Final Performance Evaluation of the ASOTRY Development Food Security Activity in Madagascar

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IMPEL | Implementer-Led Evaluation & Learning Associate Award

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PHOTO CREDITS

Douglas R. Brown. Rice fields in central Madagascar at various stages of planting. September 2019.

DISCLAIMER

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Sincerely,

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ACRONYMS

ACC	Agriculture Collecting Centre
ADRA	Adventist Development and Relief Agency
AIM	*Association Intercooperation Madagascar*
ANC	Antenatal care
AUE	*Association des utilisateurs d'eau* Water Users Association
AUP	*Association des utilisateurs des pistes* Road Users Association
AV	*Agent Villageois* Village Agent
C1, C2, C3	Component 1, Component 2 and Component 3 (correspond roughly to activities under the three respective Purposes)
CCGRC	*Comité Communal de Gestion des Risques et Catastrophes* commune Committee for the Management of Risks and Disasters
CECAM	*Centre Européen de Calcul Atomique et Moléculaire* European Center for Atomic and Molecular Computation
CHV/CWV	Community Health Volunteer/ Community Health Worker
CLAM	*Cercle local des agriculteurs malgaches* Local network of Malagasy farmers
CLGRC	*Comité Local de Gestion des Risques et Catastrophes* Local Committee for the Management of Risks and Disasters
CSB	Corn soy blend
CSI	Coping Strategy Index
CU2	Children under the age of two
CU5	Children under the age of five
DFSA	Development Food Security Activity
DRM	Disaster risk management
DRMC	Disaster Risk Management Committee
DRR	Disaster risk reduction
EQ	Evaluation question
EWS	Early warning system
F2F	Farmer-to-farmer
FBA	Farm Business Association
FEWS NET	Famine Early Warning System Network
FFA	Food for Assets
FFP	Food for Peace
FFS	Farmer Field School
FGD	Focus group discussion
FMNR	Farmer-Managed Natural Regeneration
FY	Fiscal year
GMP	Growth monitoring promotion

HDDS	Household Dietary Diversity Score
HHS	Household Hunger Scale
ICF	Inner City Fund
IGA	Income-generating activity
IMA	Infrastructure Management Association (see AUE and AUP above)
INSTAT	*Institut National de la Statistique de Madagascar* National Institute of Statistics of Madagascar
IP	Implementing partner
IPM	Integrated pest management
KII	Key informant interview
LMG	Livestock marketing group
LVCD	Local Value Chain Development
MAD	Minimally Acceptable Diet
MCHN	Maternal and child health and nutrition
MDD-W	Minimum Dietary Diversity-Women
MFI	Microfinance institution
NGO	Non-governmental organization
NRM	Natural resource management
ODK	Open Data Kit
PBS	Population-based survey
PHH&S	Post-harvest handling and storage
SBCC	Social and behavioral change communication
SO	Strategic objective
SOW	Statement of work
TANGO	Technical Assistance to Non-Governmental Organizations
USAID	U.S. Agency for International Development
USD	United States dollar
VA	Village agents
VSLA	Village Savings and Loan Association
WASH	Water, sanitation and hygiene
WDDS	Women's Dietary Diversity Score
WRA	Women of reproductive age

EXECUTIVE SUMMARY

Evaluation Purpose and Evaluation Questions

This report details the findings and recommendations of the endline evaluation of the ASOTRY activity, a five-year Title II Development Food Security Activity (DFSA) in Madagascar funded by the United States Agency of International Development (USAID) Office of Food for Peace (FFP).

The overall purpose of this final evaluation was to measure the development outcomes of the ASOTRY activity, specifically to: (1) provide endline estimates for population-level impact and outcome indicators, which will also serve as a point of comparison for the baseline evaluation values; and (2) provide evidence to prioritize and refine future DFSA interventions (i.e., Refine and Implement).

The endline evaluation is designed as the second step in a two-part evaluation process, following the baseline study at the beginning of the activity. The evaluation's main objectives were to:

1. Determine the endline values of key impact- and outcome-level indicators—disaggregated by awardee, age, and sex as appropriate— in addition to endline values of demographics in target areas and appropriate independent variables;
2. Conduct bivariate and multivariate analyses of impact and outcome indicators, with results provided by awardee and the overall Title II country program area;
3. Gather qualitative data to assist in validation and interpretation of the quantitative survey data and provide contextual information on the overall food insecurity and malnutrition situation in order to provide feedback to the implementing partners and FFP, in addition to recommending program adaptations for future procurements; and
4. Assess progress toward end-of-program targets for impact and outcome indicators.

The final evaluation uses a mixed-methods approach comparing endline quantitative and qualitative data to the baseline data and the findings of the mid-term evaluation to identify and understand factors that contributed to development outcomes, identify barriers to achieving outcomes, and provide useful recommendations to follow-on and future projects.

The primary audience of the evaluation report is ADRA and its sub partners; USAID (FFP/Washington, USAID/Madagascar) will also learn from the evaluations. The report will also be shared with relevant departments of the Government of Madagascar. Findings from the final evaluation will be used to determine the performance of the DFSA and inform and shape future food security projects. It is expected that all stakeholders will make extensive use of findings from the evaluations to make different presentations and bulletins as part of a wider dissemination of best practices and lessons learned. The evaluation recommendations may be used by the future applicants to design projects, and by USAID to refine proposal guidelines and project policy.

The evaluation was designed around the following questions:

1. To what extent did the program achieve the intended goal, objectives and results as defined by the Results Framework?
2. How did program activities improve the ability of beneficiary households and communities able to mitigate, adapt to, and recover from food security shocks and stresses?
3. How satisfied were beneficiaries with the program?

4. How relevant was beneficiary targeting, considering the needs of the target population?
5. How well were program activities planned and implemented?
6. To what extent did the program coordinate with other food security and humanitarian programming, the host country government, and the donor?
7. How sustainable are the program's outcomes?
8. How well were gender and environmental considerations integrated into program design and implementation?
9. What lessons can be learned for future FFP and USAID Title II programming in Madagascar?

Project Background

The goal of the ASOTRY activity[1] was to effect substantial, tangible improvements in nutrition, agricultural productivity, and household and community resilience by addressing the underlying causes of food insecurity through a focus on three main components: C1) to improve the health and nutrition of women of reproductive age and children under five years of age (CU5); C2) to increase knowledge, improve technologies and techniques, and promote crop diversification through an innovative farmer training model; and C3) to strengthen resilience by investing in infrastructure, including roads, irrigation, water and sanitation, and their sustainable management; sustain natural resources through rehabilitation, reforestation, construction, and training on management and maintenance; and increasing community capacity to prevent, prepare for, respond to, mitigate and recover from shocks and disasters through early warning systems.

The project worked in two geographic areas in southern Madagascar and used a layered intervention approach, which was expected to produce a higher, more sustainable impact. The idea was for all communities to receive interventions related to resilience (C3), with an approximately 75 percent overlap between households receiving interventions for C1 (nutrition and health) and C2 (agriculture).

Evaluation Design, Methods and Limitations

The ASOTRY evaluation used a mixed-methods design comprised of a quantitative survey and a qualitative study. Quantitative data were collected via an in-person, population-based survey (PBS) of 980 households in June 2019 in the three regions where the ASOTRY activity was active. The statistically representative PBS sample was selected using a multi-stage clustered sampling approach. The quantitative analysis followed a pre-post design to track statistically significant changes in indicators from the 2014 baseline to the end of project. Endline indicator calculation methods were the same as those for the baseline. Bivariate analyses, including disaggregation by key sub-populations, were applied to survey data to compare changes in indicators from baseline to endline.

The qualitative study used purposive sampling and semi-structured focus group discussion (FGD) and key informant interview (KII) protocols, and conducted a desk review of program documents. In September/October 2019, the qualitative study team conducted 71 FGDs with 489 participants (316 F, 173 M) in 28 fokontany, 54 formal KIIs (16 F, 38 M), and asset observations of 27 infrastructure investments (water, sanitation, irrigation, feeder roads).

[1] "ASOTRY" means "harvest" in Malagasy.

Limitations included survey programming errors in natural resource management (NRM) and gender-cash questions (mitigated in the analysis phase) and a gap in agricultural practices terminology in the survey (mitigated by triangulating responses with qualitative data).

Findings and Conclusions

Purpose 1: Improved health and nutrition status of women of reproductive age and children under five

There was a significant decrease in malnutrition indicators (underweight, stunted and wasted) in CU5 in all intervention areas and all target populations, both direct and indirect project participants, and a significant decrease in the percentage of underweight women. Health and nutrition work employed a Care Group model in conjunction with Community Health Volunteers and lead mothers who modelled and taught about good health and nutrition practices as well as lead fathers who worked independently. Effectiveness of the Care Group approach is supported by PBS evidence, which showed a small but significant improvement in the percentage of men and women with children under two who have knowledge of project-promoted child health and nutrition practices, which increased from 72.1 percent at baseline to 78.2 percent at endline. There was no significant change in the Household Dietary Diversity Score or Coping Strategies Index overall, but there were some differences within groups, and FGDs indicated increased awareness of dietary diversity. Many FGD participants spoke highly of the *Tsikonina* approach and how it helped them to understand and take steps to adopt new, more diverse recipes.

Some WASH indicators improved. The percentage of households in target areas practicing correct use of recommended household water treatment technologies increased. ASOTRY field agents, Community Health Volunteers and Care Groups carried out trainings and awareness-raising on water treatment (in some cases accompanied by the free distribution of water chlorination products), which contributed to an increase in the percentage of households practicing correct use of the recommended household water treatment technologies. There was a statistically significant decrease in open defecation in the Central Highlands, but no change in the overall project area. The percentage of households reporting use of improved sanitation facilities was low at baseline and decreased at endline.

Challenges and unachieved objectives remain, related to dietary diversity, source of drinking water and use of sanitation facilities. The qualitative evaluation found three main reasons for this, namely the need to improve the contextualization of the approach for massive behavior change, late implementation of effective strategic activities (*Tsikonina*, WASH, Care Groups), and lack of adequate collaboration with public authorities and other stakeholders, which impeded program quality and sustainability. However, it should also be noted that respondents in most communities, as well as the quantitative data, indicated that communities had experienced shocks in the year prior to the survey, which could have had an impact on both dietary diversity and the adoption of various coping strategies.

Purpose 2: Increased sustainable access to food for vulnerable households

Quantitative survey results showed no change in the adoption of improved agricultural practices over the life of the ASOTRY activity, with no significant difference in the percentage of farmers adopting at least three sustainable crop, livestock or NRM practices between baseline and endline. The only

significant difference was that direct participants were slightly more likely to have adopted three or more practices than indirect participants. Within this overall measure, however, it is important to note that there was a statistically significant decrease in the adoption of sustainable crop practices; this change occurred among farmers in the Central Highlands, not in the South. These ambiguous quantitative results are in contrast to more favorable results from FGDs with project participants who appreciated learning about new practices and gaining access to subsidized improved varieties of seed, which they could save and plant in subsequent seasons should they decide to do so.

Based on the Annual Survey 2019, sales for project participants Agricultural sales did not increase significantly (ADRA ASOTRY Annual Survey 2019), mostly due to a series of poor harvests, high transaction costs and a preponderance of subsistence farmers with little surplus to sell. This conclusion is supported by PBS data indicating over one-third of households experienced each of several production-related shocks: drought, flooding, wind or storm damage, and crop disease. Each of these would have a negative impact on agricultural sales. This would also explain the significant decrease in the percentage of respondents earning cash in the previous 12 months.

The constraints to improved market sales in the project area are many and, while the project tried to address certain constraints, it could not overcome numerous challenges (e.g., high illiteracy, poor infrastructure, geographical distance). For subsistence farming, the more sustainable impacts are seen in Village Savings and Loan Associations and better involvement with local markets. The value chain/ marketing method (based on Farm Business Associations) was not well adapted to the rural realities of farmers who are net buyers and started too late to bear fruit.

Purpose 3: Improved disaster mitigation, preparedness, and response in vulnerable communities

The evaluation team found specific short-term, localized improvements to community disaster mitigation assets due to infrastructure rehabilitation. NRM activities have been too small-scale and limited to reforestation to be considered effective mitigation measures. The project built or rehabilitated community assets (e.g., feeder roads, dams, irrigation channels), which have the dual function of being productive collective assets and—if well-constructed—supporting effective disaster response. The productive assets visited were relevant to needs, of reasonable quality, in use, appreciated by their communities, and nominally managed by Infrastructure Management Associations (IMAs).[2] Environmental considerations seem to have been respected, but infrastructure assets were designed by project staff without coordination with relevant state authorities (ADRA, 2019b).

Community resilience to disasters has improved the most and at scale for immediate preparedness and response through the fokontany Disaster Risk Management Committees. While the disaster warning, preparation, and response system is appreciated and works well for cyclones and fire prevention at the local level (village/fokontany/commune), there has been no change for other types of disasters and at a scale beyond the commune.

[2] ASOTRY promoted two types of IMAs: *Association des utilisateurs d'eau* (AUE) or Water Users Association; and *Association des utilisateurs des pistes* (AUP) or Road Users Association.

Recommendations

R1: Invest in staff, not stuff. In order to "help people to help themselves," the focus needs to be on personnel to facilitate change and not provision of goods to beneficiaries. Staffing levels must be adequate in early project stages to contextualize interventions and provide strong support. The role of staff role should shift gradually from training to coaching. As far as material inputs, the focus should be on IGAs that use local resources and improve a household's capacity to manage its budget.

R2: Involve both NGO and government technical sector specialists. One of the success factors of ASOTRY was the direct involvement of NGO technical specialists in stakeholder learning and coaching. However, this strategic choice had the unintended consequence of not valuing the involvement of government officials in the health and WASH sectors. Active involvement of both groups of experts/stakeholders at all stages of the life of a project is beneficial – during the targeting stage, in quality assurance, and in post-project monitoring.

R3: Engage and empower local governance. Intentionally working with local leaders can strengthen their ability to do their jobs. Joint goal setting and monitoring with communities helps empower them for positive change. Future projects should include more explicit governance activities, going beyond forming committees to act on pre-selected activities. An example by ASOTRY (at a limited scale) is GoGreen,[3] where communities chose and monitored an activity and were recognized for their success.

R4: Apply an integrated natural resource management approach that engages local government. For better NRM outcomes and sustainability, the project needs to act on three aspects simultaneously. First, ensure better awareness, governance and ownership at local and commune level, for example through the fokontany Development Committee and the fokontany Development Plan for the management of community/natural resources through joint goal setting and monitoring. Second, better integrate NRM across components, particularly farming and FFA/ infra-structure activities (e.g., soil and water management, fodder crops, agro-forestry) and Village Savings and Loan Associations (VSLAs). Third, activities must suit the local agro-ecological context, be timely, and minimize risk of failure. For example, work with local governance structures to facilitate local dialogue and change around landscape management and use more holistic approaches such as forest/landscape restoration.

R5: Contextualize interventions according to household resources, livelihood types, and socio-economic and ecological contexts. The project intervention package needs to be contextualized (socially, economically, and environmentally) for households with differing levels of vulnerability, resources, and needs. Use Year One of a new project as an inception year, to deepen understanding of the characteristics, challenges, and opportunities of the socio-economic-ecological context in the project area and its different livelihood groups. Fine-tune activities so that they are doable with the resources available to households and not dependent on subsidies, even at the start. Fine-tune interventions to households' resources, needs, and vulnerability, and conduct thorough community sensitization and mobilization around project messages and activities.

R6: Involve local government and institutions. To be sustainable/supported long-term, projects need to work with communities to strengthen local governance and institutions. This also means actively

[3] GoGreen was an ASOTRY activity to motivate the population of each *fokontany* to actively engage in environmental issues.

working with government departments/ministries at the local and regional levels from the beginning. This can work both ways—ensuring that project activities align with government priorities and also reinforce and strengthen the capacity of those same institutions.

R7: Use the FFS approach as intended. The FFS approach developed by FAO is based on people-centered learning. It encourages learning-by-doing through field exercises that employ direct observation, discussion and decision-making (FAO, 2016, 2017, 2018). Certain principles need to be respected for farmers to achieve their goals (FAO, 2016). Working with farmers through a multi-year engagement based on the Farmer Field School (FFS) approach has the greatest likelihood of initiating a transformation process to more productive, sustainable and resilient agriculture, which is not achieved by letting farmers randomly choose a crop and planting a new (but unknown to them) variety of seed. Proven approaches adapted to smallholders like conservation agriculture, System of Rice Intensification, and Farmer-Managed Natural Regeneration, as well as dry-season vegetable gardens and backyard gardens, can all be experimented with using the FFS approach.

R8: Be intentional about integration across sectors and involvement of various subgroups, especially youth. Focus on project integration, impact, quality, and sustainability from the start with specific strategies, tools and monitoring. By being intentional about this integration, it is possible to strengthen the outcomes, as each reinforces the other. An intentional approach to youth engagement, such as through school youth clubs, would help to integrate across groups of people as well as across activity sectors. Given that the youth are the future of all communities, it is important to include schools/youth clubs/parent associations for specific project activities, as they encourage sustainability and longer-term behavior change.

R9: Exploit opportunities for communication. Where people gather for an activity, it is an occasion to share information relevant to multiple objectives. For example, take advantage of Food for Assets activities and food distribution events to share information and messaging around best practices in nutrition, agriculture, NRM, and disaster risk management.

R10: VSLAs and Care Groups are foundational activities and should be a core component of future work. VSLAs build social cohesion and develop important skills. They are the foundation of other nutrition and livelihood interventions. Care Groups empower people to take charge of nutrition and health. Other interventions and activities can build on them.

R11: Community branding should take precedence over donor branding. While also acknowledging donor support, find ways to implement community branding of assets to encourage local ownership and empowerment. Management tools (e.g., registration forms, monitoring forms) should also reflect community branding.

R12: Engage the faith community in social and behavior change communications. Work with local religious leaders to identify how their religious texts and teachings are relevant to community development and social change—and can be applied to motivate positive change. For example, some religious groups have developed resources on gender and the role of men and women in families.

R13: Review and streamline measurement and monitoring tools. The use of standard food security and nutrition indicators is important and should be continued. However, the baseline and endline surveys were very long and need to be streamlined while also addressing the information gaps in their current

versions. Consider replacing the expenditure section with the Poverty Probability Index, formerly known as the Progress out of Poverty Index (IPA, 2019), and using the Women's Empowerment and Agriculture Index as an indicator of change in gender relations (Alkire et al., 2012, 2013). The survey would also benefit from a module to measure resilience, shocks and adaptation. A module that characterizes livelihood assets, activities, and allocation of household resources would aid in understanding the context and developing livelihood profiles. The survey terminology used to describe agricultural practices needs to be field-tested to ensure it is comprehensible to farmers and aligns with farmers' usage of terms. Baseline and endline surveys should occur in the same month to ensure credibility of food security findings, and be better designed to help answer evaluation questions, such as percentage of school-age children in school, household and productive assets, and land access (own, rent).

R14: Sustainability: It is important that projects facilitate a process whereby the members of the community develop a shared vision of their community's future. A facilitated visioning process that encourages thinking about where people would like their community to be, for example, five years from now helps to motivate and empower people to take charge of the changes they want using the resources that they have.

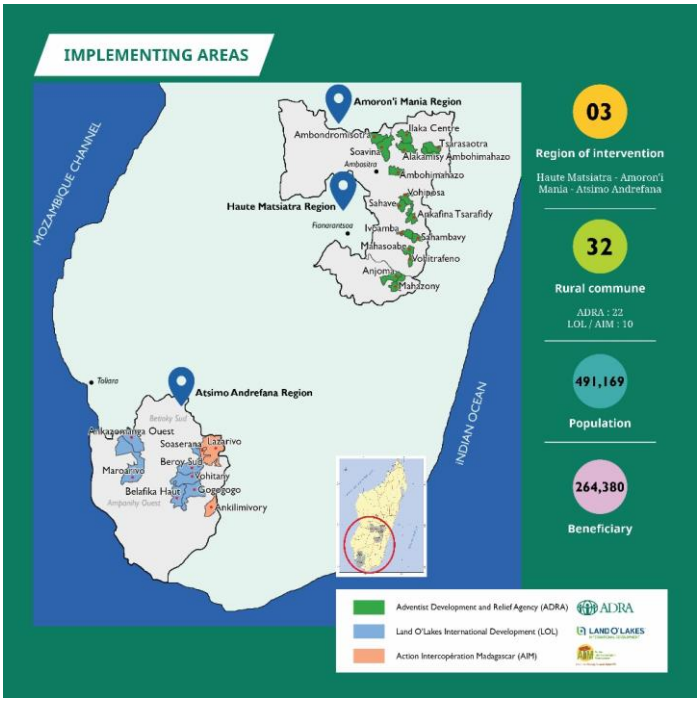
1. INTRODUCTION

1.1 Program Background

In fiscal year (FY) 2014, the United States Agency for International Development (USAID) Office of Food for Peace (FFP) awarded two new cooperative agreements for Development Food Security Activities (DFSAs) in Madagascar: the ASOTRY activity, implemented by the Adventist Development and Relief Agency (ADRA) and partners Land O'Lakes and Association Intercooperation Madagascar (AIM), and the Fararano Project, implemented by Catholic Relief Services and local partners.

