in ponds (base on the experiences of APDRA and CIRAD)	Number of farmers provided equipment and fry for fish raising in the paddy field or in ponds	150	0	316	243	0	0	0	0	559	
Activity 1.5	Collect data on CSA in some strategic area at National level in a view to update data on upscaling of CSA and best practices in the Country													

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the Year 1		Achievements of the Year 2		Achievements of the Year 3		Achievements during the extension (since Jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges	
				Ach.	%	Ach.	%	Ach.	%	Ach.	%	Ach.	%		
1.5.1	Contract with a firm to conduct National survey in some strategic agro-ecological areas	Number of national survey (with national data in CSA)	1	0	0	0	0	0	1	100%	1	100%	100%	Pour cette activité, après avoir entrepris les démarches nécessaires pour respecter les règles de la passation de marché, le projet a mandaté le groupe de consultant "Rivo Rabarijohn". L'étude a été réalisée dans la Région de Vakinankaratra, Fitovavy et Atsimo Atsinanana.	
1.5.2	Integrate data in MANAMORA database - and include database improvement by contracting with CIRAD	Number of contract with CIRAD expertise to integrate data in MANAMORA database	1	0	0	0	0	1	100%	1	100%	100%	Cette activité a été réalisée par le CIRAD durant la période de prolongation sans coût supplémentaire du projet		
1.5.3	Train regional directorates of MAEP (DRAEP) in the use of the data base MANAMORA	Number of DRAE trained in the use of the data base MANAMORA	5	0	0	0	0	0	0%	0	0%	0%	Cette activité n'a pas pu être réalisée durant la période de mise en œuvre du projet. Mais, elle devrait faire partie de la priorité du GSDM.		
1.5.4	National database transfer to DRAE (Ministry regional branch)	One database transferred	1	0	0	0	0	0	0%	0	0%	0%	Cette activité n'a pas pu être réalisée durant la période de mise en œuvre du projet. Mais, elle devrait faire partie de la priorité du GSDM.		
Activity 1.6 Purchase principal mean for upscaling activity															
1.6.1	Purchase of Equipments														
1.6.1.1	Purchase of motorcycles	Number of motorcycle	8	8	0	0	0	0	0	0%	0	0%	8	100%	Avec le budget disponible, on a pu acheter 5 nouvelles motos et 32 nouvelles bicyclettes. Les matériels utilisés durant la première phase de Manitatra ont été mobilisés pour combler les manquants
1.6.1.2	Purchase of bicycles	Number of bicycles	50	50	0	0	0	0	0	0%	0	0%	50	100%	
1.6.2	Fuel and repairs														
1.6.2.1	Fuel and repairs (spare parts) for motorcycle	Number of Motorcycle use month	297	72	96	123	11	4%	11	4%	302	102%	302	102%	Current project activity.
1.6.2.2	Car hiring for field backstopping and monitoring (all CSA: CA, Agroforestry and best practices)	Number of car hiring days	90	23	32	59	18	20%	18	20%	132	147%	132	147%	Current project activity.
2	RESULT 2 : Capacity of various stakeholders is built in Climate smart Agriculture Conservation Agriculture and Agroforestry														

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the				Achievements during the extension (since jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Year 1	Year 2	Year 3	Ach.	%	Ach.	%		
Activity 2.1	Train nurserymen in the technology of tree nurseries and in the choice of the appropriate tree species											
2.1.1	Train Nurserymen/women	Number of Nursery men/women trained	50	27	57	47	17	34%	72	144%	La quasi-totalité de ces pépiniéristes prestataires du projet dans le cadre de la production des jeunes plants pour cette année a déjà bénéficié de la formation dispensée par la DREDD lors de la campagne 2019/2020. Mais, ceci n'exclut pas les recyclages faits par les techniciens du projet et les agents de la DREDD Vakinankaratra au cours de la mise en œuvre. En résumé, 72 pépiniéristes ont déjà collaboré avec GSDM depuis le début du projet.	