The goal of the ASOTRY activity[4] was to affect substantial and tangible improvements in nutrition, agricultural productivity, and household and community resilience by addressing the underlying causes of food insecurity (ADRA, 2014) through a focus on three main components: C1) to improve the health and nutrition of women of reproductive age (WRA) and children under five years of age (CU2), with an emphasis on malnutrition prevention through behavior change, knowledge and training, and key linkages to income generation and agricultural production to increase access to financial resources and diverse, high quality foods; C2) to increase knowledge, improve technologies and techniques and promote crop diversification through an innovative farmer training model; and C3) to strengthen resilience by investing in infrastructure, including roads, irrigation, water and sanitation, and their sustainable management; sustain natural resources through rehabilitation, reforestation, construction, and training on management and maintenance; and increasing community capacity to prevent, prepare for, respond to, mitigate and recover from shocks and disasters through early warning systems.

Figure 1: ASOTRY implementation areas



(Source: ADRA Madagascar)

As outlined in the original proposal (ADRA, 2014), the project worked in two distinct geographic areas (Figure 1) and was based on a layered approach to interventions. The idea was for all communities to receive interventions related to resilience (C3), with an approximately 75 percent overlap between households receiving interventions for C1 (nutrition and health) and C2

[4] "ASOTRY" means "harvest" in Malagasy.

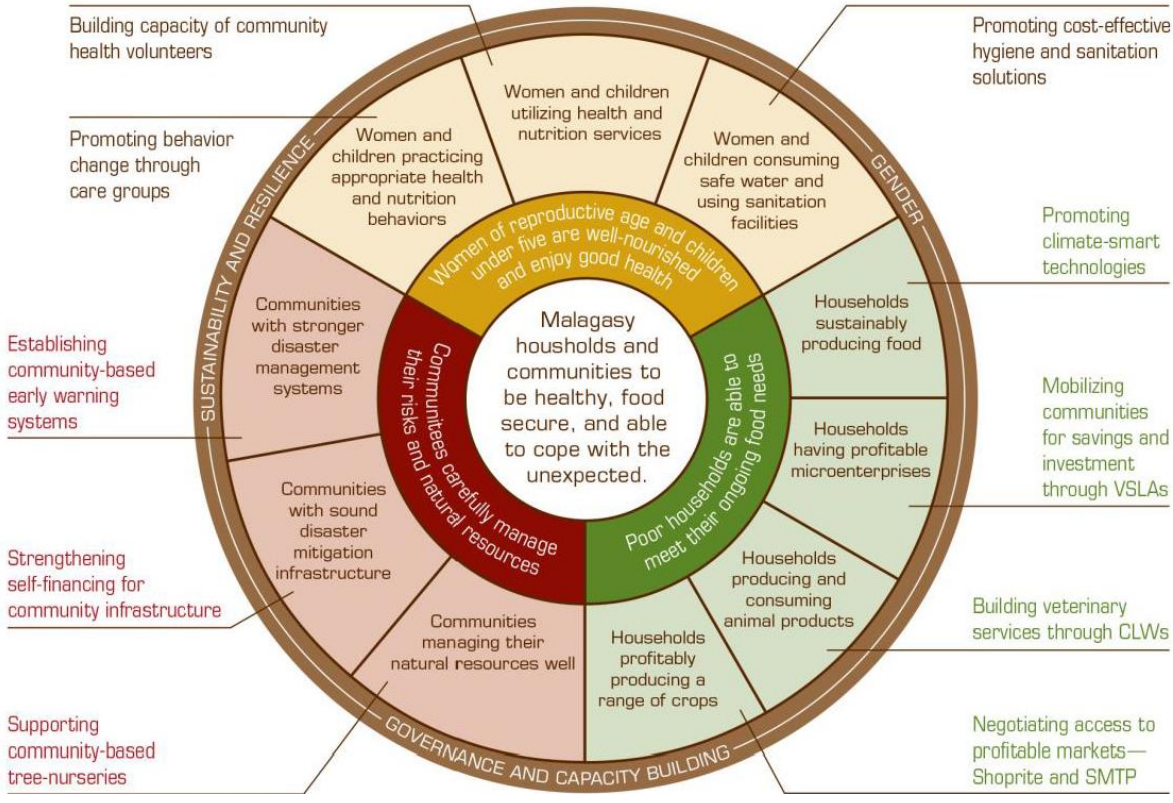
(agriculture). By layering interventions in the same households and communities it was thought that ASOTRY would achieve a higher and more sustainable impact.

This final evaluation of ASOTRY is the second and final phase of a pre-post evaluation strategy for both DFSAs. The baseline study for both projects was conducted by ICF International and its subcontractor, Agence CAPSULE, from January – September 2015 (ICF International, 2016). It employed a mixed-methods approach and provided results from the baseline survey and qualitative study. A joint midterm review of ASOTRY and Fararano was conducted in April/ May 2017 (JMRT, 2017). The endline evaluation was conducted by TANGO International and Agence CAPSULE from May – November 2019.

1.2 Theory of Change

ASOTRY's theory of change is framed within the conceptual framework of food security: access, availability, utilization, and stability (ADRA, 2014). That is, **utilization** improves when households consume nutrient-rich foods and practice improved health and nutrition, including WASH and family planning. **Availability** improves when households' agricultural productivity and livelihood strategies allow them to produce sufficient food to meet their nutritional needs. **Access** improves when households and smallholder farmers are connected to markets and integrated within profitable value chains. **Stability** results when households and communities are resilient to natural and manmade shocks, and appropriately manage natural resources, valuing the critical roles of both men and women.

Figure 2: Theory of Change



(Source: ADRA, 2014 – Figure 17, page 10)

2. EVALUATION OVERVIEW

2.1 Evaluation Purpose

The overall purpose of this final evaluation was to measure the development outcomes of the ASOTRY activity. More specifically, the purpose was to:

1. Provide endline estimates for population-level impact and outcome indicators, which will serve as a point of comparison for the baseline evaluation;
2. Provide evidence to prioritize and refine future DFSA interventions (i.e., Refine and Implement).

The specific objectives of the endline evaluation were the following:

1. Determine the endline values of key impact and outcome level indicators—disaggregated by awardee, age, and sex as appropriate— in addition to endline values of demographics in target areas and appropriate independent variables;
2. Conduct bivariate and multivariate analyses of impact and outcome indicators, with results provided by awardee and the overall Title II country program area;
3. Gather qualitative data to assist in validation and interpretation of the quantitative survey data and provide contextual information on the overall food insecurity and malnutrition situation in order to provide feedback to the IPs and FFP, in addition to recommending program adaptations for future procurements; and
4. Assess progress toward end-of-program targets for impact and outcome indicators.

The final evaluation uses a mixed-methods approach comparing endline quantitative and qualitative data to the baseline data and the findings of the mid-term evaluation, in order to identify and understand the factors that contributed to development outcomes, identify barriers to performance in achieving these outcomes, and provide useful recommendations to ADRA as the primary implementing agency—recommendations that should be useful for follow-on and future projects.

2.2 Evaluation Questions

The evaluation was designed around the following questions:

Table 1: Primary evaluation questions and methods

Criteria	Main evaluation questions	Sub-questions	Evaluation method
Impact	1. To what extent did the programs achieve the intended goal, objectives and results as defined by their Results Framework? 2. How did program activities improve the ability of beneficiary households and communities able to mitigate, adapt to, and recover from food security shocks and stresses?	1.1 Were there any important unintended outcomes, either positive or negative? 1.2 What were the main reasons that determined whether intended outcomes were or were not achieved, and whether there were positive or negative unintended outcomes? Which reasons were under control of	1. Quantitative bivariate analysis 2. Quantitative and qualitative

Criteria	Main evaluation questions	Sub-questions	Evaluation method
		the programs and which were not?	
Beneficiary satisfaction	3. How satisfied were beneficiaries with the programs?	3.1 What issues were most important to beneficiaries forming their perceptions of the programs? What were the key successes and challenges of the programs?	Qualitative
Relevance	4. How relevant was beneficiary targeting, considering the needs of the target population?	4.1 Were beneficiary targeting criteria and processes appropriate, transparent, and properly implemented? 4.2 Were the scale, type, and timing of the program activities appropriate to the needs of the target population?	Qualitative
Effectiveness	5. How well were program activities planned and implemented?	5.1. What were the main factors that contributed to whether activities resulted in intended outputs and outcomes? 5.2. What quality standards were defined? How did the programs develop those standards?	Quantitative and qualitative
Coordination	6. To what extent did the programs coordinate with other food security and humanitarian programming, the host country government, and the donor?		Qualitative
Sustainability and Replicability	7. How sustainable are the programs' outcomes?	7.1. What exit strategies were incorporated into program design? Were such strategies implemented, how were they perceived by the beneficiary population, and what were the strengths and weaknesses of the exit strategies adopted?	Qualitative
Cross-cutting issues	8. How well were gender and environmental considerations integrated into program design and implementation?	8.1. Were they successful in meeting their stated objectives? How?	Quantitative and qualitative
Lessons Learned	9. What lessons can be learned future FFP and USAID Title II in Madagascar?		Quantitative and qualitative

3. EVALUATION METHODS

This section provides an overview of the approach and methods used for the PBS, which was used for both projects, as well as for the qualitative study component of the ASOTRY final evaluation.

3.1 Quantitative Data Collection

3.1.1 Overview

The objectives of the quantitative endline survey were to provide endline estimates of FFP program indicators, measure changes in indicators over the five-year program cycle, and provide evidence to prioritize and refine interventions. The analysis followed a pre-post design in which the same survey that was used in 2015, at the start of program implementation, was repeated in 2019, as the program was wrapping up. Pre-post designs provide for measurement and statistical tests of changes in indicators between the baseline and endline, but do not allow for attribution or causation.

3.1.2 Survey Team

The quantitative data were collected via an in-person, population-based survey (PBS) of 980 households in the three regions where the ASOTRY activity was active. Survey fieldwork took place in June 2019. TANGO International and Agence CAPSULE collaborated for survey training, household listing, and fieldwork (details in Annex C). Enumerators, supervisors, and anthropometric measurers were recruited and supervised by Agence CAPSULE. TANGO converted the paper-based baseline study questionnaire provided by FFP in English and Malagasy into a tablet-based digital format using Open Data Kit (ODK) and enumerators administered the survey using tablets.[5] In addition to household identification/consent and the roster, the survey included technical modules that explore household hunger and coping strategies; dietary diversity and food consumption; poverty; water, sanitation and hygiene practices; agricultural practices; women's health and nutrition; children's health and nutrition; and gender equality.

3.1.3 Population-Based Sample Design

The statistically representative sample was selected using the same multi-stage clustered sampling approach used in the baseline (ICF International, 2016). While the sampling frame for the baseline was constructed using enumeration areas (EAs) from the 2008-2009 census (INSTAT, 2009) the endline survey used the new, redefined EAs, which were updated for the 2019 census. ASOTRY program staff provided TANGO with a list of selected communes in each district,[6] and TANGO used these communes to identify all EAs in the project area for inclusion in the sampling frame. Stunting, one of several key measures of food security and nutritional status, was used to compute sample size in the baseline and endline surveys. Sample size is the minimum number of households necessary to detect whether stunting decreased by 6.5 percentage points, the reduction targeted by the project.

[5] See Annex K for the household questionnaire and anthropometry survey.
[6] The list of selected communes refers to the 32 communes in 10 districts in the three regions of Madagascar where the ASOTRY activity was active: Amoron'i Mania, Atsimo Andrefana, and Haute Matsiatra.

Table 2: Baseline values for variables used in sample size calculations

Variable	Baseline values	
	ASOTRY	Fararano
Total number U5 in BL	1,902	1,809
Stunting rate	53.6	39.6
Design effect	1.96	2.25
% sampled population U5	16.1	16.1
Avg. household size	5.3	4.9

In the case of the two Madagascar DFSAs, FFP called for a sample size of approximately 2,150 households across both projects (1,019 for ASOTRY and 1,131 for Fararano). These minimum sample sizes were computed to be able to detect a difference of 8 percentage points in the stunting rate from baseline to endline using FFP sampling guidance (Stukel, 2018). The values applied in the computations are based on the baseline values for relevant variables (see Table 2). The final target sample size of 2,160 households is derived from the selection of 72 EAs and 30 households per EA, and includes a non-response adjustment of 5 percent.

The characteristics of the quantitative endline sample population and the key household demographic characteristics of the sample are summarized in Table 7 and Table 8 (both in Annex H). In both cases, the results are based on a total of 2,073 completed household interviews, 980 in the ASOTRY activity area and 1,093 in the Fararano area. The population estimates provided here are based on the individual-level data collected from the endline household survey and weighted to represent the entire project area. At endline, the average household in the ASOTRY activity area included 5.1 members. Three-quarters of ASOTRY households include an adult male and female (76 percent). There are more households with adult females only (17 percent) than those with adult males only (6 percent). Overall, about three-quarters of households are headed by males (74 percent) and about three-quarters of household heads (77.3 percent) have completed a primary level of education or less.

The minimum required sample sizes for the baseline and endline surveys were computed to provide estimates of key project indicators (stunting in particular) with similar levels of statistical precision over the two surveys. However, the minimum required sample size for the endline sample has been computed to be significantly smaller than what was estimated for the baseline for two reasons. First, at the time of the baseline, there was less available information about characteristics of project populations, so conservative estimates of key parameters were adopted. At the time of the endline, more accurate estimates of key parameters were available from the baseline results. In particular, the minimum change to detect (a parameter of the sample size calculation formula) was increased from 6.5 to 8.0 percentage points. The second reason is that the formula used at the baseline to estimate the number of households to achieve a sufficient number of CU5 resulted in a much larger number of CU5 being surveyed than was actually required for statistical purposes. For this reason, the required sample of households to be interviewed in the endline was adjusted downward to compensate for the oversampling of CU5 at baseline.

These adjustments to the minimum required sample for the endline have resulted in significantly smaller required samples of households to attain indicator estimates that still have the desired level of

statistical precision. For this reason, even though the endline sample is smaller than the baseline, the comparison of results with the baseline are statistically valid.

Note: FFP quantitative performance evaluations use a PBS that is drawn from the general population in a DFSA implementation area. Accordingly, beneficiaries who directly participate in DFSA activities are not specifically targeted in the quantitative survey; rather, the sample is designed to be statistically representative of the entire population within the project implementation area, which includes direct DFSA participants (i.e., those who answered "yes" when asked whether they participated regularly in any of the project activities) and indirect participants (i.e., those who answered "no" to the question), people who may benefit from the spillover effects of project activities.

Annex G shows the quantitative findings for direct and indirect participant groups. It is important to note that the baseline and endline surveys are independent population-based samples, and there may be systematic, non-random differences between direct participants and indirect participants. As a result, just as differences between baseline and endline findings cannot be directly attributed to DFSA activities, observed differences between direct and indirect participant groups cannot be directly attributed to DFSA activities. Further, as the PBS was not designed to allow comparisons between participants and non-participants, the interpretation of differences in indicator results must done judiciously. In the ASOTRY survey, 36.3 percent of sampled households self-identified as directly participating in any project activity. However, experience from past FFP surveys suggests that self-reporting of participation may not be accurate, which weakens the validity of any comparison of outcomes. This is also complicated by the fact that many indirect participants live in the same communities as direct participants and may indirectly benefit from project activities (i.e., a spillover effect), which is actually a preferred outcome. The analysis has sought to present more accurate information about project participants by consulting project performance monitoring data.

3.1.4 Data Analysis

Annex D lists the various project indicators, how they are disaggregated and their corresponding questionnaire modules. The endline indicator calculation methods are the same as those for the baseline survey. Methods for tabulation of all FFP and project-specific indicators follow the procedures outlined in the Data Treatment and Analysis Plan from the baseline survey (ICF International, 2016) and FFP (FANTA III, 2015). As for the baseline, child stunting and underweight indicators were derived from the WHO child growth standards and associated software (WHO, 2011), but calculated using a Stata command developed for this purpose (Leroy, 2011). Expenditures and poverty indicators were calculated following World Bank guidelines (World Bank, 2019).[7]

In addition to tabulating the indicators calculated in the baseline report, the endline report compares key baseline and endline indicators.[8] All analyses are weighted to reflect the full target population. Stata version 15 (Stata Corp, 2017) was used for analysis and statistical testing. Bivariate analyses including disaggregation by key sub-populations were also conducted for each project area. Firstly, given that ASOTRY included two distinctly different geographic areas with fairly different livelihood strategies,

[7] See also Appendix C of the baseline survey report (ICF International, 2016).
[8] Indicators were calculated for each project separately as well as for both projects combined. Only the results for ASOTRY are reported here.

(FEWS NET, 2013, 2017a, b), a comparison was made between baseline and endline results separately for those in the Central Highlands and those in the South (see Annex G). Secondly, endline household survey respondents were asked whether they participated regularly in any of the project activities. Respondents who answered "yes" are considered “direct participants” while those who answered "no" or "don't know" were classified as “indirect participants.” The endline indicators for direct and indirect participants were compared to the baseline indicators (see Annex F). In addition to this, statistical tests compared direct to indirect participants. Regression analysis was also carried out on selected dependent variables and is reported on in Annex I.

All tests of statistical difference indicated by the symbols in the figures in this report (i.e., ns = not significant, † p<0.1, * p<0.05, ** p<0.01, *** p<0.001) are between **baseline** and **endline**. Additionally, the bars in most figures are coloured to indicate whether they refer to the **baseline** or **endline**.

Sample weights

Sample weights were computed for each indicator. The sampling weight is the inverse of the product of the probabilities of selection from each stage of sampling (EA selection and household selection). Separate weights were derived for each indicator and adjusted to compensate for household and individual non-response, as shown in Table 3. For modules that asked questions at household level (modules C, F, and H) weights were the inverse of the probability of EA selection, multiplied by the inverse of the probability of household selection, multiplied by the household inverse of the household response rate. For modules D, E, G, J and K that asked questions at the individual level, the sampling weights were calculated for all eligible individuals and also include the inverse of the individual response rate.

Table 3: Survey response rates

	Number Sampled	Number Interviewed	Response Rate (%)
Households (Modules C, F and H) *	1,020	980	96.1
Children 0-59 months of age (Module D)	815	781	95.8
Women 15-49 years of age (Module E)	1,098	986	89.8
Non-pregnant women 15-49 years of age (Module E Women’s Anthropometry)	889	1,010	113.6
Farmers (Module G)	1,348	1,148	85.2
Primary male decision-maker (Module J)	365	313	85.8
Primary female decision-maker (Module J)	172	151	87.8
Primary male decision-maker (Module K)	225	95	42.2
Primary female decision-maker (Module K)	314	258	82.2

*Non-response rate was less than the allowed 5 percent for the survey as a whole.

3.2 Qualitative Data Collection

3.2.1 Overview

The ASOTRY qualitative study was undertaken in September/October 2019. It consisted of document review, focus group discussions (FGDs), key informant interviews (KIIs), and observation of infrastructure investments. Given the project's broad scope and wide geographic coverage, the ASOTRY qualitative team focused its efforts on a small number of sites clustered together in three areas, spending several days in each area in order to understand the impact, effectiveness and sustainability of the key intervention models promoted under each Purpose. In addition, significant attention was accorded to gender as an important cross-cutting theme. The core of the qualitative exercise was a set of FGDs and KIIs at fokontany level supplemented with KIIs at the commune or district level with selected program staff. Fokontany-level FGDs and KIIs targeted members of Care Groups, including lead mothers, lead fathers, and community health volunteers; Farmer Field School (FFS) participants together with lead farmers, members of Farmer Business Associations (FBAs), Livestock Marketing Groups (LMGs) and Agriculture Collection Centers (CCAs); members of Village Savings and Loan Associations (VSLAs) and Village Agents; Infrastructure Management Associations (IMAs) including Road Users Associations (AUPs)[9] and Water User Associations (AUEs);[10] and members of the Local Committee for the Management of Risks and Disasters (CLGRC).[11]

3.2.2 Sample Design

Qualitative sampling followed a purposive site selection process with input from ADRA and its partners. In the context of the broad scope of activities and the project's coverage of a vast geographical area spanning two distinct agro-ecological zones, the evaluation team sought to determine a representative sample of sites that could be visited within the time available—a period of 15 days in the field.

The team leader worked closely with ADRA staff during the preparatory phase to identify a logical route through the project area that would ensure that the sample sites would be representative of the project area as a whole, involve reasonable travel times, and allow the team to remain in one location for several nights at a time. A total of 28 fokontany were selected, covering the full range of ASOTRY's work in all three regions where the project was active—with the number of sites in each region approximately proportional to the level of project activity by ADRA and its partners. In addition to geographic coverage (i.e., range of regions and districts), site selection took into account relative performance (based on preliminary results from the endline survey broken down to the EA level),[12] IP, accessibility, and proximity to infrastructure investments. See Annex E for the full list of sites visited and details of all FGDs and KIIs, and infrastructure visited.

[9] French acronym: *Association des utilisateurs des pistes*
[10] French acronym: *Association des utilisateurs d'eau*
[11] French acronym: *Comité Local de Gestion des Risques et Catastrophes*
[12] The team leader prepared a preliminary analysis of the quantitative household data to assist in identifying EAs with positive, average, and weak results on core program indicators. This information was then used by the qualitative evaluation team in consultation with the two ADRA staff accompanying the team to identify sites along the planned route within a day's travel from each of the main locations. The result was a mix of sites visited that reflects the full spectrum (low-medium-high) of performance in the ASOTRY implementation area.

3.2.3 Evaluation Team

The qualitative evaluation team consisted of four consultants (two female and two male) recruited by TANGO International; two were international and two were nationals. Collectively, the team had expertise in the technical areas covered by the project: agriculture, livelihoods, maternal and child health and nutrition (MCHN); water, sanitation and hygiene (WASH), gender, disaster risk management, and resilience. The evaluators were assisted throughout the fieldwork by a team of interpreters, notetakers and drivers provided by Agence CAPSULE. Additionally, two ADRA staff who had been involved in the project were assigned to work with the team—doing advance work such as contacting the communities to be visited and making arrangements in advance for site visits.

3.2.4 Methods

Desk Review: Evaluation team members undertook an extensive document review as a part of the qualitative study. An initial set of project documentation was provided by ADRA and supplemented by TANGO, to serve as background reading and made available to team members on Dropbox. Team members added, identified, and reviewed a significant amount of additional documentation and project reports provided by ADRA, including relevant lessons-learned documentation generated by ADRA on many of ASOTRY's key intervention models.

Focus Group Discussions and Key Informant Interviews: The FGDs and KIIs were organized around the main intervention models promoted by ADRA and its partners under each of ASOTRY's three Purposes, which were implemented as three Components corresponding to each of the Purposes. Initial drafts of the tools were developed by the two international team members and reviewed, revised and finalized by each team member according to his/her area of expertise (see tools in Annex K.) At each site, a fairly standard set of FGDs was conducted. In order to reduce the burden on respondents, many of whom participated in more than one project "group" or structure that served as the ASOTRY's entry points for activities (VSLAs, various committees, etc.), the team typically hosted two sets of FGDs and/or KIIs in parallel—one set of focusing on the subject matter of Purpose 1 (health, nutrition and WASH—implemented as Component 1 [C1]) and the other on matters related to Purposes 2 and 3 (agriculture/livelihoods/markets and DRR/resilience)—implemented as Components 2 and 3 [C2 and C3]). In communities where time only permitted one FGD and/or there were several groups represented among those who turned up for the site visit, the team often held two mixed FGDs in parallel, e.g., discussing matters related to their VSLA, FFS and FBA in one and in the other, MCHN and WASH. The team conducted a total of 71 FGDs in the 28 fokontany. Participants totaled 489 (316 F, 173 M) and averaged seven participants per FGD. The team conducted a total of 54 formal KIIs (16 F, 38 M), including certain types of project participants/volunteers at the fokontany/commune level: for example, Chief of Fokontany, Community Health Volunteer (CHV), community livestock worker, and Tree Nursery Manager. KIIs were also conducted with senior staff of ADRA, its local partners, and several government partners. Annex E summarizes the KIIs, FGDs, and asset observations conducted.

Direct Observation: Typically, the evaluation team worked in two-person teams, each visiting different project sites; depending on distance, either two or four sites were visited in one day.[13] Each team was

[13] Where time allowed, one site was visited in the morning and another fokontany close by in the afternoon. Full days were spent in some sites when required due to travel time constraints.

accompanied by one of the ADRA staff to facilitate introductions and navigation. Road travel between sites and regions allowed additional time to observe conditions in the project area. In addition, the team visited a selection of 27 infrastructure investments (water, sanitation, irrigation, feeder roads).

3.2.5 Analysis, Coding, and Interpretation Methods

FGDs and many KIIs were voice recorded with participants' verbal consent, and both evaluators and note-takers took written notes. All notes were subsequently uploaded to DropBox. Individual evaluators used matrices to summarize their notes for each category of FGD (e.g. lead mothers). The matrices informed the identification of strengths, weaknesses, and lessons learned in relation to each intervention model explored and have, in turn, fed directly into evaluation findings. During fieldwork, the evaluation team met regularly to discuss observations and questions that arose, which aided in understanding and interpreting their observation. The long travel time between locations facilitated these conversations.

3.3 Integration of Quantitative and Qualitative Findings

The methodology followed a mixed-methods evaluation protocol. The data from the endline survey and the qualitative study were analyzed independently using techniques appropriate to each dataset. Integration of the findings from each data source involved two components: i) findings arising from analysis of the qualitative data were used to help interpret those from the PBS data analysis; and ii) where relevant, findings from the PBS data were integrated with those from the qualitative data analysis to produce a more complete picture for each evaluation question.

> ***Leaders who were appointed to store ADRA tools enjoyed more advantages over others … at the end of the project, it seems as if the tools become theirs and only some people they valued could have access to them while the rest are left out.***
>
> **Lead Father, 43 years old, Amoron'i Mania**

3.4 Limitations

ODK programming of NRM questions. The natural resource management (NRM) questions in Module G were asked only of those farmers who kept livestock and not of those engaged only in crop production. In most cases, farmers planted crops and kept livestock, so they were asked the NRM questions anyway. The programing error only impacted the few who only planted crops and had no livestock. At the analysis phase the N (denominator) was adjusted to reflect the correct number so that the results were comparable to the baseline.

ODK programming of gender-cash questions. Module J (gender-cash) questions were only asked to adults who were married/living together AND earned cash. For this reason, when Module B (household roster) was programmed, the cash-earner question was only asked to adults who were married. This meant that in the household roster there was not a count of *all* adults (married or not) who earned cash, which was needed to calculate the first cash indicator in Module J *percentage of men and women who earned cash in the past 12 months, overall and by sex*). It was only possible to calculate *percentage of men and women in a union who earned cash in the past 12 months, overall and by sex*. In order to make the baseline and endline values comparable, analysts re-estimated baseline values of the indicator

percentage of men and women who earned cash in the past 12 months, overall and by sex so that it corresponds to the endline indicator.

Agricultural practices terminology. Since the endline was intended to replicate the baseline, ODK programmers replicated the options and wording used in the baseline survey. This was problematic for some questions in Module G (agriculture). During the qualitative phase of the work, the practices/techniques described in FGDs and KIIs with FFS participants did not correspond well to those listed in the survey tool: some practices listed as response options in the tool were not observed in the field, and others that were observed were not listed in the tool. Moreover, when asked to describe the new techniques they had learned in the FFS, participants in the qualitative study found great difficulty to say more than "we learned better planting techniques" or "we planted better seed." When they did describe a new practice, they often used terminology that did not appear in the list of choices that had been made available to survey respondents. Without survey response options that reflect farmers' actual agricultural practices, and the terminology farmers use, the survey tool may not capture data accurately—respondents may end up choosing response options that do not reflect what they are actually doing. While this does not impact a respondent's opinion of the usefulness of the agricultural interventions, it does raise questions as to the validity of these indicator measures at both baseline and endline. This may help to explain some of the apparent inconsistencies in the quantitative and qualitative data relating to agricultural indicators.

Timing of evaluation. Fieldwork for the baseline quantitative survey took place in May 2015, whereas the endline data were gathered in June 2019. While the difference in timing (May versus June) is not large, the seasonal calendar for the most common livelihood zone in the Central Highlands (FEWS NET, 2013) indicates a transition from dependence on own production to market purchase for the principal staple food crop (rice) from May to June. This could have an impact on the various food security measures (e.g., HHS, HDDS, CSI), which respond fairly quickly to changes in circumstances. The responses to the various shock exposure and coping strategy questions could have been impacted by this difference in timing. For this reason, the baseline and endline surveys should occur in the same month to ensure credibility of food security findings.

4. EVALUATION FINDINGS

4.1 Targeting

Women and children under the age of five (CU5) were the main target population for the ASOTRY activity. Targeting was based on a layered approach in each of the two geographic areas where it was implemented, which we will refer to as the Central Highlands and the South for the purposes of this report.[14] The objective was to have multiple interventions in the selected communities, with considerable overlap in households receiving interventions under Purposes 1 and 2. The project appears to have achieved these goals. One-third of PBS respondent households reported having participated directly in one or more project activities (see Table 15 in Annex H). Of those directly involved, over two-thirds were involved in two or more activities and almost half were involved in three or more. While there were some differences in participation between the Central Highlands and the South (see Table 15 in Annex H), overall there was considerable overlap in activities related to Purposes 1 and 2: 55 percent of households participated in nutrition training and 53 percent in agriculture training. More importantly, in terms of layering, 43 percent received both agricultural and nutrition training—an overlap in the order of 80 percent, slightly higher than the target of 75 percent. This overlap was even greater in the South, where two-thirds were involved in both (in the Central Highlands, one third were involved in both). It should also be noted that over 80 percent of those participating in project activities reported receiving food or cash transfers. The qualitative research component certainly supported these findings. FGD participants were frequently members of several committees, community-based groups or community associations and benefited from more than one project activity.

> ***We wish we could keep them [project field agents] with us. We would write an official letter for that … We'd like them to continue to give us advice and share technical skills.***
>
> **VSLA member, male, 21 years old, Atsimo Andrefana**

At the same time, targeting was not without its challenges. An electronic registration system was used to register all participants and provide a card/number to identify them as project participants. ASOTRY organized a process for the selection of beneficiaries by conducting a series of massive sensitization campaigns to invite people in the selected fokontany to participate in the project. However, not all responded to this invitation, which resulted in their exclusion from project activities until they could be added at a later time (provided that they met project participation criteria). In FGDs, some frustration was noticed among community members who were not involved because of their initial hesitation to participate, in some cases based on fears arising from rumors about what would happen if they were included in the list. The sensitization and registration process could probably be improved to ensure that the local population had a more complete understanding and a better acceptance of the process and participation criteria prior to formal registration. For example, youth appeared to have been unintentionally excluded during awareness-raising activities. Although a few adolescents reported

[14] The regions Amoron'i mania and Haute Matsiatra are in the Hauts Plateaux area, which will be referred to as the Central Highlands zone. The region of Atsimo Andrefana is in the south, a hotter and drier area, and will be referred to as the Southern zone.

having attended *Tsikonina,*[15] many of them reported having never used CHV services, thinking that they were intended only for pregnant women and children.

FGDs indicated a general level of community satisfaction with the recruitment of ASOTRY field agents and the choice of Care Groups by the community and CHVs. However, the appointment by local authorities of those who were to be responsible for equipment distribution or storage was often criticized because some beneficiaries felt that their access to the equipment was limited.

ASOTRY made efforts to conduct an independent technical study to select water points to be rehabilitated, considering project and public authority priorities. Nevertheless, some public stakeholders appeared to have been dissatisfied by certain choices because of a lack of communication about the reasons for their decisions and the criteria for participation. They also reported that some infrastructure was inconsistent with norms (e.g., rehabilitating a water point in an area prone to flooding, the use of defective parts for repairs). Some needy areas felt disappointed because they were not included in the areas to be rehabilitated. That being said, the project could not be everywhere, nor did all communities meet the participation criteria, and some difficult choices had to be made by staff.

4.2 Purpose 1: Improved health and nutrition status of women of reproductive age and children under five (CU5)

4.2.1 Introduction

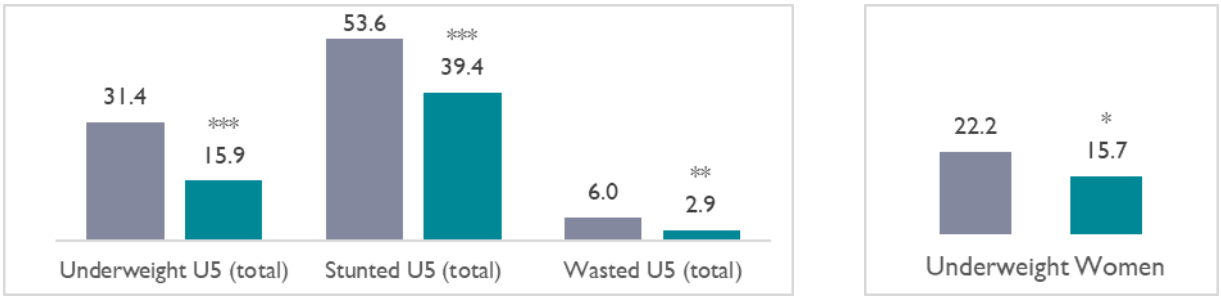
Activities in support of Purpose 1 focused on health and nutrition awareness and behaviors, awareness and use of community health services, and behaviors related to water and sanitation.

4.2.2 Results

There was a significant decrease in malnutrition indicators in CU5 (underweight, stunted and wasted) in all intervention areas and for all target populations, both direct and indirect project participants (Figure 3), as well as a significant decrease in the percentage of underweight women. See Annex G for a breakdown of results by participation status and geographic zone.

[15] *Tsikonina* was the name given by the ASOTRY activity to a 12 day session during which mothers learn to cook "rainbow food." *Tsikonina* is the name of an ancestral children's game during which they cook food with miniature utensils and eat together. This name was well appreciated by participants and opened mothers' hearts.

Figure 3: Prevalence of underweight, stunted, or wasted CU5 and of underweight women
Prevalence of underweight, stunted, or wasted CU5 declined from **baseline** to **endline.** Prevalence of underweight women declined from **baseline** to **endline.**



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

Sub-purpose 1.1. Improved health and nutrition behaviors of caregivers and children under 0-59 months

Health and Nutrition Indicators: Health and nutrition work employed a Care Group model in conjunction with CHVs and lead mothers who modelled and taught about good health and nutrition practices, as well with lead fathers who worked independently. This model was supported through food assistance in the form of corn-soy blend (CSB) targeted to mothers with young children and through regular growth monitoring promotion (GMP) facilitated by a Smartphone-based application, which calculated anthropometric measures and gave regular and instant feedback on the growth and development of young children. The activities themselves helped to increase awareness of nutritional status and change behaviors. The Care Group approach, in combination with targeted food assistance and community-based care or referral to hospitals for malnutrition cases, contributed to significant improvements in nutrition.

Interviewed ASOTRY field agents and participants (CHVs, male and female Care Group members, lead mothers and fathers) and other community members indicated it was important to know nutritional status. The improved endline GMP indicators (see Annex F) suggest that awareness-raising related to nutritional status was productive. Simple explanations by CHVs and Care Groups of regular GMP benefits alongside *Tsikonina* activities as recommended by the mid-term review were crucial (JMRT, 2017).

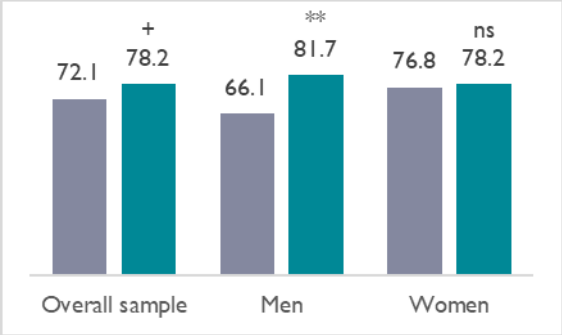
MCHN Practices: The effectiveness of the Care Group approach is also supported by evidence from the PBS, which showed a small but significant improvement in the percentage of respondents who have knowledge of the project-promoted child health and nutrition practices.[16] The overall percentage of men and women with CU2 who have knowledge of MCHN practices increased from 72.1 percent at baseline to 78.2 percent at

> ***ASOTRY field agents give model to the community to strengthen their messages, not like other projects where we are simple performers. They commit themselves to helping us during community works. They give explanation on why things need to be done differently. For example, eat less rice to enable you add more other nutrient food.***
>
> **CHV and CLGRC, Amoron'I Mania**

[16] These practices include providing adequate nutrition and following the "first 1,000 days" approach.

endline. This increase was especially pronounced for men, where the percentage increased from 66.1 percent to 81.7 percent (Figure 4).

Figure 4: Percentage of men and women with CU2 who have knowledge of MCHN practices
There was a small but significant improvement in the number of those who have knowledge of MCHN practices from **baseline** to **endline**, in particular by men.



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

KIIs with CHVs and FGDs with Care Group members supported this as both indicated that their knowledge about appropriate health and nutrition practices had increased.[17] FGD participants attributed quality training to adequate communication tools, and to both ASOTRY field agents and technical specialists.

Tsikonina was effective at improving awareness of nutrition for CU5 and pregnant women. In FGDs with people who were not members of Care Groups, more than half thought that diversified rainbow foods were only for malnourished children. While less frequent among project participants (Care Group members), there were still some mothers, community members, and even CHVs who participated in FGDs and KIIs who seemed to lack knowledge about the nutrition of sick CU5 despite having participated in various trainings.

I used to eat boiled cassava daily with nothing else, boiled sweet potatoes, boiled maize, or simply rice with green leaves. Tsikonina gave me the opportunity to cook diversified rainbow food. I therefore realized that I always misunderstood diversified food. It's not about alternating different stuffs in a week. I decided hence to add other ingredients like peanuts, lentils, iodized salt, tomatoes, and onions to my ordinary meals.

Mother, Amoron'I Mania

Dietary Diversity – Household, Women and Children:
While there was no significant change in the Household Dietary Diversity Score (HDDS) overall (Figure 5), there were some differences within groups. There was a significant positive change between baseline and endline in the Central Highlands and also between the direct and indirect participants at endline (see Annex G). FGDs during the qualitative evaluation also indicated an increased awareness of dietary diversity. In-depth interviews discovered that current awareness of the importance of

[17] In general, knowledge about the necessity of ANC, the importance of eating rainbow foods, the need for diet diversity, and techniques of water purification was common. However, few people knew appropriate nutrition practices for sick children, and the meaning of "latrines per household." They often understood this as "latrines for the big family of 20 to 100 persons." (See additional discussion under Sub-purpose 1.3.)

diversified food consumption is new, compared to prior to the project. New tested recipes from *Tsikonina* resulted in dietary change in more than half of the qualitative study respondents. Several FGD participants indicated that dietary diversification through the use of new recipes is however limited during the lean season.

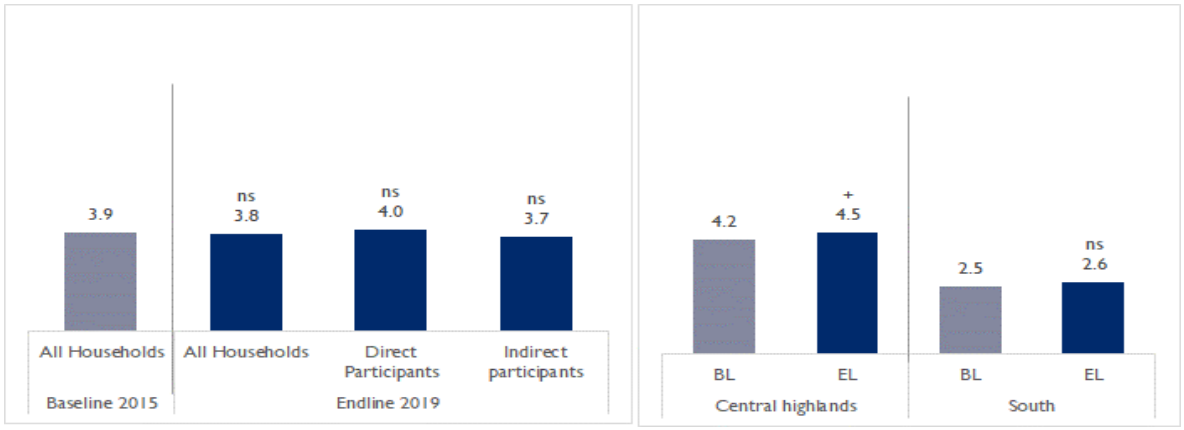
Some FGD participants noted that the distribution of oil and CSB+ helped households to adopt and continue the habit of preparing meals with oil as an ingredient. FGDs in the Central Highlands showed a greater awareness of the importance of diet diversification than those in the South. Based on these conversations, the evaluation team felt that better productivity from kitchen gardens, combined with consciousness of need, were reasons for this success in the Central Highlands (Figure 5).