Activity 2.2	Train lead farmers and farmers in CSA (CA, agroforestry and afforestation, other good practices)											
2.2.1	Train Lead farmers (by project Technicians and other stakeholders)	Number of Lead farmers	50	64	54	51	30	60%	85	170%	Les paysans leaders du projet ont reçu des formations de la part : > des agronomes du GSDM > des agents de la DRAEP > des techniciens du CEFTEL et ATDRM. Mais d'une manière générale, ce sont les techniciens du projet qui facilitent leurs interventions en faisant des recyclages et des réorientations individualisées.	
2.2.2	Support cost of farmers training by Lead farmers (Farmer to farmer approach, based on man-day spent on training of their peer farmers)	Intervention of Lead farmers (man-day)	12 600	2 772	4 205	4 872	749	6%	12 598	100%	Current project activity.	
	Training of adopters	Number of participants	5 000	1 279	2 523	1 689	369	7%	5 860	117%	Dans le cadre de l'adoption de l'approche paysan à paysan, des sessions de formation sont organisées dans la zone par les paysans leaders. Depuis le début du projet, 5 860 paysans ont assisté à ces séances ; soit 117% de l'objectif du projet.	
Activity 2.3	Train secondary school students in CSA (CA, Agroforestry and afforestation, other good practices)											
2.3.1	Make Diagnosis to select beneficiary schools	Number of diagnosis to select beneficiary schools	1	1	0	0	0	0%	1	100%	Cette activité a été réalisée lors de la première année du projet.	
		Number of selected schools	12	12	0	0	0	0%	12	100%	Notons que le diagnostic nous a permis de sélectionner 6 écoles. Car on a continué à travailler avec les 6 écoles déjà encadrées par le GSDM durant le projet PAPAM (financement AFD)	
2.3.2	Organize Events (Commitment charte event, Tools delivery)	Number of Event	2	2	0	0	0	0%	2	100%	La signature de la charte d'engagement avec les 6 nouvelles écoles a été réalisée à la date de 12 et 13 février 2019. C'est un engagement tripartite entre chaque établissement, l'OEMIC/MEN et le GSDM.	

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the Year 1		Achievements of the Year 2		Achievements of the Year 3		Achievements during the extension (since Jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	%	Ach.	%	Ach.	%	Ach.	%	Ach.	%	
2.3.3	Organize Training for Ministry Branch (OEMC/ DREMC/BEMC)	Number of session organized for training for Ministry Branch	1	1	0	0	0	0	0	0	0	1	100%	For a better coordination of activities monitoring, and also for information and sensitization, a training of the OEMC agents and DCI designers (curricula designer) was organized in February 2019.
2.3.4	Organize Training for teachers (3 sessions of training in Vakinkankatra)	Number of session organized for training for teachers	3	2	2	0	0	0	0	0	0	4	133%	Trois sessions de formation des enseignants ont été prévues dans le document de projet. Elles ont été faites. Mais afin de remplacer les enseignants formés du CEG Ankazomirotra et Vinany qui ont été affectés dans d'autres régions ; et pour renforcer les enseignants dans la CEG Betafo qui a un effectif important en classe de 6ème et 5ème, une autre session a été réalisée à Betafo. Lors de chaque intervention, l'OEMC/MENETP a assuré l'animation des thèmes sur la protection de l'environnement ; et le GSDM sur les pratiques agroécologiques.
2.3.5	Training Tools (tarpauling, booklet, teacher guideline, language-photo)- 6 new schools	Number of training tools pack	1	1	1	1	1	1	1	100%	0	4	400%	Des outils pédagogiques aussi ont été mis à la disposition des 12 écoles encadrées afin de faciliter la transmission des informations aux élèves. Ils ont été livrés auprès des écoles chaque année scolaire.
2.3.6	Produce and edit Communication tools (tarpauling, Roll up)	Number of communication tools pack	2	1	0	0	0	0	0	0%	0	1	50%	A part les fournitures pédagogiques développées ci-dessus, le projet a également édité et distribué des outils pédagogiques. Ces outils sont constitués par des bâches de formation avec des dessins simples illustrant les différentes étapes des pratiques en question. Ensuite, il y a les photos langages qui ont été distribuées afin de faciliter la compréhension des élèves. Ces fournitures ont été livrées au tout début du projet
2.3.7	Produce Film for communication	Number of film for communication produced	1	0	0	0	0	0	0	0%	0	-	0%	Comme prévu dans le document de projet, un film d'animation en 3D basé sur les contenus du livret ludique a été produit. Il a été réalisé par le NOG'ONE. Le 09 octobre 2020, la sortie officielle du film intitulé "l'Agro-écologie pour les générations futures" a été réalisée à l'IMF-Analankely.
2.3.8	Produce Cartoon strips for school children	Number of cartoon strips produced for school children	1	0	0	1	1	1	0	0%	0	1	100%	

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the			Achievements during the extension (since jan 2022 from july 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	Ach.	Ach.	Ach.	%	Ach.	%	
2.3.9	Provide some kits and inputs for demonstration plot (Materials and tools, Teaching Tools, inputs) for 6 new school	Number of demonstration plot	12	12	12	12	12	100%	12	100%	Plusieurs systèmes en AC ont été installés au niveau des parcelles d'application des 12 écoles encadrées par le projet. Ces parcelles d'application servent : > premièrement de lieu de formation pratique pour les élèves > de parcelles de démonstration pour les parents d'élève qui se réunissent régulièrement au niveau des écoles ; et visitent ces parcelles (ils peuvent ainsi apprécier les performances des pratiques agroécologiques rencontrées par leurs enfants) > d'outils de diffusion pour les paysans aux alentours de l'école ; et qui ont pu y observer les systèmes développés tout au long de l'année.
2.3.10	Accompany students in the implementation	Number of school children trained	6 000	1 895	3 047	6 439	3 234	54%	11 381	190%	La valeur cumulée des élèves bénéficiaires de cette activité est de 11.381 durant les 3 années du projet.
2.3.11	Organise competition of best school (demonstration plot and student knowledge)	Number of competition organized of best school	1	0	0	0	1	100%	1	100%	La pandémie de Covid-19 à perturber la mise en œuvre de cette activité. Seulement, elle a pu être réalisée durant le mois de juillet 2022.
2.3.12	Exchange visits between School	Number of exchange visits between School	3	3	15	12	3	100%	33	1100%	Durant l'année 3 du projet, chacune des 12 écoles encadrées par le projet ont réalisé des visites échanges dans les zones du projet. Les parcelles d'application et les exploitations agricoles familiales adoptants les pratiques agroécologiques ont été ciblées pour servir de base de discussions et d'échanges entre les représentants des enseignants, élèves et parents d'élève. Dans le Moyen Ouest, le site de formation du GSDM à Ivory est également une destination privilégiée pour ces visites. En résumé, 33 visites échanges entre écoles ont été réalisées depuis le début du projet. On a comptabilisé 921 bénéficiaires ; dont, des représentants des enseignants, parents d'élève et élève.
2.3.13	Organize annual workshop (capitalisation, experiences exchange)	Number annual workshop days	3	1	1	1	0	0%	3	100%	Au début de chaque année scolaire, le projet organise un atelier de bilan des activités menées auprès des écoles encadrées. A part les représentants de chaque école (enseignants, élèves et parents d'élève), on invite également des autorités locales et des partenaires de développement à participer à cet atelier. Trois (3) ateliers de bilan prévus dans le projet ont tous été réalisés durant le projet.

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the				Achievements during the extension (since jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	Ach.	Ach.	Ach.	Ach.	%	Ach.	%	
2.3.14	Car hiring for training, monitoring and other actions for secondary school	Number of car hiring days	60	21	16	26,0	5	8%	68,2	114%	Current project activity.	