> ***My last boy was underweight and Tsikonina helped me a lot. I complied with its prescription to separate his dishes and utensils from ours. Special diet is for underweight children only— not for a healthy family.***
>
> **Lead Mother, 44 years old, Haute Matsiatra**

It was also apparent to the evaluation team that various fruits and vegetables were available in local markets. A KI indicated that the ASOTRY activity not only improved the availability of food, but also access to it and utilization of it. On the other hand, the evaluation team notes that, even if some felt this way, it was certainly not the case for all. There was a statistically significant decline in dietary diversity among women (Figure 6). Given the very positive reception of the *Tsikonina* approach to increasing knowledge and skills related to dietary choices, this slight decline in dietary diversity among women should not be taken as a negative outcome—after all, their children have improved. It is more likely that there has been some form of a shock impacting current consumption. One common coping strategy is to reduce dietary diversity by focusing on starchy staple crops –with women more likely to do so themselves rather than for their children.

Figure 5: Average Household Dietary Diversity Score (HDDS) comparison by participation status and by geographic zone

Overall average dietary diversity remained stable from **baseline** to **endline**. Dietary diversity improved from **baseline** to **endline** for people in the Central Highlands.



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001

[1] That is, there was no statistically significant change from **baseline** to **endline**.

[2] At **endline**, direct participants had an improved HDDS score relative to indirect participants. See table in Annex G.

Source: Quantitative survey

Coping Strategies and Dietary Diversity: In order to understand the apparent contradiction between the qualitative and quantitative data regarding nutritional practices and dietary diversity, it is also important to look at the coping strategies that people adopt when under stress. While there was no significant change in the CSI across the project area taken as a whole (Figure 7), there were some subgroups where there was a significant change between baseline and endline. In particular, the CSI was significantly higher in the Central Highlands at endline (32.9) than at baseline (25.1) (Figure 7).

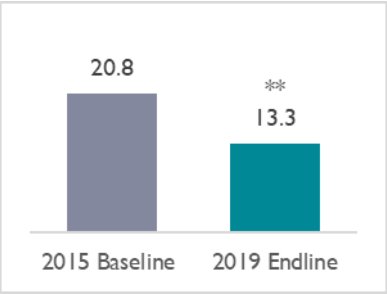
> ***I always thought that hospitals are only for sick people. While encouraged by a CHV to get my ANC visit there, I went without conviction. I was astonishingly satisfied with the way I was received and their care: iron pills, immunization and many advices for my delivery and newborn care.***
>
> **Illiterate young mother, Atsimo Andrefana**

It is important to keep several things in mind when interpreting measures like the various dietary diversity scores (HDDS, MAD, MDD-W, WDDS) and measures of stress and coping (HHS, CSI). First of all, they are very responsive indicators and therefore impacted by changes in the current context. Because they are based on current food consumption and other behaviors during the preceding day or month (depending on the indicator), they are best interpreted as a group rather than individually (Maxwell et al., 2013). This is in contrast to the anthropometric indicators, which are not as responsive to immediate circumstances and so give a better idea of the general trend over time. In the case of the apparent poor results for the dietary diversity scores, the increase of the CSI indicates that some households were under more stress than at baseline. An explanation may be found in the shock data (see Table 16 in Annex H), which indicates that about a third of the ASOTRY population had recently experienced drought (over half in the South), a bit more than a fourth had experienced flood and water logging (especially in the Central Highlands), about a third had strong winds and storms (especially in the Central Highlands) and around a third of the population had experienced crop diseases or pests (more so in the South). Such shocks would have had an immediate impact on both dietary diversity (Figure 6) and the CSI (Figure 7).

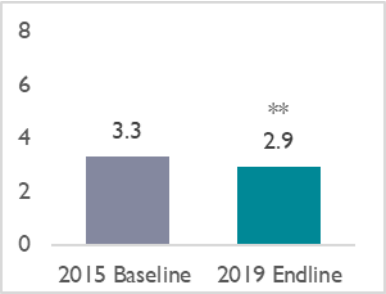
> ***Change was so obvious since the beginning of ASOTRY. If lean season was formerly from October to November, now, we can meet our needs thanks to our newly adopted agricultural techniques taught by ASOTRY. We have plenty of food not only for the whole year, but have even a surplus until August of next year.***
>
> **Young lead father, Amoron'I Mania**

Figure 6: Women's Dietary Diversity

Percentage of respondents with Minimum Dietary Diversity—Women (MDD-W) has decreased from **baseline** to **endline**



Women's Dietary Diversity Score (WDDS) has declined slightly from **baseline** to **endline**



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

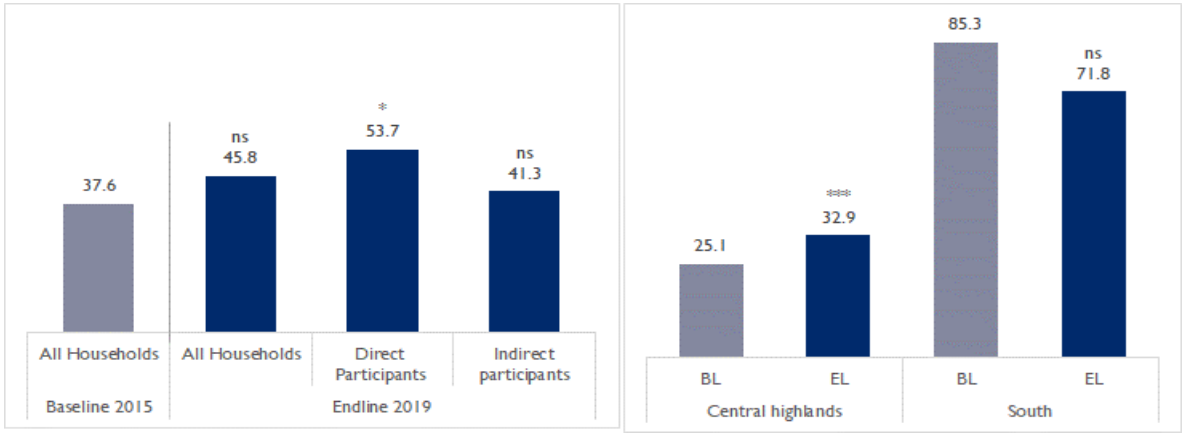
Sub-purpose 1.2. Increased utilization of health and nutrition services for women of reproductive age and CU5

ASOTRY targeted WRA and CU5 with health services offered by CHVs and health centers. Among those services were GMP (Growth Monitoring Promotion) and follow-up care for CU5, promotion of diversified and rainbow food with iodized salt, referral to hospitals of sick children for cases beyond the competence of CHVs or those determined to have severe malnutrition, referral of pregnant women to hospitals for ANC visits, delivery and newborn care. Additionally, *Tsikonina* activities enabled them to address cases of moderate malnutrition at the community level.

ASOTRY emphasized the link between increased agricultural production and access to improved nutrition. According to KIIs, the provision of seeds and introduction of new agricultural practices encouraged the use of kitchen gardens in arid soils. However, it was also apparent to the evaluation team that other community members still remained out of reach since it seemed from FGDs that behavior change related to kitchen gardens was really only at an early stage of experimentation when the project ended. This would explain the availability of new types of food at household level and in marketplaces without any large scale (measurable) improvement in dietary diversity.

Figure 7: Coping Strategies Index by participation status and geographic zone

No significant change in CSI from **baseline** to **endline** for most people. At **endline**, CSI was higher for direct participants compared to indirect participants and also higher at **endline** for those in the Central Highlands than at **baseline**.

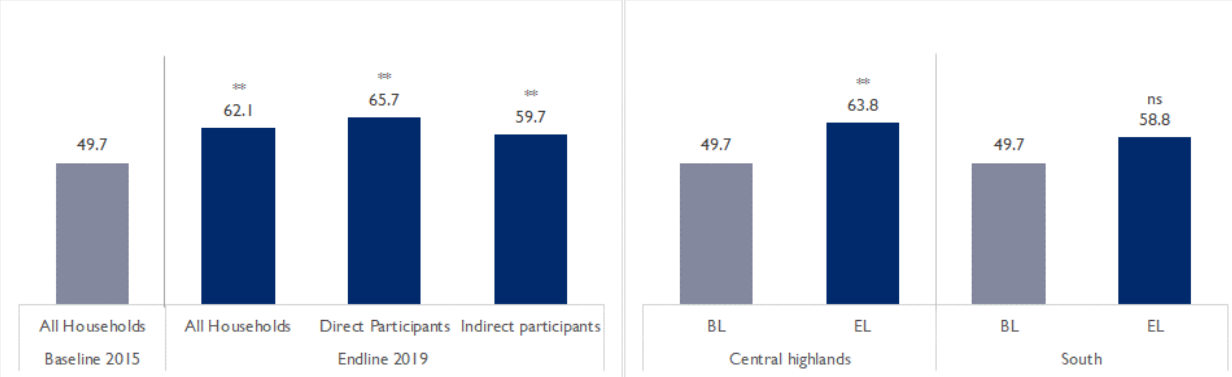


ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

Collaboration between CHVs and Care Groups (lead mothers and lead fathers) was reported to be effective. The endline quantitative data demonstrate not only that the targeted population was aware of available services but that there was improved utilization of health and nutrition services. Better anthropometric indicator values for CU5 (see Figure 3) and WRA are in part evidence for the use of these services. Antenatal care (ANC) visits are crucial for both mothers and their babies within the first 1,000 days for newborn growth. The percentage of women who were referred to hospital for at least four ANC visits increased from 49.7 percent at baseline to 62.1 percent at endline, with a greater increase in the Central Highlands (Figure 8). FGDs also indicated that this increase was facilitated by road rehabilitation efforts, which made it easier for women to travel for their ANC visits (Figure 9). This change was also especially significant for direct participants (Figure 8 and Annex G).

Figure 8: Births receiving at least four antenatal care visits

Overall, prevalence of births receiving at least four ANC care visits increased from baseline to **endline**. At **endline**, *percent of direct participants' births receiving at least four ANC visits* was higher than for households overall. The percent of births receiving at least four ANC visits increased particularly for those in the Central Highlands.



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Women aged 15-49 with pregnancy in the past 5 years.
Source: Quantitative survey

Sub-purpose 1.3. Reduced incidence of water- and hygiene-related illnesses for children under five

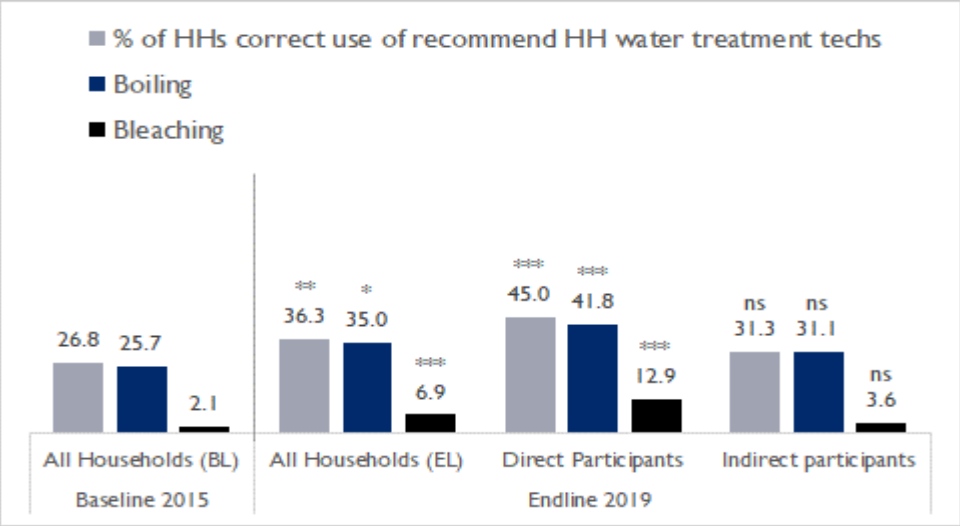
Standard indicators for household WASH practices were assessed at baseline and endline. While over a quarter (26.7 percent) of surveyed households report using an improved source of drinking water at endline, there is no significant difference from the baseline value (see Annex F). The overall percent of households in target areas practicing correct use of recommended household water treatment technologies increased from 26.8 percent at baseline to 36.3 percent at endline (Figure 10).[18] In terms of specific practices, households using boiling and bleaching showed statistically significant increases. However, on closer examination, there was a statistically significant increase among direct participants and no change among indirect ones. Similarly, the change from baseline to endline was only statistically significant in the South and not in the Central Highlands (Annex G, Figure 11). The prevalence of diarrhea among CU5 has not changed significantly from baseline to endline for either the Central Highlands or the South (see Annex G).

Figure 9: Rural road rehabilitation increased health facility use, Atsimo Andrefana

Source: O. Rahamefy

[18] The recommended water treatment technologies were boiling, adding bleach/chlorine, using a water filter (either a ceramic/sand/composite filter or bio-sand filtration) and solar disinfection (see tables in Annexes E and F).

Figure 10: Use of recommended water treatment technologies by participation status
The percent of households practicing correct use of recommended water treatment technologies (including bleaching and boiling) increased from baseline to endline.



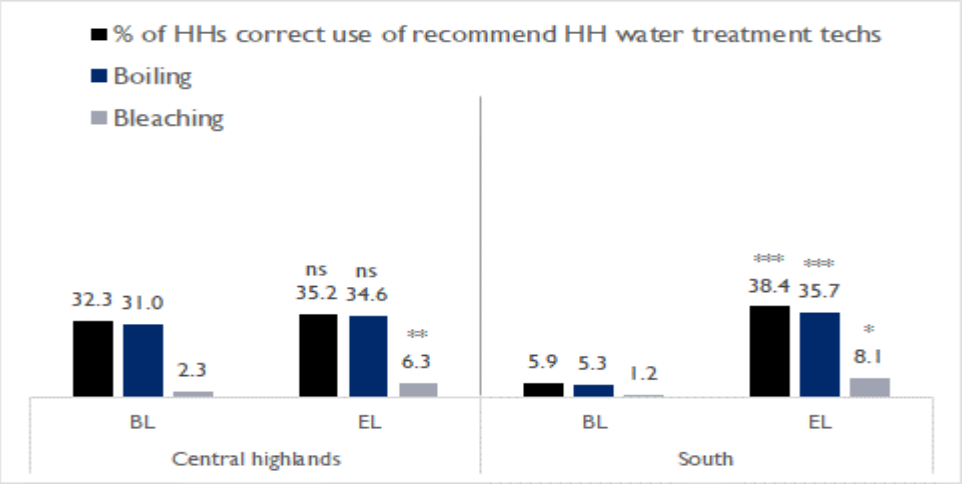
ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

Overall, the percentage of households who reported use of improved sanitation facilities was low at baseline (2.4 percent) and declined to 0.9 percent at endline, especially in the Central Highlands (see Annex G). This may partly explain why there has been little to no change in the incidence of diarrhea (Annex F). On the other hand, there has been a statistically significant decrease in open defecation in the Central Highlands (from 38.7 percent at baseline to 18.3 at endline) in contrast to the project as a whole (Annex G).

ASOTRY field agents, CHVs and Care Groups carried out trainings and awareness-raising on water treatment (in some cases accompanied with the free distribution of water chlorination products), which contributed to an increase in the percentage of households practicing correct use of the recommended household water treatment technologies, from 26.8 percent to 36.3 percent (Figure 10), however, when considered individually, there was only a statistically significant change in the use of bleaching and boiling. The increase in boiling and bleaching practices was substantial and highly significant in the Southern targeted areas (Figure 11), where water is scarce and known to be unsafe. As shown in the figures, boiling was more common than bleaching. In the qualitative study, it was learned from respondents that chlorine's strong odor, water chlorination product availability, and financial accessibility were the main obstacles to bleaching water.

While these household-level practices for purifying water had increased at endline, community members reported a limited access to drinking water from available public safe water points, as a segment of the population could not afford the required minimal financial contribution for infrastructure maintenance.

Figure 11: Use of recommended water treatment technologies by geographic zone
Household use of recommended water treatment technologies increased signifcantly from baseline to endline for those in the South.



ns = not significant, + p<0.1, * p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

Many qualitative study participants reported depletion of springs and wells during the dry season. Defects with improved water systems (leaks, low water flow) were also mentioned. Therefore, people had to wait longer or walk further to fetch water. This likely contributed to the decrease in the percentage of households that can obtain drinking water in a less than 30-minute round trip, from 84.3 percent (baseline) to 72.2 percent (endline) (Figure 13). As seen in Figure 13 (and also Annex G), the decrease in percentage is significant in the Central Highlands (but not in the South), where people in many fokontany complained about increasingly severe drought that caused water sources to dry up.

Nowadays, our water is unsafe because fetched from springs (unprotected) ... it's not the case for the public pump, but the pump is not free ... you should pay fifty ariary per water can. Only those who have money would buy safe water from the public pump, those who cannot afford it have to walk to the spring.

Lead mother, 23 years old, Haute Matsiatra

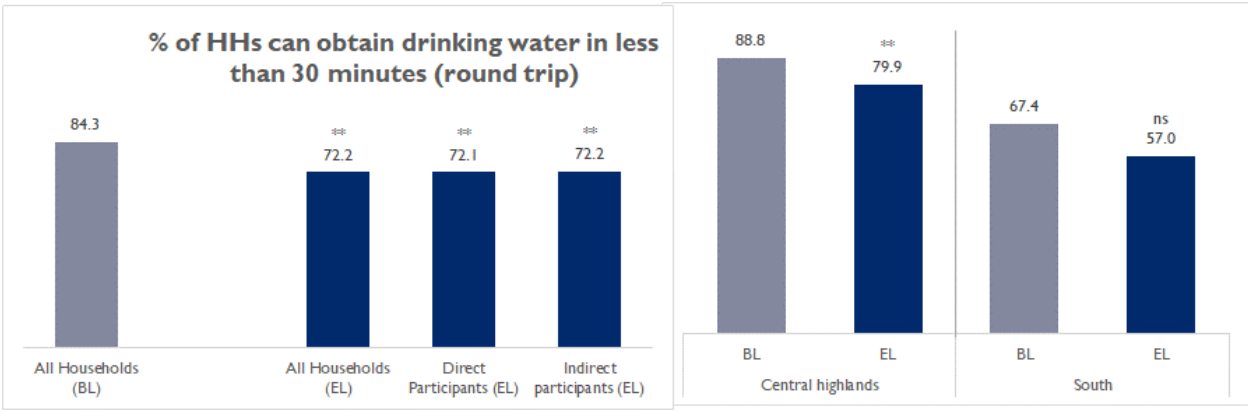
Figure 12: Rehabilitated sources of drinking water, Central Highlands (L) and South (R)

Source: O. Rahamefy

The challenge here is that the survey sampled people in areas where there were improved water points (which are unlikely to dry up in a drought) as well as unimproved ones (that might very well dry up). Since the survey did not ask sufficiently specific questions to get at this, we are relying on FGDs and KIIs, which seem to indicate that the decline in access is due to the unimproved water points (not the improved ones) drying up. For those in areas where there were not yet improved water points, they were having to go further and spend more time getting water—to a great enough extent that it offset any improvement in areas where ASOTRY had done work on the water supply.

Figure 13: Access to drinking water

The percentage of households that can obtain drinking water in less than 30 minutes (round trip) had a statistically significant decrease from **baseline** to **endline**. However, the difference was statistically significant only in the Central Highlands.



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

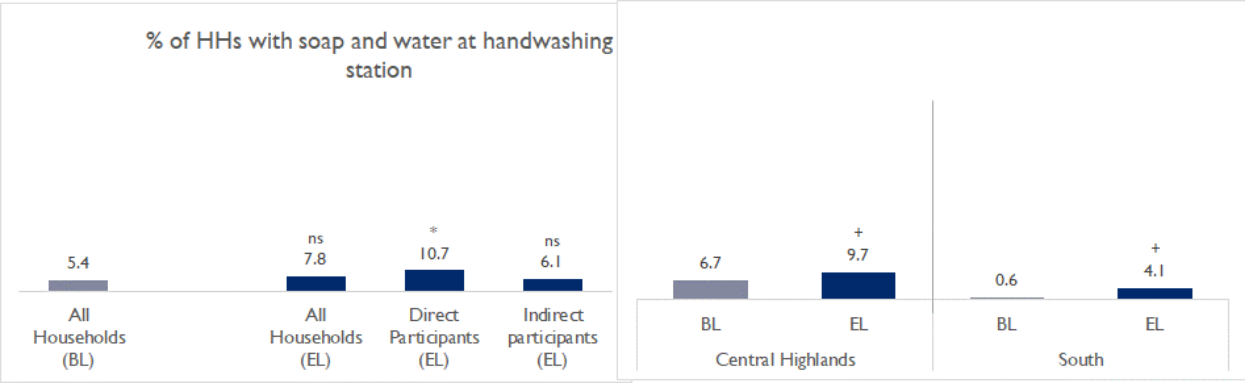
It should be noted that the WASH component of the ASOTRY activity was introduced in response to recommendations from the mid-term review (JMRT, 2017), beginning in late in 2017. Even so, the project succeeded in rehabilitating 168 water sources and wells (ADRA, 2019c, d). However, this late start also may explain why at endline there was no statistically significant change in access to improved water sources—there are not yet enough improved water points in a sufficient number of fokontany to significantly increase the percentage of households using an improved source of drinking water (Figure 13). That said, the team did observe some ASOTRY-supported drinking water improvements and found them to be functional and of acceptable quality.