Activity 2.4. Organise training sessions targeting development actors such as farmers organisations, NGO and services providers												
2.4.1	Organize training sessions targeting development actors as farmers organizations, NGO, local service provider	Number of participants from development actor trained	60	0	0	20	0	0%	20	33%	Du 21 au 24 juillet 2021, les agents de la Région Vakinankaratra (14 personnes), du Cœur de forêts (02), de l'APDRA (02), et des représentants des organisations paysannes membres du FIFATA (02) ont participé à la session de formation sur l'Agroécologie. Les trois premières journées se déroulaient dans la Salle de Réunion de la Région Vakinankaratra. La dernière journée a été consacrée à une visites des exploitations encadrées par le projet sur les Hautes Terres.	
2.4.2	Organize exchange visit in the training sites of GSDM	Number of participants to exchange visit in the training sites of GSDM	2 400	1 306	658	1 336	576	24%	3 876	162%	Depuis le début du projet, 3 876 visiteurs ont passé sur le Site de formation du GSDM à Ivory et des parcelles encadrées par MANITATRA 2 au tours du site. Ceux-ci représentent 162% de l'objectif final du projet.	
2.4.3	Car hiring during training sessions (6 days per session)	Number of car hiring days	18	0	0	6	0	0%	6	33%	Current project activity.	
Activity 2.5 Involve regional Directorate of Meteorology in Climate smart Agriculture Conservation Agriculture and Agroforestry												
2.5.1	Organize information/sensitization of local stakeholders	Number of local stakeholders sensitized on Climate change by regional Meteorology officer	3	0	2	1	0	0%	3	100%	Deux ateliers de bilan de sensibilisation sur la valorisation des données agro-météorologiques ont été déjà réalisés lors des 02 premières années du projet. Le 14 avril 2022, un troisième atelier sur "l'Océan, le Temps et le Climat" a été organisé dans la Salle de réunion de la Préfecture de Vakinankaratra dans le cadre de la célébration de la "Journée Météorologique Mondiale". Au total, 26 participants issus des CTD et STD dans la Région ont participé à cet événement. Ainsi, l'objectif du projet sur ce point est atteint.	
2.5.2	Organize Training workshop for local stakeholders	Number of training workshop session Number of participants trained on Climate Change and information bulletins	3	0	0	7	0	0%	7	233%	Depuis le début du projet, 07 formations sur la valorisation des données agrométéorologiques ont été réalisées dans les 02 zones du projet. On a mis un accent particulier à la méthode d'interprétation du bulletin trimestriel conçu dans le cadre de la convention établie avec le Service Regional de la Météorologie Vakinankaratra. Durant ces sessions de formation, 75 participants ont été enregistré.	

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the				Achievements during the extension (since jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Year 1	Year 2	Year 3	Ach.	%	Ach.	%	Ach.	
2.5.3	Provide regional Meteorological information bulletins (quarterly)	Number of information bulletins provided	800	0	343	410	0	0%	753	94%	Depuis le début du projet, 753 bulletins agro-météorologies ont été distribués depuis le début du projet. Ce qui correspond à 94% de l'objectif final du projet.	
2.5.4	Provide per diem for meteorological officer	Number of METEO officer man-day intervention	12	0	16	32	0	0%	48	400%		
Activity 2.6 Involve the Ministry of Agriculture and livestock (MPAE) and Ministry of Environment and Forestry (MEEF) or regional directorates												
2.6.1	Organize field collaboration and exchange by MPAE + MEEF	Number of mission	3	0	0	0	0	0%	-	0%	Cette activité a déjà été réalisée durant l'organisation des deux journées de l'agro-écologie à Vakinankaratra réalisées durant l'année 2 du projet.	
2.6.2	Organize field collaboration and exchange by regional directorates ( DRAEP + DREDD)	number of signed agreements	2	1	1	2	2	100%	2	100%	Le projet a proposé différentes activités afin de solliciter l'implication effective des 2 branches du ministère dans le Vakinankaratra : la DRAE et la DREDD.	