While there has been no statistically significant change in the use of soap and water at a handwashing station for the project as a whole, when each zone is considered on its own, there was a statistically significant increase in the percentage of households using soap and water (Figure 14). The percentage of households with soap and water at a handwashing station commonly used by family members increased from 6.7 to 9.7 percent in the Central Highlands and from 0.6 percent to 4.1 percent in the South.

The evaluation team observed that body hygiene was variable throughout the visited sites even though many participants in FGDs indicated an adequate level of knowledge of hygiene behaviors among the majority of CHVs and Care Groups. For example, most of the respondents knew that handwashing was important to prevent diarrhea and, for some of them, the habit was already acquired; but for other

participants in FGDs this practice was not sufficiently ingrained in their daily routine. That there was no statistically significant difference between baseline and endline overall (Figure 14) while there was among direct participants is an indication of ongoing skill acquisition that still needs supportive intervention. When examined by geographic zone, it is clear that there was a statistically significant, though small, improvement in handwashing practices.

Figure 14: Households with soap and water at a handwashing station
At **endline**, direct participants had a statistically significant positive increase compared to the overall average at **baseline**. There was also a small but statistically signifcantly increase from **baseline** to **endline** in each geographic zone (Central Highlands and the South).



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

The frequency of open defecation practices has not changed over the project area as a whole despite the efforts of ASOTRY to raise awareness. That being said, there was a highly significant decrease in open defecation in the Central Highlands (Annex G), where many community members perceived the benefits of using sanitation facilities even if not up to the preferred quality standards. Conversely, no change was observed in the Southern areas (Annex G) because open defecation is still the social norm. More than two thirds of interviewed persons declared that they use latrines for the "big family," which varies from 20 to 100 persons. Only a few of them have their own latrines for their nuclear family. The stage of behavior change remains different between the two areas.

It was reported that community members have built new latrines in both the Central Highlands and Southern areas. However, preliminary quantitative data showed that use of improved sanitation facilities has decreased from 2.4 percent to 0.9 percent (Annex F). The decrease was significant (from 3.1 percent to 1.3 percent) in the Central highlands (Annex G), where the minimal infrastructure norm was not reached for the majority of built latrines. For example, pit lids were missing, or tippy taps were seen outside of only few latrines (Figure 15). There were stories of children stealing them and transforming them into toys.

However, there seemed to be positive changes in some types of latrines. For example, at baseline 50 percent of respondents used a "latrine without slab/open pit" and 44 percent used "no facility/ bush/ field" (Table A10.2. in baseline report). At endline, these values were 59.3 percent and 37.6 percent respectively (Table 10, Annex H in this report). However, the "latrine without slab/open pit" is not considered an "improved" sanitation facility according to the FFP indicator, and changes here do not

count as improvements even though adoption of this type of latrine is a definite improvement over "no facility/bush/field." An alternative way of looking at changes in defecation practices would help to show what sort of changes are actually taking place—something that is masked in such a high-level indicator. While people may not be able to adopt the ideal type of latrine, they can adopt things that are simpler and that are an improvement on open defecation.

It was also noticed that images used for teaching about latrine building illustrated a standard that was unattainable by most people in contrast to something that anyone could do with the resources that they have at hand. In areas where latrine use was not yet an acquired habit, people built latrines only because of fear of sanctions by authorities while they continued to practice open defecation.

Figure 15: Improved sanitation facility, Central Highlands

Source: O Rahamefy

4.2.3 Conclusions

The majority of community members and some stakeholders appreciated these project components. These ASOTRY interventions were globally relevant to improving health and nutrition status of WRA and CU5. The people-centered approach adopted under this purpose was acknowledged as outstanding and was a factor in the positive changes observed in the women's and children's nutrition and health indicators, some WASH indicators, gender indicators and most of the poverty indicators. The ASOTRY activity made tangible efforts to comply with mid-term review recommendations for this Purpose, which in the opinion of the evaluation team contributed to these achievements.

Nevertheless, there remain challenges and unachieved objectives related to dietary diversity, source of drinking water and use of sanitation facilities. The qualitative evaluation found three main reasons among others, namely the need to improve the contextualization of the approach for massive behavior change, late implementation of effective strategic activities (*Tsikonina*, WASH, Care Groups), and lack of adequate collaboration with public authorities and other stakeholders that impeded program quality and sustainability (to be discussed in Section 4.6).

4.3 Purpose 2: Increased sustainable access to food for vulnerable households.

4.3.1 Introduction

Activities in support of Purpose 2 focused on i) improving the adoption of sustainable agricultural practices and the use of improved inputs through a modified Farmer Field School (FFS) approach, ii) improving the storage and marketing of agricultural products through the formation of FBAs and the construction of Agriculture Collection Centers (ACCs) and their associated management committees, and iii) improving the natural resources and financial management skills primarily through the promotion of

VSLAs. Items (i) and (ii) were also supported by a subsidy component, where the cost of inputs (e.g., seed) and infrastructure (e.g., community storage facilities or rice mills) was shared by project participants and the project itself. While the quantitative results are less conclusive, qualitative work proved to be helpful in understanding the changes that have taken place.

4.3.2 Results

Sub-purpose 2.1. Increased agricultural production

Quantitative survey results showed no change in the adoption of improved agricultural practices over the life of the ASOTRY activity, with no significant difference in the percentage of farmers adopting at least three sustainable crop, livestock or NRM practices between baseline and endline (see Annex F). The only significant difference was that direct participants were slightly more likely to have adopted three or more practices than indirect participants (see Annex G). Within this overall measure, however, it is important to note that there was a statistically significant decrease in the adoption of sustainable crop practices (see Annex F). This change occurred among farmers in the Central Highlands and not in the South. It should be noted that, though there was no statistically significant change in the adoption of sustainable NRM practices for the project as a whole, there was a statistically significant decrease in the percentage among indirect participants (see Annex G). These ambiguous quantitative results are in contrast to more favorable reports from project participants.

Staff vs stuff (subsidized inputs): Though there was no statistically significant change in the percentage of farmers using three or more sustainable agricultural practices, there was considerable interest in "modern technology/techniques" according to FGD participants. There is no doubt that the subsidized seed was very attractive to FFS participants. On the other hand, subsidized seed is a huge amount of effort and expense for little return to the project. In addition to this, it did not model an approach that is viable for semi-subsistence farmers who are net buyers and it did not reduce the risk to farmers who were using the seed for the first time (in fact, this type of wholesale adoption at field-scale can be risk-increasing—as was noted by some FFS members in the South who experienced a crop failure). While there were a couple of reports that some farmers might have bought extra subsidized seed and resold it at a profit, this did not appear to be widespread. However, there are other reasons than this to steer away from subsidizing inputs, as outlined above.

New skills and techniques: FGDs with FFS participants indicated that farmers had been receptive to new crops and planting techniques and generally felt that they were an improvement. In some cases, the new practice did not do well (grew poorly or produced nothing) and this may have turned farmers off. Farmers noted that the new techniques improved yield—but added that this was conditioned on normal weather conditions. This observation itself indicates that farmers are very aware of the challenges presented by the environment. However, since there was no in-field comparison between "old" and "new" practices, there was no accurate way for farmers to assess whether any problems they encountered were specific to the new variety/practice or because it was a poor growing season generally—they were only left with a general impression but no objective way to evaluate.

Secondly, FGD participants struggled to describe the nature of "the new technical approach" that they used in the FFS.[19] They only spoke in general terms of liking the "modern technique" because it was better than the "old way." One wonders if they would have been better equipped to discuss these differences and what they mean if the FFS had met weekly and focused on the sorts of things that the FFS approach should emphasize.[20] Per project design, the FFS groups met monthly, so there was less face-time with FFS facilitators. With a lack of focus on learning by doing, there was little opportunity for participatory learning and experimentation. Farmers' inability to be able to talk about the changes they had made and techniques they had learned calls into question the validity of the agricultural indicators in the quantitative survey, which rely on the ability of farmers to recognize the practices listed by the survey enumerators.

While Integrated Pest Management (IPM) would have been an excellent approach[21] to introduce through FFS, project staff felt the paperwork and time required to include it in the project, as outlined in the Pesticide Evaluation Report and Safer Use Action Plan approval process (USAID, 2019) were an insurmountable hurdle (ASOTRY KII).

Finally, it appeared that the skills and techniques introduced were not dependent on expensive cash inputs, since farmers know that they can save and replant their own seed. Farmers can be encouraged to experiment with and use improved varieties of seed without being obliged to buy new seed every year to maintain the yield. The improved seed only needs to be renewed every few years and it is possible to do this by buying a small amount of foundation seed and then using it to replace existing seed over time—one doesn't need to buy enough seed to replant the entire field all at once. In principle, this would bode well for sustainability, but it is uncertain whether or not the results will be sustainable as a result of the other weaknesses in the approach—i.e. the ad-hoc modifications to the FFS approach and the absence of a participatory experimental approach to trying new things at small scale as described in the foregoing discussion and under "Risk and experimentation" below.

Gaps: In the evaluation team's assessment, there were several gaps or missed opportunities for programming that would have helped transition agriculture in the project area to a more productive, sustainable and resilient form. For example, there was no evidence of any promotion of conservation agriculture (CA) though it would have had relevance in the non-paddy fields in the area—particularly, but not only, in the dryer South (Richards et al., 2014). The same would apply to conservation agriculture with trees, a combination of CA and agroforestry also known as Evergreen Agriculture (Mutua et al., 2014a; Mutua et al., 2014b). There was also no evidence of efforts to promote the natural

[19] See also the discussion of agricultural practices terminology in the Limitations section (3.4).
[20] Namely, working in groups as follows: farmers meet regularly in a local field setting under the guidance of a trained facilitator to engage in practical field exercises using direct observation, discussion and decision making, encouraging learning-by-doing. Farmers make observations on the local production system, focusing on the topic of study, and observe and compare the effects of two or more alternative practices on small experimental plots in each member's fields aiming to address the problem, one following local practice, the other testing the proposed "best practice" or "improved practice" (FAO, 2016, 2018).
[21] It is not uncommon for pesticides to be used indiscriminately, with the potential for serious health and environmental consequences. An IPM approach focuses on pest prevention and using pesticides only as needed to control pests, recognizing that there are often other means of control that do not require the use of such chemicals. An IPM approach also builds the skill level of farmers so that they can make wise use of the techniques available to them in an environmentally sensitive way while at the same time saving them money.

regeneration of forests instead of planting trees raised in the nursery, e.g. Farmer-Managed Natural Regeneration (FMNR).[22] Other gaps included:

Risk and experimentation: Encouraging farmers to buy enough seed to plant a whole field with the new (unknown) variety sets a bad example—it is risky and beyond farmers' financial means. It is better to encourage farmers to delimit a small area in their field to try the seed and decide for themselves. Additionally, the complete replacement of old crops with new varieties did not allow for an in-field comparison of existing and new practices.

Agricultural Collection Centers (ACCs): While the establishment of ACCs would no-doubt assist members in the storage and preservation of their harvest, few farmers would have the means to participate, now that the project has wrapped up, as there is a considerable cost to membership. ACCs need members because there is a fixed cost to the infrastructure and members are supposed to pay 33 percent of the investment. At least one group was in debt to the contractor to finish the construction of the ACC. On the other hand, the part of the ACCs that focused on PHH&S—and on seed selection and saving—would have benefited all farmers, large or small.

Modified FFS approach: The FFS approach employed was adapted locally by the project, but may have overlooked essential elements such as frequent (weekly) meetings to enable applied learning and discussion and, for example, the use of farmer experiments—where each farmer experiments in a manner designed to facilitate an in-field comparison that would demonstrate results and allow farmers to draw their own conclusions.

Livestock: The FFS groups in the South also received what they referred to as "improved" goats or sheep, which were distributed to selected members of the group to be cared for. Once they produced the first offspring, the intent was for them to share the next generation of offspring with others in the group and/or community. While FGD participants were not especially clear as to what was "improved" about the goats or sheep, it appeared to mean that they were properly vaccinated against common diseases prior to their distribution. Given that vaccinating animals is costly, this in and of itself was a welcome benefit. The project did train community livestock workers and set them up with resources and contacts to facilitate their work. FGD participants certainly seemed to appreciate having access to their services.

As for the value of an extra goat or sheep per household—whether it would help to grow a family herd to the size where it was "sustainable"—is an open question. What may have been of greater benefit would have been a male goat (or sheep) of an improved breed—one that could be used to breed with local herds and improve the genetics on a larger scale.

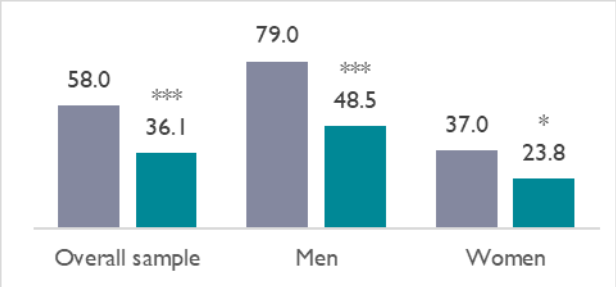
Sub-purpose 2.2. Increased agricultural sales

Sales: Based on the Annual Survey 2019, sales for project participants did not increase significantly (ADRA ASOTRY Annual Survey 2019), mostly due to a series of poor harvests, high transaction costs and a preponderance of subsistence farmers with little surplus to sell. This conclusion is supported by PBS data indicating over one-third of households experienced each of several production-related shocks—drought, flooding, wind or storm damage, and crop disease (see Table 16 in Annex H). Each of these

[22] See discussion in Sec. 4.4 under subpurpose 3.1.

would have a negative impact on agricultural sales. This would also explain the significant decrease in the percentage of respondents earning cash in the previous 12 months (Figure 16). Production shocks would imply that those who would normally hire outside help are less likely to do so—meaning that there are even fewer cash-earning opportunities at a time when they might be needed.

Figure 16: Percentage of men and women who earned cash in the past 12 months
The percentage of men and women earning cash in the last year decreased from **baseline** to **endline**. The percentage decreased most among **men**.



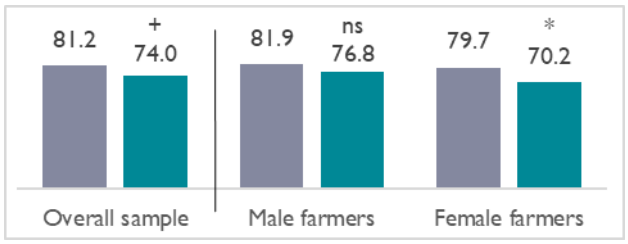
ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

The project reported on a few cases of increased agricultural sales through formal contracting (ADRA, 2019a) and, based on FGDs, it was clear that the large majority of sales were done individually through local informal markets, as the majority of participants are subsistence farmers who are net-buyers and experience both social and technical difficulties participating in group sales. The project enabled wholesalers to interact with FBAs, but the linkage appeared tenuous and the only incentive for farmers to sell to wholesalers was that the wholesaler paid for the transport, representing only a 3-4 percent benefit and likely not worth the additional risk and work involved on the FBA's part. Moreover, at the farm gate/local market level, there was no price differentiation for better quality product to encourage better PHH&S practices.

While most farmers had some livestock, the PBS did not gather data on livestock ownership or sales. Focus groups that discussed livestock, focused on the support provided by the community livestock worker related to animal health and disease prevention and treatment. In the South, where people had more livestock, one of the challenges for project staff was getting people to consider livestock sales as an option in times of stress. Small livestock (sheep and goats) are purchased when cash is available but insufficient to buy cattle; they are seen as a stepping-stone to investment in larger livestock. Hence, there are few sales and these are rarely made to facilitate household consumption.

The FBA component of ASOTRY was implemented later in the project; none of the FBAs the evaluation team met had completed any transactions on their own. A few had done so with the active assistance of the project and at least half acknowledged that they had ceased to operate. The project constructed 15 ACCs, whose purpose was to assist FBAs with crop storage and marketing (ADRA, 2019a). Of the three ACCs visited, each had operated for less than a year. They were well constructed and maintained, though none had a fence, and their committees were struggling with planning their future (ACC FGD).

Figure 17: Percentage of farmers using improved storage practices
There was a slight decline from **baseline** to **endline** in the use of improved storage practices



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

All FGDs indicated that the rehabilitated feeder roads had been essential for improving access to local markets and also for allowing access to larger vehicles for transporting people and goods.

A few times in FGDs it was mentioned that the first step to encourage farmers to start thinking of crop marketing was to store part of one's harvest off-site so as to prevent immediate sales in response to an immediate need. This is a positive change—as in cash-poor households, when there is a need of cash, there is a tendency to sell quickly from what is stored at home—regardless of whether the price in the market is good. Crops stored in an ACC are less "accessible" for such needs but still available if a genuine need arises—they are a less liquid asset. As will be noted later, VSLA participation also helped reduce the need for "distress" sales when prices are poor.

Post-Harvest Handling and Storage: The quantitative data indicate a statistically significant decrease from baseline to endline in the use of improved storage practices (Figure 17). However, the decline was not statistically significant among male farmers—only among females. In essence, the men did not experience the same decrease in the use of improved storage as the women—possibly because they are more likely to be associated with crop marketing through FBAs (ICF International, 2016). It should be noted that the decline was similar for direct and indirect participants (Annex G), suggesting that the decline was unrelated to the project interventions, but possibly related to the shocks and stresses respondents experienced (Table 16, Annex H). When one has little to store, there is less reason to use improved storage practices as the harvest may not be around long enough to make it worth the effort. The quantitative survey questions regarding PHH&S only included "improved" storage practices[23] and gave no options for the use of traditional practices.[24] Not being able to choose options that reflected their actual circumstances, the farmers chose from the options available in the survey with the result being that it very likely overestimated the initial level of use.

FBA members in FGDs acknowledged receiving training on Post Harvest Handling (PHH) and marketing but their responses concerning either subject were general and did not demonstrate a clear vision for future activities.

The project had the right approach of grouping several FBAs together in order to link them to an ACC and for the members to contribute one third of the construction costs. However, the members' cost-

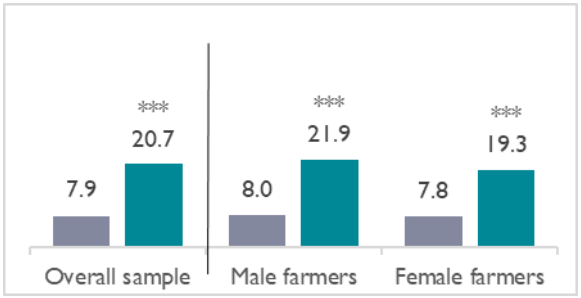
[23] Improved storage practices include improved granaries, underground storage, warehousing, triple bagging, and minitanks.
[24] Traditional practices would include storing grain in the corner of a room in the house, where it can be attacked by insects or rodents or be exposed to moisture and high humidity.

share of 33 percent proved to be too high and counterproductive in the end, as the surviving ACCs saw their membership diminish by more than half and suffer from demotivation and on-going cash-flow problems (ACC FGD). At least two ACCs failed before starting, as the members could not come up with the contribution required by the project[25] even when the cost share was reduced to 10 percent.

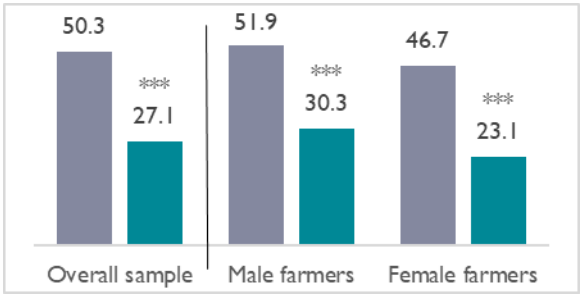
Some ACCs were also provided with crop processing equipment such as rice and peanut shellers. While the ACCs are sustainable in principle, their future seems uncertain: they occasionally faced competition from more efficient sole owners/operators and some had difficulties with maintaining the new equipment, largely because they have very little (if any) cash flow to afford parts needed.

Figure 18: Use of financial services and adoption of value chain activities

More farmers used financial services at **endline** than at **baseline**



Fewer farmers practiced promoted value chain activities at **endline** than at **baseline**



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

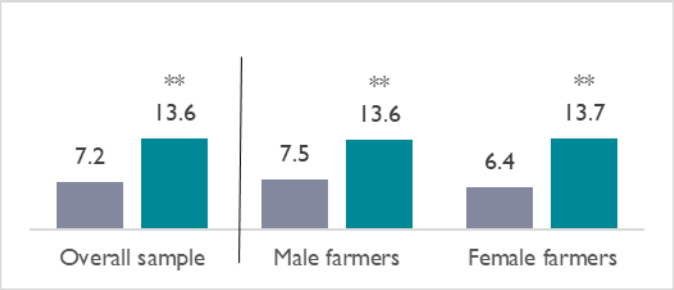
Working on value chain development through the promotion of commercially oriented FBAs did not appear to work well in ASOTRY—perhaps because most farmers did not produce a marketable surplus and were net-buyers of agricultural crops. This interpretation is supported by the quantitative data, which indicate that participation in project-promoted value chain activities dropped from 50.3 percent to 27.1 percent with little difference between the sexes (Figure 18), but with a smaller decline for direct participants (Annex G). Farmers in the Central Highlands were particularly affected, with participation in project-promoted value chain activities dropping from 55.3 percent to 29.7 percent, whereas there was no significant decrease in the South (Annex G). Farmers are generally assumed to be motivated to adopt improved crop production practices and post-harvest handling techniques because they feel the direct benefits of an on-farm income that responds to increased production and to market forces. However, for subsistence farmers, it is often felt that they do not perceive the same benefits when they produce only staple food crops for home consumption (FGD, Staff KII).

To some extent, this is true. On the other hand, in general, there are very few purely subsistence farmers because even those who produce for home consumption, who may also be buyers of food crops when their own production is not sufficient, do engage in some market transactions. In reality, most are semi-subsistence farmers who are, in fact, net-buyers—typically selling some of their production when there is an urgent need for cash (most frequently at harvest when the prices are lowest) and then buying the same staple food crops later with earnings from low-wage off-farm labor—usually buying more than they initially sold, hence the term “net buyer.” So, while there is not as much incentive for

[25] Initially the cost share was 25 percent from ACC members, with the balance provided by the project budget.

semi-subsistence farmers to participate in a commercially-oriented FBA, there is certainly reason for them to participate i) in value chain activities that help them to get a better price for what they do sell and ii) in PHH&S activities that help them to better care for and store what little they do have for home consumption and/or sale. That farmers understand these issues was evident from some FGDs around VSLA participation—VSLA membership enabled them to pay urgent expenses and store their rice to sell later instead of selling "green rice" to be able to pay bills.

Figure 19: Percentage of farmers who used agricultural or livestock services in the past 12 months
More farmers, both male and female, used agriculture or livestock external services at **endline** than at **baseline**



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

That fewer farmers practice the promoted value chain activities does not mean that farmers did not make use of agricultural services—for either crop or livestock production. The percentage of farmers accessing agricultural and livestock services increased (Figure 19) between baseline (7.2 percent) and endline (13.6 percent) for both male and female farmers. However, looking more closely at the data, there is a difference between the two geographic zones—there was a statistically significant increase in the South and no significant change in the Central Highlands (see Annex G). Additionally, there was a statistically significant increase among direct participants but no change among indirect participants (see Annex G). Farmers in the South who have been direct participants in project activities have increased their use of agricultural services in contrast to those who were not. This aligns with the observation from FGDs with farmers in the South, who mentioned the important role played by community livestock workers who also were able to provide farmers with vaccinations for their livestock.

Sub-purpose 2.3. Increased engagement of women and men in diversified, viable microenterprises

The quantitative data indicate an increase in farmers' use of financial services from 7.9 percent to 20.7 percent with little difference between the sexes (Figure 18). This is largely due to the growth of VSLAs providing access to credit—though loan size was generally too small to support the development of longer-term viable microenterprises. The majority of VSLAs were working well, socially and economically, and involved about two-thirds women. The majority of income-generating activity (IGA) diversification was done at the individual level, though there were a few cases of diversification as a group activity, such as pen fattening. The three major issues reported by VSLAs were people being too poor to pay the weekly contribution and repay loans, a lack of trust among some members, and being

too busy or too far to attend weekly meetings. It was also noted that many groups do not conduct the annual share-out at a useful time—October being preferred so as to coincide with the start of agriculture and school activities. In the South, many groups do not function during the lean season. From FGDs with VSLAs, there are a significant number of cases, perhaps 10 percent, where two household members participate in VSLAs, usually in different groups.

From the FGDs it was clear that while the VSLAs established are sustainable, in some areas they would struggle to self-replicate, as the Village Agents[26] were not active. While the project did not intentionally use the VSLAs for integrating C1 and C3 activities, this did happen on an ad-hoc basis because many VSLA members were also community volunteers, some wearing many hats (AC, lead mothers, LF, CLGRC, etc.).

The use of Micro Finance Institutions (MFI) by project participants was low, they were used mostly for safekeeping individual and VSLA savings and, in a few cases, for project activities relating to FBA/ACC (ADRA, 2019a). The local MFIs CECAM and *Ombona Tahiry Ifampisamborana Vola* (cash flow funds) are sometimes present at commune level and have agri-business activities, which some project participants use independently of the project.

FBA farmers and some VSLAs received training on financial and business skills late in the project (ADRA, 2019b). There has been little time and few opportunities for that knowledge to be put into practice and there does not seem to be a mechanism for the provision of ongoing coaching and dissemination.

On the other hand, when the subject of VSLAs was raised in FGDs there were invariably stories of how participation had helped people to overcome difficulties—whether it was helping them obtain money to pay school fees, meet an urgent need for cash so that one did not need to sell “green rice,” or invest in a small IGA. The VSLAs were universally expressed as having positive benefits, even where problems were also identified during the FGD.

4.3.3 Conclusions

The constraints to improved market sales in the project area are many and, while the project tried to address certain constraints, it could not overcome the compounding negative effects of high illiteracy, geographical distance, and poor infrastructure, lack of trust between people, lack of practice in group activities and generally low mobile phone access. The size and scope of these constraints are too large for a single project to address.

For subsistence farming, the more sustainable impacts are seen in the VSLAs and better involvement with local markets.

The value chain/ marketing method (based on FBAs) was not well adapted to the rural realities and started too late to bear fruit.

The project responded to some of the mid-term review recommendations regarding C2, such as providing more field staff, reducing the use of the farmer-to-farmer approach and putting a greater emphasis on FFS, strengthening farmer organizations, and increasing the promotion of post-harvest storage. However, it did not have the time or resources to address most of the other recommendations

[26] Village Agents were local people trained by the project to guide the formation and activities of VSLAs.

such as implementing IPM, promoting high-value horticulture crops, diversifying off-farm livelihoods, or increasing the reach of VSLAs (JMRT, 2017).

The "all-or-nothing" approach to demonstrations and farmers' own trials did not permit a side-by-side comparison of the advantages and disadvantages of alternative agricultural practices, which would allow farmers to make an objective assessment among alternative practices based on their own experience. It also exposed farmers to greater risk by encouraging them to adopt new practices/use new varieties at scale without the opportunity to try them first in a sub-plot within their field. This is in contrast to the FFS approach originally developed by FAO (FAO, 2016, 2017, 2018), which encourages small-scale experimentation (in demo plots and on-farm) using resources farmers can access themselves—an approach based on "try this and see what you think" rather than "here is a better way, do it and you will be better off."

4.3.4 Lessons Learned and Recommendations

Agricultural Production

- With the FFS approach, first encourage best subsistence practices with everyone (staple crops, chickens, home-based PHH&S) before moving to more advanced practices and perhaps only for those who demonstrate potential (close to markets, more literate, longer practice of group work, part of VSLAs, etc.). Use the FFS approach as it was designed rather than making ad-hoc adaptations without evidence of their effectiveness. The FFS approach should be used as intended—with regular (weekly) meetings, each farmer trying their own experiment at small scale within a larger plot of land and without relying on subsidized inputs.
- Subsidization of seed, while it may increase its use in the short run, is expensive to the project and encourages dependence on outside resources in contrast to the small-scale experimentation approach embedded in the FFS methodology.

Marketing, Value Chains and PHH

- For subsistence farmers, commercially oriented value chain activities are high-risk and unfamiliar; they need more time and a step-by-step approach for at least three years with some coaching. They should be considered once farmers are self-sufficient and comfortable working in groups (especially through participation in a VSLA).
- NGO field staff are not generally prepared/experienced in marketing and value chain activities, nor do they have enough time to provide coaching. There is a need for staff trained in this area.
- Value chain activities should be linked to VSLAs. VSLAs result in group cohesion, discipline, access to cash and a degree of credibility vis-à-vis MFIs that are important initial conditions for successful value chain activities. Consider using the Local Value Chain Development (LVCD) model/approach (Norell et al., 2017) to assisting groups of farmers to develop the skills needed to learn about and improve value chains of importance to them. Like the VSLA groups, the LVCD approach has a strong focus on building strong groups and uses a participatory approach to facilitate local learning and skill development.

Linkages with Components 1 and 3

- Particularly in the context of FGDs with VSLA members, people talked about how improved income and/or access to savings helped with better food purchasing decisions, and how crop diversification led to better nutrition at household level. Analysis of the overlap in participation in project activities in the quantitative survey also reinforced the degree to which direct participants

were involved in both components. While people were aware of these linkages, the poverty rates remain high and so their ability to capitalize on them remains limited.
- VSLA participation and the ability to store crops off-farm helped to increase resilience to shocks of the sort that Component 3 was designed to address.

4.4 Purpose 3: Improved disaster mitigation, preparedness, and response in vulnerable communities.

4.4.1 Results

Sub-purpose 3.1. Community disaster mitigation assets improved

Using a Food for Assets (FFA) approach and participatory community planning, the project built or rehabilitated community assets such as feeder roads, dams, irrigation channels, and livestock watering places. These assets have the dual function of being productive collective assets in normal times but also necessary for mounting an effective disaster response if well-constructed. Additionally, they also help to reduce the negative impacts of a disaster by, for example, facilitating emergency vehicle access or improving water management, especially drainage.

The productive assets visited were relevant to needs, of reasonable quality, in use, appreciated by their communities, and nominally managed by Infrastructure Management Associations (IMA)[27], which were formed and trained before the start of the activity to assist with ownership and sustainability. Environmental considerations seem to have been respected in that the assets blended well in their context with no evidence of negative impacts, and the project had ensured that an environmental assessment process was incorporated at the design stage. On the other hand, the design of infrastructure assets was performed by project staff without coordination with the relevant state authorities and they were officially handed over before project's end (ADRA, 2019b).

While the membership of the IMAs is generally gender-balanced, based on FGDs it appeared to the evaluation team that men were more involved in the actual decision making. Recurrent comments made by IMA members and non-members concerned the selection and skill set of the Infrastructure Management Association (IMA) officers—that the officers had been appointed by the fokontany leadership but were not actively engaged in running the IMA. The IMAs appreciated receiving appropriate training for the management and maintenance of the assets but, in many cases, reported having difficulties in mobilizing labor for maintenance work, usually scheduled twice a year: before and after the rainy season as part of disaster preparation and response planning.

The main issues for the maintenance of rural feeder roads concerned the high labor requirement for maintaining steeper gradients due to increased water erosion damage and the damage to hardware due to flooding. About half of the IMAs also had a system of collecting community contributions (cash or in-kind) to be used to purchase materials such as cement or hire skilled labor, but in many cases they faced increasing difficulty in getting the contributions due to lack of a perceived benefit from the users or a lack of sanctions for non-payers. The general management and financial contribution system seemed to

[27] ASOTRY promoted two types of IMAs: *Association des utilisateurs d'eau* (AUE) or Water Users Association; and *Association des utilisateurs des pistes* (AUP) or Road Users Association.

work well for small groups of users whose projects had clear benefits, such as small irrigation schemes or water points; it did not seem to work well if there were many users and the user base kept changing, such as in larger irrigation schemes.

In summary, the community assets that were built or improved using FFA, as well as the food assistance itself, were appropriate and appreciated by the community. Additionally, the groundwork for long-term sustainability was laid by ensuring that IMAs were set up and trained—both in how to maintain the assets and how to function as an IMA. However, to be effective over the long term the IMAs would also need to acquire experience over a period of years, with coaching along the way. It is too early to say with any degree of certainty if this goal has been achieved now that management is in their hands alone.

Community NRM was limited to reforestation efforts through FFA, and primarily with acacia. These efforts were observed to be small-scale and patchy, and to have achieved limited success in the Central Highlands zone: most of the trees planted in public spaces did not survive and the project shifted to planting on private land in the final two years, according to KIs. The low impact and effectiveness of NRM activities is corroborated by the quantitative data showing only a small increase in NRM practices from 2.6 to 4.9 percent among direct participants (Annex G) and no change for the project area as a whole.

Of the many seedling nurseries established, only a few appear sustainable and many of those are also producing fruit and cash-crop trees (nursery producer FGD). The communities with better NRM capacities seem to have stronger leadership and governance, independently of project activities. However, tree planting is hard work and has limited success unless local governance issues are addressed concurrently or prior to efforts to rehabilitate degraded forests/grasslands. Planting is not being done at sufficient scale to have an impact on the current level of degradation of the uplands of watersheds.

It should be noted, however, that there are other viable options for improved NRM at the fokontany level. Changes in governance arrangements at the fokontany level are possible, but they take an investment of time and staff facilitation efforts. There are provisions in the legal system for local management of natural resources, and some examples of success (staff KII). Additionally, FMNR is a lower-cost approach (in terms of both dollar value and labor effort) to landscape restoration than planting trees (Brown et al., 2011; Harvey et al., 2014; TANGO International, 2012), which has shown promise, especially in drier areas,[28] and was promoted by Fararano (JMRT, 2017).

Sub-purpose 3.2. Community early warning systems improved

Each fokontany has a Disaster Risk Management Committee (DRMC); those members interviewed indicated that they appreciated the training received and knew their roles. The 10-12 DRMC members are assigned specific responsibilities for each of the fokontany quartiers. All committees had received a kit (flags, radio, megaphone, jerry cans, etc.) and most had performed two or three simulations. The feedback from FGD participants was that the DRMCs generally performed well for cyclone early warning.

When a cyclone is announced, the committee warns people, going house to house if necessary, and encourages them to prepare themselves (e.g., by fortifying houses and roofs and stocking up on water,

[28] However, FMNR also works very well in more humid areas.

food and medicine) and to ensure that safe places are known and ready. Thus far, during storm events, families in dangerous situations have been relocated with relatives and public safe spaces have not been used (DRMC and mixed FGD).

Each commune has two Early Warning System (EWS) agents who are also part of the CLGRC and have responsibilities to measure and report on rainfall and market prices. This information is intended to be relayed monthly to the district level and further up the chain to the region and national levels as part of the national EWS system established by the government. However, from the discussion with EWS volunteers and project staff, this system did not function and was not expected to continue. Even if the system had worked, there are doubts about the sustainability of relying on community volunteers to spend time and energy collecting rainfall and market prices if there is no benefit to them and their communities since there is no functioning feedback mechanism.

Sub-purpose 3.3: Community response capacities improved

In all FGDs, the majority of respondents were aware of their local DRM committees and their role in disaster preparation, early warning and response, primarily focused on cyclones. The DRM committees visited all had a Disaster Preparedness and Management Plan, and followed a yearly calendar of activities such as preparing populations and assets before the rainy season (e.g., through road maintenance, ditch and canal clearing, and removal of trees that may present a hazard).

When it comes to cyclone warning and preparation, the committees and the general population indicated that they felt better prepared than before the ASOTRY activity as there was now a formal system, widely recognized in the fokontany. The only recurrent comment from the committee members was that they were unable to communicate amongst themselves once a cyclone hit and asked that they be also given telephones and boots.

The president of each fokontany DRMC is a member of the commune DRR committee, which meets only when required. There has thus been a good level of response at commune and sometimes even at district level when a disaster is reported, such as for house fires.

While the disaster warning, preparation, and response system is appreciated and works well for cyclones and fire prevention at the local level (village/fokontany/commune), there has been no change for other types of disasters and at a scale beyond the commune.

It was noticed that the Disaster Preparedness and Management Plan had some unhelpful features to be considered a useful and sustainable community management tool, as it was a multi-page photocopied document, full of text, no graphics and with ASOTRY/USAID branding.[29]

4.4.2 Conclusions

Community resilience to disasters has improved the most and at scale for immediate preparedness and response through the fokontany DRMCs. There have been specific short-term, localized improvements

[29] Respondents in some FGDs and KIIs indicated that they did not know how they would continue work with the project-created forms since they had no way to get more once the project ended. In most cases, these could be set up in a notebook designated for this purpose, but respondents felt that they needed to use the branded document since that was what they were taught to use.

due to infrastructure rehabilitation. On the other hand, the NRM activities have been too small-scale and limited to reforestation to be considered effective mitigation measures.

Generally, the project did not address the mid-term recommendations regarding C3 such as changing the NRM strategy to include more local ownership and governance, discontinuing the EWS system, and including DRM/NRM concepts and activities along with farming and VSLA activities (JMRT, 2017).

While there have been some limited efforts at landscape restoration through tree planting on some public and private lands, community-based NRM approaches to help individual fokontany address local NRM governance issues were not employed. Unless these are addressed, success is unlikely. Similarly, tree planting is hard work and risky—especially when there is a less costly and more effective alternative. As mentioned above, FMNR is a means to naturally regenerate trees in forest or grassland landscapes and the uplands of watersheds (Brown et al., 2011; Harvey et al., 2014; TANGO International, 2012). It is an inexpensive and more effective means to landscape restoration than tree planting. Landscape restoration through improved governance and the use of FMNR is critical for i) groundwater recharge, ii) disaster risk mitigation (especially flooding) and iii) improving the availability and sustainability of pasture and wood/non-wood forest products.

In all cases, FFA projects seem to have worked well and were appreciated by FGD participants.

4.4.3 Lessons Learned

The communities with better DRM and NRM were observed to also have better leadership and governance, independently of the project. Examples include having known rules about setting fires and enforcing sanctions. Future projects should include a more explicit governance component, going beyond forming committees to act on pre-selected activities.

The activities that are sustainable and have had an impact are the ones where there is a direct benefit and a community expectation, such as regular asset preparation/repair and population warning and encouragement ahead of a cyclone.

While there was no mention of the GoGreen[30] activities by FGD participants, GoGreen was mentioned by project staff and seems a good approach to be used more widely, as also reported in the SALOHI project evaluation (Andianaonitsoa et al., 2014), but with more community ownership.

4.4.4 Recommendations

Use a more holistic community resilience approach to DRR/NRM rather than just a technical approach that revolves around committees (i.e., the CLGRC and the CCGRC). This would include more community-wide participation (members of VSLAs, Women's groups, Producer Groups, traditional and religious leaders, etc.), specific leadership and governance training, and support to encourage participatory collective agreement for goal setting and self-assessment, such as used in the GoGreen activity.

[30] GoGreen is an activity to motivate the population of each fokontany to actively engage in environmental issues for each project purpose. Each fokontany selects a few key environmental activities dealing with village improvements, personal hygiene/sanitation, adoption of farming techniques and infrastructure/natural resource protection, and holds annual group-based self-evaluation exercises, which are then ranked in a project-wide competition.

- As a project, there should be better cross-component integration of activities and desired impact. For example, the promotion of fruit trees, fodder crops, grazing, and burning management, and FMNR would lead to synergies for better food and environmental security.
- For better sustainability and continued use, community management tools such as Disaster Preparedness and Management Plans should be kept simple, with graphics, not project branded and not dependent on printing/photocopying.
- Small-scale, local-level DRM activities are well received, have a positive and longer-lasting impact and thus should continue to be part of a community resilience approach. However, project-supported national-level EWS activities should be discontinued until there is an effective national-regional system in place.
- NRM activities should not be a sub-component of DRM but rather offered as an integrated approach with farming/livelihoods. For example, reforestation efforts should use a watershed approach with a focus on stabilizing/restoring degraded uplands, using FMNR rather than tree planting and agroforestry on private lands. There should be facilitation of a community-level dialogue to address NRM issues—e.g. how a fokontany might develop/revise local governance arrangements regarding grazing, firewood collection, burning and so on, in order to facilitate the natural regeneration of trees, the soil and water protection role of landscapes, and the restoration of degraded forests.

4.5 Unintended Outcomes

In an integrated program of this nature, with various layered activities, one expects there to be various cross-sector outcomes. In many cases, these are intentional. This section discusses outcomes—positive and negative—that were not part of the project design.