Activity 2.7 Participate to CSA integration into public policies												
2.7.1	Participate to workshops or meeting to advocate CSA (no cost)	Number of workshop on CSA in which the GSDM take part	3	1	1	1	0	0%	3	100%	Le 16 et 17 décembre 2021, le GSDM a organisé un atelier "Interface Recherche et Développement". Le but de l'atelier a été de mettre sur une même table les organismes de recherche et ceux qui travaillent dans la diffusion des innovations afin d'optimiser les interventions de chacun. Mais on a également invité des paysans afin qu'ils puissent relater la contexte dans lequel ils se trouvent, leurs contraintes et leurs visions sur les travaux de chacun des organismes.	



Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the Year 1		Achievements of the Year 2		Achievements of the Year 3		Achievements during the extension (since jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges	
				Ach.	%	Ach.	%	Ach.	%	Ach.	%	Ach.	%		
2.7.2	Participate to workshops or meeting on climate change to advocate CSA (no cost)	Number of workshop climate change in which the GSDM take part	3	1	0	2	0	0	0	0	0	3	100%	Notons que le projet a participé à une foire régionale "Vitrine de Vakinankaratra", organisée par FIVROY. Un stand a été monté, de manière à présenter les différentes pratiques agroécologiques promues par le projet. Deux paysans bénéficiaires ont assuré la présentation et quelques témoignages sur les impacts positifs de chaque pratique. Par ailleurs, comme les questions qui reviennent souvent sont la disponibilité des semences et les appuis techniques d'après la promotion des Paysans Leaders. En effet, ces derniers ont déjà des bagages importantes, théoriques et pratiques, sur les différentes pratiques agroécologies adaptées dans la Région. De plus, comme ils ont en-cadré des nombreux paysans bénéficiaires du projet ; alors, ils ont des informations importantes sur les différentes semences disponibles dans leurs zones. Par ailleurs, du 04 au 08 Août 2021, le GSDM a participé à la foire internationale de l'économie rurale ("Fière Mada"). Un paysan encadré par MANITATRA 2, membre de la Coopérative FANILLO, a représenté le projet;	
3.	RESULT 3 : Farmers organisations are supported and linked to various stakeholders in the Agriculture to support sustainability of the project results														
Activity 3.1.	Support FOs to participate in the development of National Action Plan for Climate Change as well as other Climate Change Frameworks														
3.1.1	Organize awareness raising on Climate Change targeting development actors as farmers organizations, NGO, local service provider	Number of session for awareness ri-sins on climate change	3	0	0	0	0	0	0	0	0	-	0%	0%	
		Number of participants informed on Climate Change framework	90											0%	Activité déjà réalisée dans le cadre du projet PAPAM (financement AFD)
3.1.2	Car hiring during training sessions (2 days per session)	Number of car hiring days	6	0	0	0	0	0	0	0	0	-	0%		
Activity 3.2	Participate to sharing experiences at the regional level (COMESA and other regions) integrating political actors and development actors														

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements				Cumulative achievements		Remarks / Challenges
				Ach.	Ach.	Ach.	Ach.	Ach.	%	
3.2.1	Organize exchange visits targeting policy makers, developers, actors (technicians) and farmers in COMESA and other regions	Number of exchange visits in COMESA and other regions	1	0	0	0	0	0	0%	Cette activité n'a pas pu être réalisée à cause de la crise sanitaire liée à la pandémie de Covid-19
		Number of exchange visits and participants	5	0	0	0	0	0	0%	
Activity 3.3.	Support FOs to maintain continuous exchange with FDA and FDAR (state promoted development mechanisms in national level) in order to make a link between farmers and agricultural services									
3.3.1	Ensure Permanent exchange with FDA (state promoted development device in national level) in order to make a link with government development orientations	Number of concerned FDA	1	1	2	0	0	1	100%	Depuis cette campagne agricole, 141 demandes de financement ont été montées avec des OP encadrées par le projet. Ces demandes ont été déposées auprès du FDA Vakinankaratra. Et, parmi ces demandes, 25 microprojets ont été mis en œuvre, suite au financement de l'AFD.
		Number of concerned FDAR	1	1	1	1	0	1	100%	
3.3.2	Ensure Permanent exchange with FDAR (state promoted development device in regional level) in order to make a link with government development orientation	Number FOs benefiting finance from FDAR	90	0	0	25	0	25	28%	
Activity 3.4.	Ensure that the FOs obtain permanent utilization of the Agricultural Service Provider to make a link between the farmers and the agricultural services									
3.4.1	Ensure Permanent utilization of CSA or Agricultural Service Center (state promoted development mechanism in District level) to make a link between farmers and agricultural service	Number of concerned CSA (Agricultural Service Center)	6	5	5	0	0	5	83%	Actuellement, les CSA sont devenus des prestataires de services agricoles, notamment au niveau du FDA Vakinankaratra. Ainsi, le mécanisme de développement CSA/FDA tel qu'il est décrit dans le document de projet a changé.
Activity 3.5.	Support FOs on their collaborative contracting with various partners such as APPDRA, FIFAMANOR, CEFTEL, AVSF, AGRISUD and PAPAM in various interventions									



Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the			Achievements during the extension (since jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	Ach.	Ach.	Ach.	%	Ach.	%	
3.5.1	Built capacity of FOs on rice/fish ecosystem by contracting with APDRA	Support from APDRA (2 Years of support for technicians and lead farmers)	2	0	1	1	1	50%	2	100%	Le projet a signé une convention de collaboration avec l'ATDRM pour le développement de la rizipisciculture dans la zone. Cette collaboration a duré 2 ans.
3.5.2	Built capacity of FOs on dairy cattle and forages by contracting with FIFAMANOR	Support from FIFAMANOR (2 Years of support for technicians and lead farmers)	2	0	1	1	1	50%	2	100%	Le projet a signé une convention de collaboration avec le FIFAMANOR pour l'amélioration de la production laitière dans la zone. Cette collaboration a duré 2 ans.
3.5.5	Built capacity of FOs on Best practices, bio-pesticides and fruit trees by contracting with CEFTEL	Support from CEFTEL (2 Years of support for technicians and lead farmers)	2	1	0	0	0	0%	1	50%	Le projet a signé une convention de collaboration avec le CEFTEL concernant le renforcement des capacités de son dispositif d'encadrement en matière de techniques maraichères, gestion de la matière organique, agroforesterie et autres bonnes pratiques agricoles. Cette collaboration a été réalisée durant la première année du projet
<b>4. COMMUNICATION AND VISIBILITY</b>											
<b>Activity 4.1. Visibility and communication events organization</b>											
4.1.1	Organization of regional field days targeting government authorities and development actors	Number of regional field days	1	0	1	0	0	0%	1	100%	Le 19 et 20 mars 2020, deux (2) journées de l'agro-écologie ont été organisées par le GSDM dans la Région de Vakinankaratra. Une journée et demie a été consacrée à des visites des réalisations du projet. Tandis que la demi-journée restante avait permis de faire une restitution en salle. Ces journées de l'agro-écologie ont été réalisées afin de renforcer les actions de plaidoyer en Agroécologie à l'échelle nationale. 167 personnes ont participé à cet événement.
4.1.1.1		Number of participants (Authorities, donors, local stakeholders, lead farmers, researchers, development actors, unions farmer and journalist)	150	167	0	0	0	0%	167	111%	
4.1.1.2	Conception of other Communication tools as streamers, roll up and mass communication	Number of streamer	6	2	1	0	0	0%	3	50%	
4.1.1.3	Car hiring for all communication and visibility action	Number of roll up	6	1	1	2	0	0%	4	67%	Current project activity.
4.1.3	Car hiring for all communication and visibility action	Number of car hiring days	60		28	12	0	0%	40	67%	
<b>Activity 4.2. Publications and broadcasting</b>											

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the Year			Achievements during the extension (since Jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	Ach.	Ach.	Ach.	%	Ach.	%	
4.2.1	Broadcasting on national TV	Number of TV broadcasting	2	1	6	4	0	0%	11	550%	A part la diffusion à la Télévision nationale des 10 films techniques produits dans le cadre du projet, le Responsable de la Communication et l'Agronome du GSDM ont, également, participé à une émission en directe.