Reduced seasonal migration: Seasonal migration is a fact of life for many households in the project area. In areas where men usually migrate seasonally, some indicated that they did not migrate when there was FFA work available. This was beneficial to households, helping to reduce seasonal labor deficits and reducing the number of households led by only one parent.

Dependence and lack of ownership: Many respondents in FGDs and KIIs spoke highly of the ASOTRY activity and how much they appreciated the food assistance and the support from the program and its staff. This was very good to hear, but it was expressed in such a way as to give the impression that they were continuing to look to ASOTRY for continued support. Many of the assets provided through ASOTRY are very clearly identified as such, e.g., through project and USAID branding.[31] Who will be perceived as the owner, given the way in which the assets are identified? Will the cost-sharing arrangements be sufficient to create a sense of local ownership? Could a different approach have changed this? Has a strong sense of dependence on the ASOTRY program and agents been an unintended consequence of material assistance and the competence and deep involvement of ASOTRY agents?

Due to the late start of a number of project-related activities (after the mid-term review), combined with those that are unfinished/failed (FBAs, ACC, Seed), many groups appear to be waiting for the next project. Some even indicated that they had already registered themselves at commune level for that purpose. Would project participants have felt a greater sense of ownership and more independence had

[31] FGD and KII respondents frequently talked about the assets and various groups as belonging to the project or the donor. See related discussions in Lessons Learned and Recommendations sections.

there been sufficient time (another two years) to gain experience with these new arrangements before the end of the project? The late implementation of the exit strategy also seems to have had an impact on this dependence on ASOTRY and donors.

Birth registration improved: The project's promotion of ANC also increased the proportion of childbirths that took place in the hospital. Since a hospital birth meant that newborns were registered immediately at the town hall in the commune, this saved families a special trip that would have been required if the child was born at home. People were pleased with this improvement in birth registration.

Added value of clear and culturally appropriate communication through *Tsikonina*: The explicit acceptance of and adherence to practices introduced through *Tsikonina* was unexpected. The name *Tsikonina* reminded mothers of a famous ancestral children's game which consists of similar activities to those that are part of the program, which might help to explain their acceptance of and enthusiasm for the approach.

In contrast to this, it was observed that at least one out of three interviewed community members who were not direct participants in the project (namely elderly or young people and some mothers), developed the mistaken understanding that a diet of diversified rainbow foods was only intended for underweight or sick children and not for the whole family. It appears that this misinformation spread due to the way some lessons discussed during *Tsikonina* were conveyed to others.

Increased social capital: Participants' engagement in many ASOTRY activities including *Tsikonina*, VSLAs and community works like road rehabilitation, appears to have strengthened community social cohesion. In addition, although it was not voiced as such, there is an indication that there is now more community harmony because thanks to VSLAs, there is less need to borrow or negotiate through other means to feed the family.

Changed livelihood strategy: The project introduced some participants to new activities such as planting and marketing vegetables. Based on their experience with activities introduced by the project, some beneficiaries de-prioritized their former principal livelihood activities (e.g., informal profession) and put more emphasis on another IGA (e.g., vegetable seller).

Benefits of FFA on MCHN: While one fully expected there to be interactions between sectors—especially between those under Purposes 1 and 2—there were others that were not expected. One example was the impact of road rehabilitation on the use of health and nutrition services—better road access facilitated travel related to these services.

4.6 Factors Contributing to Outcomes

4.6.1 Factors contributing to positive outcomes

Perception of need: In many cases, activities responded to a perceived need, which increased their likelihood of success. This was certainly the case with awareness related to nutrition that came through the *Tsikonina* approach, but also the motivation to establish a kitchen garden or to participate in a VSLA. People perceived a need for improved child nutrition and for improved financial resources and these activities met those needs in a culturally appropriate manner.

In other cases, external circumstances created a need and encouraged positive change leading to desired outcomes: a measles outbreak, friendly healthcare, sound collaboration between CHVs and healthcare providers, facilitation of childbirth registration, road rehabilitation, and the community convention of "*dina*," which reinforces security, all contributed to improved nutrition and health outcomes.

> ***I always thought before that Hospitals are only for sick persons. But encouraged by a CHV to get my ANC at the Hospital when I was pregnant, I went there without conviction. I was astonishingly satisfied of the way I was received there and their care. I even got iron pills, immunization injections against tetanus and many instructions for my delivery. Then, I continued with FP and child care. Now, I don't attend any traditional healer anymore...***
>
> **Illiterate young mother, commune Soaseràna**

Perception of benefits: Some people (in the Central Highlands in particular) diversified their diets.[32] Some explained this by saying that it was in part because a more diverse diet means eating less rice, which reduces that expense. A side effect of this is improved diet quality, as more nutrient-rich foods become part of the diet.[33]

Creation of new habits: In some cases, people initially participated in an activity because there was an incentive for participation but, with repetition, it developed into a new habit. The consistent use of new practices/behaviors results in the creation of new habits and leads to sustainable behavior change. For example, the FFA distribution in support of road rehabilitation included vegetable oil. This regular supply of oil helped to form the habit of using oil as an ingredient in the diet. Some indicated their intent to continue to use oil after ASOTRY, even though they would need to buy it themselves.

Similarly, some mothers who went to the hospital for ANC indicated that they are more likely to go there for other things. Hospital-based ANC has encouraged women to visit their nearest hospital where, in addition to being more closely monitored by a CHV, they can also be supported in delivery, family planning services, child immunization, and other diverse healthcare-related matters.

Presence of change agents: In many (most) communities, some men or women are either well-trained natural leaders or were simply involved in several ASOTRY activities, and are deeply convinced in what they promote and are a good example in the community. These women and men are powerful community-based change agents. They help, for example, to mobilize households and the community at large to build latrines or assist mothers with food diversification.

Strengthened social capital: One of the important factors leading to positive outcomes has been the way in which certain activities strengthened social capital. In particular, the work of the Care Groups, together with the lead mothers and lead fathers, has strengthened community cohesiveness and the sense of responsibility for the nutritional well-being of their children. Similarly, successful VSLAs create a sense of empowerment both at the individual household level and amongst the members of the community who are involved in them.

Character and approach of staff: The quality and approach of technical agents (specialists and other project staff) were noted by respondents on a number of occasions. Participants sensed this and were more willing to get involved as a result. This was supported by good oversight by project staff through

[32] See discussion in Section 4.2.2 under Sub-purpose 1.1 ("Dietary Diversity" paragraph).
[33] This occurs because most households are net buyers of rice, whereas they can grow a certain number of vegetables in the kitchen garden. A more diverse diet that includes vegetables and "requires" less rice, which is purchased, can be cost-saving.

joint supervision of the ADRA/ASOTRY activity team as well as the agility and ability of ASOTRY employees to respond promptly when there were problems.

Culturally appropriate approaches: The *Tsikonina* approach used in the Care Groups served to leverage a food incentive in a culturally appropriate way, facilitating the development of new dietary habits. The Care Group model itself effectively improved adoption of maternal and child health behaviors and practices, especially with the inclusion of lead fathers alongside lead mothers. They were able to communicate with people effectively in ways that ensure that messages were widely conveyed and easily accepted. This also helped to increase the use of health and nutrition services.

Integration and layering: The fact that the project actively encouraged the participation of families in multiple activities also meant that some project participants had multiple responsibilities. Some were involved in multiple group activities (e.g., VSLAs and FFS). This improved efficiency since the same persons were exposed to different messages and were more likely to promote the connections between the different activities.

4.6.2 Constraining Factors

Collaboration with local authorities: Early on in the project, a decision was made not to engage with the public health authorities regarding the Care Group model. This was a lost opportunity for collaboration with health authorities at district and commune levels and negatively impacted the exit strategy for this component as the Care Groups did not have a "home" in the existing public health institutions. Without this linkage in place, referral of severe malnutrition cases to treatment centers is difficult and contributes to difficulties accessing adequate care for those in need. Similarly, missed collaboration with local public authorities with respect to water and sanitation has likely impeded sustainability regarding the maintenance of rehabilitated safe water points.

Timing of initiation/implementation: A number of activities had insufficient human resources in the first half of the project to attain their targets (e.g., agriculture and the FFSs) and others were only added after the mid-term review (e.g., some WASH activities). As a result of late/delayed implementation, the exit strategy became more challenging. With no clear identification of motivated service providers or potential leaders to help sustain ASOTRY outcomes (e.g., sanitation infrastructure, *Tsikonina* organization, newly learnt agricultural techniques), their continuation is less likely.

The late implementation of WASH activities means that the community institutions established for their operation and maintenance have not had much time to progressively gain the experience and independence that is essential for sustainability. Similarly, the distribution of goods close to the end of the project in order to meet specific targets, or intensive support from field agents at a late stage in support of exit strategy implementation, can itself contribute to dependence and reduce the likelihood of sustainable outcomes.

Resourcing or design of program: The mid-term review identified a serious shortfall in field staffing. As a result, the number of field agents (e.g., for agriculture) was increased significantly during the second half of the program. However, this delay also meant that it was impossible to have the long-term engagement with, for example, FFS participants or Water Users Association members that is needed to make success more likely. It can lead to discouragement, a sense of abandonment, or a feeling of "I can't do this on my own."

The sanitation component of the WASH program seemed to emphasize an approach to latrines that would be unattainable by many. More careful attention to the appropriateness of the technology being promoted may have improved outcomes in the area of sanitation.

The project adopted a modified FFS approach, one which promoted large-scale adoption of agricultural techniques rather than experimentation at small scale. This exposed farmers to considerable risk of failure from trying activities with which they had no first-hand experience—reducing the likelihood of adoption of those improved practices beyond the life of the project.

Design failures that lead to participants feeling that their efforts have been wasted (e.g., late delivery of seed and seedlings, failed harvest with provided seed, failed reforestation efforts) have a negative impact on outcomes and the potential for sustainability.

It would have been helpful to ensure that youth were explicitly included in project activities. While different activities specific to youth were not necessarily needed, what was needed was the intentional incorporation of youth into ongoing programming. Because youth were overlooked, to some extent they remained an untouched population despite their potential to sustain newly acquired habits from generation to generation.

Clarity of communication: It is important to use all the levers possible for social and behavior change, including ensuring clarity in communication so that messages are understood as intended. Where this does not occur, it can have a negative impact on outcomes.

Lack of generalization of teaching regarding nutrition and health has impacted outcomes in some cases. For example, more than two out of three CHVs, lead mothers and lead fathers have inadequate knowledge of dietary requirements for children and adults, wrongly believing that nutrient-rich "rainbow foods" are only intended for underweight children. Careful communication and checking of messages could have avoided this wrong impression.

Improved communication and integration across program components might have encouraged those whose knowledge of healthy foods had improved due to involvement in a Care Group to use the money earned by participation in a VSLA or through the sale of surplus field crops to invest in a kitchen garden. Messages related to the importance of maintaining infrastructure (water, sanitation, and road) by the community could help make the connection between infrastructure and health.

Though youth were not targeted specifically by the project, much of the messaging was relevant to them. Communication resources and approaches developed for various aspects of ASOTRY could have been tested to make sure that they were relevant to youth—to be sure that they were not inadvertently excluded.

Impact of branding: Assets constructed with project resources were branded with a very visible sign of some sort. In a similar fashion, forms provided to groups for their use were also visibly branded. In each case, the branding only mentioned the project name and that it was FFP/USAID funded. It made no mention of the local users—the community, the management committee, etc. Comments from some FGD participants and KIIs gave the impression that, while people found the various components/assets relevant, they also considered them to be ASOTRY's or USAID's assets, not theirs. This USAID branding may have inadvertently reinforced these perceptions.

Relevance to needs: Another factor that can negatively impact outcomes is when activities are not relevant to beneficiaries' needs. For example, semi-subsistence farmers who are net buyers and have no marketable surplus are unlikely to participate in or benefit from agricultural marketing activities—reducing their likely impact. Greater results might have been achieved through an emphasis on proper storage and handling of crops at the household level and helping farmers to find ways to time when sales are made so as to obtain better market prices. A number of FGD participants mentioned that VSLA participation helped them avoid having to sell when the price was at its lowest.

4.7 Contribution of Activities to Mitigation, Adaptation to, and Recovery from Food Security Shocks and Stresses

While people have experienced a variety of shocks during the life of the project, as outlined in a recent report from the Famine Early Warning System (FEWS NET, 2019), and as reported by respondents to the PBS (Table 16, Annex H), there have been statistically significant increases in household expenditures and reductions in the prevalence and depth of poverty for households with both male and female adults (Figure 20 and Figure 21). This is particularly true in the Central Highlands. There was no significant change in per capita expenditures or poverty in the South. These changes are concurrent with the pattern of positive change in anthropometry indicators, which show a statistically significant positive change for all, especially those in the Central Highlands (Figure 3). This implies a certain degree of recovery from prior shocks and stresses as well as those experienced during the first four years of the project—and there have been several according to KIIs and FGDs. These results raise the question why there was not a significant improvement in most food security indicators over the life of the project. In part, this is because the indicators measure immediate circumstances: people are under stress due to shocks experienced in the past 12 months (Annex G)—especially those in the Central Highlands, who have adopted more coping strategies (Figure 7).

In terms of specific activities, there is no doubt that food and cash transfers played an important role. Of the 36 percent of respondents who indicated that they had participated in ASOTRY activities, 82 percent indicated that they had received some form of food rations or cash transfer—either as CSB or FFA, in-kind or as cash. Additionally, as KIIs and FGDs indicated, this assistance also helped to engage and maintain people's interest in other activities that had the potential to facilitate lasting change.

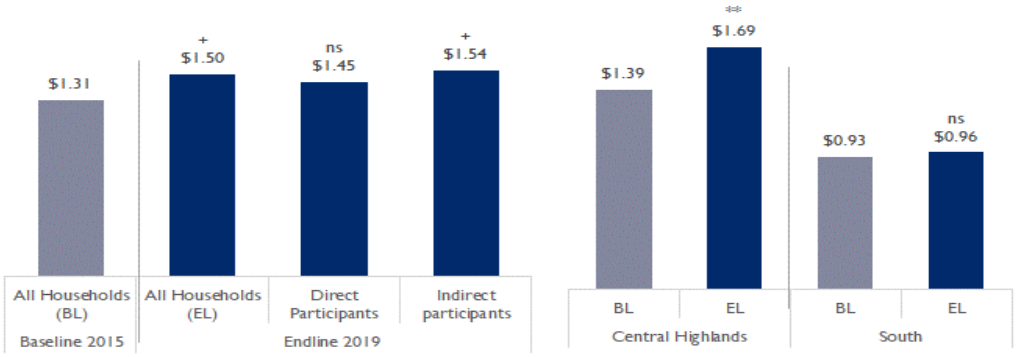
Participants in FGDs related to health and nutrition clearly indicated that they had learned a lot about dietary diversity and its importance to lasting improvements. Similarly, FGDs related to VSLA activities discussed how their participation had helped them get over shocks and avoid adopting overly-negative coping strategies. Care Groups and especially VSLAs were both very positive in their contribution to mitigation, adaptation, and recovery.

The same could be said for infrastructure activities—water for agriculture and improvements to roads and bridges. Both will help to mitigate and adapt to shocks and stresses in the future—assuming that they are maintained, which means that the IMAs (AUEs and AUPs) are essential for their continued contribution. The skills transferred to these user groups, as well as those acquired by the CLGRCs, have the potential to contribute to ongoing mitigation, adaptation, and recovery, but it is up to the residents themselves to follow up and act on that knowledge.

In summary, the combination of activities in ASOTRY does not appear to be associated with major improvements in households' overall economic well-being in the areas where the project was active. On the other hand, there has been a significant and positive improvement in child and maternal nutrition. Perhaps the better way to understand the findings summarized in this section, is to conclude that project activities have helped to protect direct and indirect participants from experiencing major negative impacts from recent shocks—an important part of resilience. In spite of numerous shocks and stresses during the project and, more specifically, in the period immediately prior to the evaluation, there was no significant decline in overall economic well-being in the areas where the project was active and there were some overall gains in nutrition outcomes.

Figure 20: Per capita expenditures (as a proxy for income) of USG targeted beneficiaries for households with male and female adults

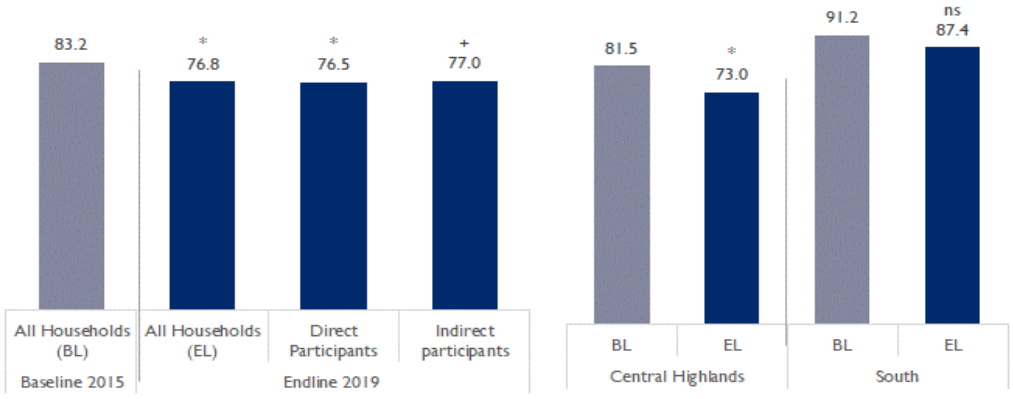
Per capita daily expenditures have increased from **baseline** to **endline**.



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Expressed in constant 2010 USD
Source: Quantitative survey

Figure 21: Prevalence of poverty: percent of people living on less than $1.90/day for households with male and female adults

Fewer people are below the poverty line of $1.90/day from **baseline** to **endline**



ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001
Source: Quantitative survey

4.8 Beneficiary Satisfaction

In general, FGD participants expressed appreciation for new knowledge that promised improved health and nutrition outcomes, better livelihoods and improved community cohesion (social capital). That being said, they also appreciated the project's food assistance in its various forms (CSB, FFA) as well as support for infrastructure rehabilitation (roads, bridges and irrigation) and subsidized inputs (e.g., seed). Specific areas of success and challenges revolved around several themes:

Coherence and complementarity: Most people expressed the general view that ASOTRY responded to many of their needs. In addition, some expressed their appreciation for the complementarity and coherence between the three components of the project.

Conduct: On a number of occasions, respondents indicated that they appreciated ADRA staff in comparison to other NGO workers. When asked to explain, they frequently indicated that their comportment or behavior was different from that of the staff of other projects that they had encountered.

Capability and competence: In a few cases, interviewees expressed some concern about the process by which committee members were selected or their suitability to the roles for which they were chosen. Some KIs felt that the ASOTRY field agent made the selection of committee members when this was supposed to done by the community. Similarly, in a few cases someone expressed dissatisfaction with the skill set of the person chosen—that they were incompetent for the role (such as a secretary that was not literate or a president who was not comfortable speaking in public). On the whole, ASOTRY had a consultative process in place for the selection of volunteers to participate in the various groups and associations/committees and many of the people in those roles who spoke with the evaluation team seemed competent and capable in their assigned roles.

Consultation and communication: Often it appeared to be the case that, where people in the community were not satisfied, it was because they did not understand the project. It appeared that at registration, some misunderstood the intent of the project and either the criteria for or the benefits of registration. Similarly, there may have been a need to clarify the purpose of some interventions or some of the things that the project provided to either the general population of the community or to the IPs (e.g., to clarify to the CHV and Care Group the reasons that buckets and watering cans were given to the CLGRC).

There was a certain level of dissatisfaction on the part of some health authorities because they were unaware of ASOTRY—the content the project was promoting and the role of its agents. This could have been resolved by a consultative process and clearer communication. Instead, some learned about it during the wrap-up and hand-over phase as part of the exit strategy.

Conditionality and follow-through: Conditionalities were connected to some activities initiated by the project. In the case of the construction of an ACC and an associated rice mill, the FBA involved needed to solicit a contribution from members sufficient to cover 25 percent of the cost of construction. Some succeeded at this, but many did not. Eventually, the project reduced the required contribution to as low as 10 percent, but the process itself was less than ideal.

Similarly, some indicated a problem with late deliveries of seed and seedlings. This lack of follow-through on a promise was a source of disappointment for those who experienced it. Similarly, some farmers in the South were disappointed that "improved" crops did not do well in the growing conditions (poor rainfall), or in reforestation efforts that resulted in no living trees.

In summary, people felt that the project activities responded to their needs for the most part. While there were some areas of dissatisfaction, on the whole the people who participated in FGDs and KIIs would welcome continuation of this or a similar project by ADRA. There was a sense that people would like ADRA to return and continue, as they needed more help or felt that there was unfinished business. Some of this may be due to the late start of some activities—but there is also the reality that people live in difficult circumstances and, to some extent, no matter how well the project performed there would be more to do. On the other hand, there are strategies and approaches to programming/implementation that can mitigate against this sense of helplessness –of needing more handholding, of not being able to do for oneself. This will be discussed in the Lessons Learned and Recommendations sections.