4.2.2	Broadcasting on national Radio	Number of Radio broadcasting	30	10	12	18	6	20%	46	153%	
4.2.3	Expenses related to attendance of journalists or reporters in events for publication on TV or newspapers	Man-day of reporters (20 reporters x 5events)	120	32	17	16	0	0%	65	54%	D'une manière générale, les activités de communication sur le projet, ainsi que sur les autres projets menés par le GSDM sont faites régulièrement.
		Number of newspapers' publication	8	9	3	3	0	0%	15	188%	
4.3.1	Edition documents and tools for technicians and farmers	Number of publication type (online & social media)	2	2	7	55	0	0%	64	3200%	D'une manière générale, les activités de communication sur le projet, ainsi que sur les autres projets menés par le GSDM sont faites régulièrement.
		Number of TV events broadcasting	6	1	11	4	0	0%	16	267%	
4.3.2	Editing of films for each project events	Number of Radio events broadcasting	6	1	6	4	0	0%	11	183%	Le projet a produit, au total, 10 films techniques.
		Number of document and tools pack edited	1	1	0	1	0	0%	2	200%	
4.3.3	Capitalization leaflets	Number of capitalization leaflets	1	2	1	1	0	0%	4	400%	L'une des missions du GSDM étant d'assurer la capitalisation de tous les initiatives relatives à l'agroécologie dans tous Madagascar. Durant Manitatra, des nombreux documents de capitalisation ont été sortis ; entre autres, les fiches de capitalisation dans 4 zones agroécologiques (Sud-Est, Hautes terres, Moyen Ouest, Sud-Ouest
5.	PROJECT ADMINISTRATION (HUMAN AND EQUIPEMENTS)										
Activity 5.1.	PMU officials recruited										

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the Year 1		Achievements of the Year 2		Achievements of the Year 3		Achievements during the extension (since Jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	%	Ach.	%	Ach.	%	Ach.	%			
5.1.1	National Technical Assistant (Project Leader)	Months	33	10	30%	12	36%	18	54%	7	21%	46,5	141%	Current project activity.
5.1.2	Assistant of project leader	Months	33	9	27%	12	36%	13	39%	0	0%	34,0	103%	
5.1.3	Technician Agroecology (Highland+Middle West) (6 technicians)	Months	198	57	28%	72	36%	108	54%	5	3%	242,0	122%	
Activity 5.2. GSDM Backstopping fully implemented by his key staff														
5.2.1	Director (2 months per year)	Months	6	2	33%	2	33%	3,0	50%	1	17%	8,0	133%	Current project activity.
5.2.2	Agronomist (2 months per year)	Months	6	2	33%	2	33%	3,0	50%	1	17%	8,0	133%	
5.2.3	Trainers agronomists (2 months per year per trainer): 2 trainers (Martin and Hasina)	Months	12	4	33%	4	33%	6,0	50%	2	17%	16,0	133%	
5.2.4	Agro economist (2 months per year)	Months	6	2	33%	2	33%	3,0	50%	1	17%	8,0	133%	
5.2.5	Communication Officer (2 months per year)	Months	6	2	33%	2	33%	3,0	50%	1	17%	8,0	133%	
5.2.6	Agronomist Vakinankaratra (2 months per year)	Months	6	2	33%	2	33%	3,0	50%	1	17%	8,0	133%	
Activity 5.3. Local missions														
5.3.1	Per diem for GSDM national staff	Days	600	160	26%	114	19%	179	30%	40	7%	493	82%	Current project activity.
5.3.2	Per diem for local staff	Days	300	46	15%	83	28%	52	17%	21	7%	202	67%	
Activity 5.4. Mean and equipments implementation														

Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the			Achievements during the extension (since Jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Year 1	Year 2	Year 3	Ach.	%	Ach.	%	
5.4.3	Offices renting and communication										
5.4.3.1	Regional office renting	month	36	11	12	18	7	19%	48	133%	Current project activity.
5.4.4	Equipments										
5.4.4.1	PC/laptop	Unit	4	3	2	0	0	0%	5	125%	La majorité de ces matériels a été achetée durant la première année du projet.
5.4.4.2	Printers/scanner/photocopiers	Unit	2	2	0	0	0	0%	2	100%	
5.4.4.3	Digital camera	Unit	2	2	0	0	0	0%	2	100%	
5.4.4.4	Video projectors + screens	Unit	2	2	0	0	0	0%	2	100%	
5.4.4.5	Hard disks	Unit	1	1	0	0	0	0%	1	100%	
5.4.4.6	Other equipments (flat rate per technician)	Per technician	6	6	0	0	0	0%	6	100%	
5.4.4.7	Communication/courier and other coordination expenses	Unit	3	2	1	2	7	233%	12	383%	Current project activity.
5.4.5	Spare parts for hard ware and other office machineries										
5.4.5.1	Spare parts (hard ware, photocopiers etc.)	year	3	1	1	2	1	17%	4	133%	Current project activity.
6.	PROJECT OVERSIGHT										
Activity 6.1.	Steering committee										
6.1.1	Steering committee establishment	Steering committee established	1	0	1	0	0	0%	1	100%	L'établissement d'un comité de pilotage du projet a pris un peu de retard. En effet, le démarrage du projet coïncidait avec la période de l'élection présidentielle. Ainsi, des chamboulements au niveau des ministères étaient à prévoir. Et, le GSDM avait, de suite, opté pour un report de la mise en place de ce comité lors de l'année 2 du projet
6.1.2	Steering committee meetings to give strategic orientation and advice during all phases of the project	Number of steering committee meetings	3	0	1	1	0	0%	2	67%	A cause du retard évoqué ci-dessus, 2 réunions de pilotage ont été organisées durant le projet.



Budget acc.	Expected Result / Planned Activities	Indicator	Project target	Achievements of the			Achievements during the extension (since Jan 2022 from July 2022)		Cumulative achievements		Remarks / Challenges
				Ach.	Ach.	Ach.	Ach.	%	Ach.	%	
Activity 6.2. Monitoring and Evaluation of the project											
6.2.1	Base line study through external expertise	One base line study	1	1	1	0	0	1	100%	100%	Après la non-validation du rapport d'intervention du bureau d'étude "geosystems" sur cette activité, le GSDM a établi une situation de référence en interne. Le point de départ étant le recensement, fait au début du projet, par l'équipe locale auprès des paysans ayant pratiqué l'Agriculture de conservation durant MANITATRA 1. Et, le compléter sur la base de plusieurs enquêtes socio-économiques des ménages agricoles dans la Région de Vakinankaratra et du recoupement avec les informations collectées auprès des acteurs de développement de la Région.
6.2.2	Financial auditing	Financial auditing (one per year by COMESA)	3	1	0	1	33%	2	67%	67%	Les missions de suivi-évaluation du projet par le CO-MESA ont été fortement perturbées par la pandémie de COVID-19. N'empêche que 2 missions de suivi technique et financier ont pu être réalisées
6.2.3	Bi-annual reports	Semestrial report (1st : 1 per year)	3	1	1	1	33%	4	133%	133%	Current project activity.
6.2.4	Annual reports	Annual report (including semestrial 2 report)	3	1	1	0	0%	3	100%	100%	Current project activity.
6.2.5	Mid-term evaluation through external expertise	One Mid-term evaluation	1	0	1	0	0%	1	100%	100%	Pour ces activités, après avoir entrepris les démarches nécessaires pour respecter les règles de la passation de marché, le projet a mandaté le groupe de consultant "Rivo Rabarijohn".
6.2.6	Final evaluation through external expertise	One Final evaluation	1	0	0	1	100%	1	100%	100%	
6.2.7	Car hiring for monitoring and evaluation	Number of car hiring days	90	0	11	2	2%	34	38%	38%	Current project activity.
Activity 6.3. Project achievements capitalization											
6.3.1	Project capitalization report	Number of capitalization report	1	0	0	1	100%	1	100%	100%	







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