> ***I can say that the project saved a lot of households.***
>
> **Mayor of commune**

4.9 Coordination

This section discusses coordination with external actors, such as other food security and humanitarian programming and the host country government, as well as internal coordination.

Internal: KIIs with various project staff indicated that ADRA led the partnership between ADRA, Land O'Lakes and AIM efficiently so that the ASOTRY activity was seen as a whole and the same wherever it was implemented. There were regular meetings and a steady flow of information from top to bottom and vice versa. There also appeared to be effective internal coordination, for example between technical staff and ASOTRY community-based IPs such that acceptable information was generally available when needed and there was the same understanding of ASOTRY everywhere at different levels. In addition, it appears that the technical staff welcomed initiatives from the communities participating in the project.

External: External collaboration presented more challenges, particularly since there were a number of different external entities with which there was potential for collaboration. Several aspects are discussed below:

Local and regional government: At the most local level, there seems to have been an excellent degree of collaboration. The project consulted with local authorities at the commune level prior to start-up and, depending on the reception, decided whether or not to work in the fokontany in that commune. Meetings with KIs at the fokontany and commune level indicated general satisfaction with the work of ASOTRY and its staff.

This collaboration is in contrast to the frustration expressed by some health authorities at mid- and local levels who did not feel at all connected to the project or informed by the project regarding its activities. Some raised questions such as "Who are these lead mothers and lead fathers? Some of their CHVs were not appointed by us? Why did they organize a health event without informing us?"

With respect to C1, some felt that ASOTRY's work clustered with community members and without any obvious collaboration with other projects or ministries, except perhaps the Ministry of Health and only with other ministries in the area of donation of items.

On the other hand, with respect to C2 and C3 there seems to have been a reasonable level of coordination with various ministries such as Agriculture, Industry, and Infrastructure, but primarily in the form of seeking approval or information sharing. Examples included: i) seeking help from ministry staff to provide early, basic training to some beneficiary groups and project staff; ii) registering groups with the local administration; iii) arranging for hand-over in the final year; iv) inviting the ministry to an annual general information-sharing meeting; v) once, ADRA requested technical advice about dealing with a specific crop pest. Collaboration did not appear to take the form of joint planning, consultation regarding technical specifications for infrastructure investments, or joint monitoring of activities and results.

Religious leaders: There seems to have been a concerted effort to keep local religious leaders informed of project activities—typically by inviting them to meetings and events. However, this did not seem to extend to a robust collaboration where there was a bi-directional learning and a working relationship.

Other organizations: KIIs seemed to indicate that attempts were made by ASOTRY to ensure that its groups were connected to new projects as they commenced.

Inform, consult, or involve: Coordination between actors can take on several different forms. First, at its simplest and most limited, coordination is unidirectional—keeping the other party informed of what one is doing. Secondly, a greater degree of coordination would involve a bidirectional relationship where there is some degree of consultation: seeking the other's opinion and using it to inform one's activities as well as keeping the other informed. The highest level of coordination goes beyond bidirectional information sharing to a relationship that has some form of mutual involvement or collaboration. In ASOTRY, coordination seemed to consist primarily of the first type of relationship: unidirectional information sharing. There was little indication of the second or the third.

Internal coordination appears to have been excellent. Externally, staff appear to have kept the relevant authorities informed (with the exception of health) and have consulted in some cases, but neglected to seek opportunities to involve those external entities and engage in such a way as to encourage/ strengthen them in their roles.

4.10 Gender Considerations

Integrating gender into the program did not involve a specific set of gender-related activities. At the start, it consisted of one person, the Gender and Social Organization Coordinator, who was responsible to see that both genders participated equally in the project. While no specified financial resources were allocated to gender, the coordinator worked with those in charge of the other components to develop resources that integrated gender considerations. At the start of the project women's participation was very low, but it increased over time as the participation rate for women increased relative to that of men.

One important aspect of the gender work was its focus on couples and communication. In addition, later in the project a gender focal point was identified in each commune—a volunteer responsible for communicating with the fokontany around gender issues. Some participants indicated that, at the start of the project, they never talked about anything but this had changed significantly by the end.

Some specific observations from FGDs and KIIs follow:

> ***My husband laughed at ADRA's teaching on gender at first. He thought that men are only good at collecting firewood but have nothing else to do around the house. He changed his attitude when I was sick recently. I had a problem with my eyes which kept me confined to my bed because I was dizzy and had headaches. Since then he has begun to do some housework to support me at home. ADRA's sensitization campaign has had an impact.***
>
> **Lead Mother, 33 years**

Gender balance: For the most part, most committees were gender balanced but apart from this, gender equity is still a work in progress.

Gender and VSLAs: Since it is quite common for VSLAs to consist of mostly women, the fairly high male participation rate in VSLAs (30 percent) was a pleasant surprise. FGDs gave the impression that VSLAs have had significant impact on gender considerations.

Gender and decisions: There was a general sense in FGDs that the gender emphasis had helped improve relations between men and women in that more couples were making joint decisions. While there were some anomalies, there seemed to be less sole decision-making about the use of self-earned cash by both men and women (Annex F) and a greater emphasis on joint decision-making around maternal health and nutrition (Figure 22 and Annex F). It is unclear exactly what is going on with decision-making related to decisions about child health and nutrition as it appears there is an increase in the number of men making decisions about child health and nutrition alone, while there is a decrease in the number of women making decisions alone (Annex F). Moreover, we cannot interpret the responses by men and women in isolation. Women respondents perceive that there has been an increase in joint decision-making on child health and nutrition decisions (from 44.2 to 59.3, a statistically significant change).[34]

Gender and Care Groups: The decision to have both lead mothers and lead fathers was a good idea and seemed to be beneficial in sensitizing the community to gender issues. Based on FGDs, fewer men and women in a union make their decisions alone in matters related to MCHN; more now make them jointly with their partner.

Gender and project staff and volunteers: The evaluation team got the impression that messages on gender were communicated well by ASOTRY staff and trainers. The creation of Gender Focal Points in each commune was a useful innovation. While there still appears to be some misunderstanding and confusion on the notion of gender by men and women in the project areas, there seems to be a general consensus that ASOTRY has had a positive impact on gender relations—with there being better

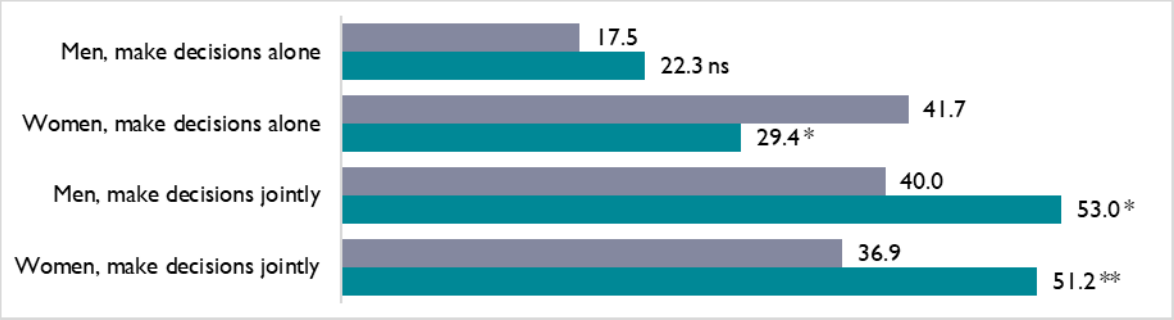
> ***Thanks to ADRA, we've adopted a strategy in our home that involves dialogue such that we've even managed to succeed in building a house.***
>
> **Project participant, as related to a KI**

[34] It would be also be important to compare the responses of spouses in each household to see if their perceptions align, but this analysis is outside the scope of this evaluation.

relations between men and women and more joint decision-making.

Figure 22: Joint or solo decision making about maternal health and nutrition by men or women in a union (%)

Joint decision making about maternal health and nutrition increased among both men and women from **baseline** to **endline**



4.11 Environmental Considerations

In principle, the environmental dimension was a key motivating factor behind the project design and approach to implementation. ADRA and partners were well aware of the challenges presented by the natural environment—in terms of both seasonal variations and the possibility of shocks like drought, flood, and cyclones but also the nature of the landscape itself, especially in the Central Highlands. The challenges presented by the environment and their impact on household livelihoods and food security were behind the emphasis of the project on improving agricultural livelihood activities in C2 (Purpose 2). Similarly, the primary reason for C3 (Purpose 3), which focuses on DRR and infrastructure rehabilitation, was to address challenges presented by environmental risk and the need to increase household and community resilience to shocks and stresses.

Figure 23: Member of CLGRC pointing out a grove of trees planted by the community

Under Purpose 2, activities in C2 did not consider environment as much as they could have. On the positive side, the project placed considerable emphasis on the rehabilitation of irrigation systems and terraces as well as the use of compost and manure. There was also some effort devoted to the reduction of bushfire. Even so, much more could have been done on all of these. On the negative side, there was little emphasis on drought resistance (especially in the South), no training in IPM (though it is acknowledged that the USAID approval process itself was problematic), no emphasis on community-level

management of natural resources, and a narrow emphasis on tree planting, which was much less effective than the alternatives and unlikely to last because of the challenges that tree establishment presents in degraded environments.

Under Purpose 3, activities in C3 that focused on infrastructure rehabilitation, be it roads/bridges or irrigation for agriculture, as well as the provision of potable water were careful to ensure i) that management committees existed prior to any work being undertaken and ii) that environmental considerations were incorporated into the design—such that there was no negative environmental impact from the work itself and that the design had the ability to withstand environmental shocks. The NRM work was also located under C3, which also meant that it was somewhat disconnected from the agriculture aspects of the project. While there was some success at tree planting (Figure 23), the scale of effort was insufficient to restore degraded landscapes and have an impact on groundwater recharge or provide significant ecosystem services.

Some specific challenges arose because ASOTRY was obliged to follow USAID's system of environmental assessment, which led to delays that had negative impacts on the project. Delayed activities meant that there was less time to follow through on the coaching that various IMAs needed to be self-sufficient and self-sustaining in their role.

For the most part, the environmental dimension of the project respected the principles of "do no harm"—that is, the various activities did not have a negative impact on the environment. A number of activities also contributed to environmental resilience and the ability to cope with environmental shocks and stresses—particularly those in irrigation and infrastructure. While the project design certainly allowed for more proactive action to counter the accumulated impact of environmental degradation and vulnerability, the agriculture and NRM activities did not achieve what they could have if they had been designed and implemented differently, especially if integrated into Purpose 2 together with landscape restoration and management and not in Purpose 3, where they got lost in DRR.

4.12 Sustainability

It is critical for sustainability that activities be economically viable, ecologically or environmentally sound, and socially acceptable. If not, they are unlikely to be continued for any length of time when external support is not present. Findings related to sustainability are grouped into four categories—environmental, economic, social, and institutional.

Environmental sustainability: As far as the QET could determine, none of the activities were likely to move things in an environmentally unsustainable direction on their own, but they would not necessarily help to reverse existing environmental degradation. In terms of the activities promoted under C2 and C3, steps were taken to ensure that they would "do no harm" and, in some cases, would be likely to promote environmental sustainability—as can be seen by the choice of agricultural practices included in the indicators. On the other hand, the agriculture and NRM activities could have had a greater impact had they been implemented with an intentional focus on community-based NRM and landscape restoration, and by empowering farmers and communities to develop a vision for this and the skills to do so. Environmental sustainability was not an issue for C1 with the exception that in its absence, any improvements to health and nutrition will be fleeting—i.e., unsustainable.

Economic sustainability: For the most part, there has been a moderate reduction in poverty over the life of the project, which is a positive sign in light of the ongoing shocks and stresses experienced by direct and indirect participants alike. VSLA activities and the social capital that accompanies them bode well for lasting improvements to the economic dimensions of lives and livelihoods. Similarly, the various training activities that have focused on improving value chains and business skills increase the likelihood of people's livelihood activities being economically sustainable. It also appears that the various agricultural practices introduced are adapted to the resources available to smallholder farmers—assuming that farmers save their seed (see also Lessons Learned and Recommendations in the section dealing with Purpose 2 on page 34).

Important for economic sustainability is the promotion of activities anyone can do with the resources that they have at hand or can acquire themselves with the means they have at their disposition. For example, people are able to use the *Tsikonina* with their own resources, and there are types of latrines that can be built without expensive purchased materials.

On the other hand, economic sustainability of agricultural activities would have been enhanced by focusing on minimizing the risk of trying new approaches to livelihood activities by experimenting at small-scale (see discussion on the FFS approach on page 25). Economic sustainability needs to be evaluated from the participant's perspective—their ability to handle risk, the amount of effort they can afford to invest, and their perception of cost/benefit.

Similarly, the activities of the FBAs and the CCAs built by the project have the potential to be economically sustainable provided that the management committees do their job. Whether they are replicable by other communities is another matter, but in and of themselves, they should be sustainable.

Social sustainability: Considering the cultural context, project activities appeared to be well adapted and acceptable. ASOTRY's approach to Care Groups, which included the use of both mothers and fathers as leaders, helped to integrate the promoted ideas into the community and individual behaviors. The same could be said for the *Tsikonina* approach to learning about the importance of dietary diversity. Similarly, VSLAs fit the local context and, by their very nature, strengthened social capital and community cohesiveness, which is essential for their continued adoption. When asked what the QET would see if they returned in five years, one FGD participant stated that they would not stop.

> ***As long as we are alive, we will not stop.***
>
> **Participant in VSLA/FFS FGD**

Institutional sustainability: It is in the institutional dimension that sustainability is the most uncertain. For institutions to be sustainable, it is important that those who manage them/who are part of them gain sufficient experience and develop the confidence needed to be able to manage them on their own or, at the very least, to be able to seek guidance when it is needed.

It is in this area that sustainability has most likely been compromised by the way in which the project was implemented—things got off to a slow start, there were not enough staff to support work in the field, and there was a lack of planned integration. The project laid important groundwork for sustainability by ensuring that there was a local management committee for institutions like the IMAs and ACCs prior to providing funding for the work. However, in a number of cases, the committees had

only been around for a short time and appeared to lack confidence in their role. Had certain activities been started earlier in the project lifecycle (i.e., no later than the second year) there would have been sufficient time for staff to ensure beneficiaries had the necessary experience to be able to continue on their own as project staff stepped back and let community members take the lead.

Beyond a certain period of time, people need a coach, not a trainer, to help them learn by doing on their own. Staffing levels need to be adequate to provide strong support early on, allowing a gradual shift over time from training to coaching. Essential for sustainability is the cultivation of independence from the start of the project, rather than phasing out activities near the end of the project. A gradual approach, embedded in activities from the start, serves as preparation for the eventual scaling back of staff support, and the transition to a coaching or mentoring model that serves to increase the likelihood that learned behaviors and activities will continue post-project.

An important component of an exit strategy is an intentional connection with, and embedding of community-level activities within, relevant government institutions. In order for this to take place, it is important to have sound collaboration with ministries and their local branches right from the start. Sufficient human resources are also important to provide the coaching and mentoring that is needed throughout the life of the project. Finally, there must be sufficient time to allow one to walk alongside until people are ready to go it alone. With the late start to some important activities, there was not time for this to be fully realized.

A lot of the essential factors for sustainability are present in principle and have the potential to be sustained with local skills and resources—but only time will tell whether "well-trained" or natural leaders or convinced service providers will take the lead and continue the various activities now that ASOTRY programming has terminated.

4.13 Lessons Learned

A number of lessons learned have been highlighted as part of the discussion for each of the three Purposes. They will not be restated here. That being said, we have grouped the main lessons learned by theme and they will touch on some of those lessons highlighted earlier.

The positive incentive that comes from success and the importance of reducing risk of failure: In the South, the painful discouragement of some farmers became apparent during some FGDs because of the failure of some crops at harvest time. Not that crop failure is unheard of in this region, but some reported that new seed and planting techniques failed to produce as promised. This was the unfortunate result of encouraging people to adopt new agricultural practices or a new crop across the whole field at once rather than trying it at small scale—and also of making an implied promise of success rather than encouraging an experimental approach.

How one illustrates and talks about new practices: The project prepared a variety of resources to aid in communication regarding, e.g., construction of latrines. While the project did not appear to promote one particular type of latrine, it appears that promotional materials highlighted one with brick walls and a tin roof. The sentiment "I can't do this on my own" may have been the result of using only a high-end latrine as an illustration—something unaffordable and therefore unattainable by most.

Context-specific programming: The project area consisted of two distinct agro-ecological zones. There were also variations in market access and availability of services (including cellular reception) throughout the areas in which the project was active. Amongst the different livelihood groups, which themselves had different characteristics, challenges and opportunities, there were also different wealth categories (FEWS NET, 2013, 2017a, b). Within these wealth rankings, some (perhaps the majority) were net buyers of food crops while others were net sellers. In the same manner, some were net sellers of labor (i.e., off-farm work—perhaps the majority) and others, net buyers of labor (i.e., hiring people to help out on their farm). The same variation is also the case for access to land.

Because of these differences in socio-economic-ecological context, a one-size-fits-all approach is inadequate, especially in more-remote and largely illiterate communities. For this reason, it would be preferable to adapt the general project theory of change to local conditions, using studies and secondary data sources (FEWS NET, 2013, 2017a, b) to help understand and overcome barriers that exist, in part by creating a classification based on socio-economic-ecological context and adapting/tailoring implementation for best impact, sustainability and replicability (agro-eco zones, remoteness, social/economic status, level of literacy and group performance, net buyer/seller status and the degree to which a farming household is focused on subsistence production or has a marketable surplus). Given this, it would be helpful to tailor the baseline study of a new project to help understand the context, thereby facilitating the process of contextualizing the intervention package/sequence for groups of households who have differing levels of vulnerability, resources, and needs.

Champions, positive deviance, and behavior change: It is essential to include the social and behavioral change communication (SBCC) approach explicitly in the theory of change in order to find the most appropriate behavior change levers and use them: peer recognition, examples/role models, state/religious/social leaders, friendly competition, reward system, etc.—remembering that an approach using the adult learning method of facilitating, not training, is most appropriate.

The Care Group model was effective and should be continued—but integrated into the local health system. Including both lead fathers and lead mothers was especially effective. The Care Group model and the use of the *Tsikonina* approach improved the spread of messages and adoption of MCHN behaviors and practices.

Additionally, it is important for projects to use “champions” to promote behavior changes using the positive-deviant model. The model seems to work well in nutrition and health, but there is room for it to be used in other areas where cultural change is needed—such as in agriculture and money management. Finding and encouraging the development of such champions from the start is especially important, as they need time to gain the necessary experience.

Finally, when it comes to behavior change, not everyone is at the same stage. For this reason, it important to think of it as a process that needs to move through a community and eventually touch the majority of community members.

Branding and local ownership: In terms of sustainability, what is most valuable is developing a sense of local ownership and responsibility for outcomes. Ideally, the goal is for community members to say to an outsider “look what we did for our community” and then “we are thankful for the help we received from…” Unfortunately, the manner in which assets and management tools are branded may be counter-

productive in terms of this sense of local ownership. In many ways, the branding of assets and community training and management tools makes a difference, even at the subconscious level. For this reason, it should be considered from the community ownership/sustainability perspective. Perhaps the community could create the signage and incorporate the donor logo into the design, clearly stating that it is the community who built and maintains the asset—with the support of the donor(s).

Similarly, during training and practice, it is better for participants to practice using the management tools that will be used post-project with local materials (such as school notebooks). Given that the computer-formatted photocopied sheets provided by the project will no longer be available, it is important for people to know how to create their own copies of the management tool/forms that they need. Lacking the means and skills to do so can be a disincentive.

Help religious leaders to understand their role in SBCC: Given the number of churches visible throughout the project area, it is clear that faith-based institutions play an important role in the life of rural populations in Madagascar. In this context, it can be helpful to use religious concepts to exemplify and mobilize people in a way that speaks to the things that they value. Additionally, the religious leadership can play a role by encouraging behavior change. This is especially true because many of the core messages of a project like ASOTRY are also found in the values of faith-based institutions, e.g., messages related to care for children, care for creation, couples as partners in a mutually supportive relationship, and sound financial management/wise stewardship of resources—time, talents, and money.

Integration across components through "multi-responsibility" volunteers: During the course of the evaluation, it was observed that persons involved in more activities were more likely to grasp things and have a better overall picture of what to do/how to change. To some extent, integration took place at the level of individuals in the community who were involved in multiple project activities. With this in mind, it seems there is a place for the promotion and recognition of "multi-responsibility volunteers" who, because of their unique involvement and perspective, are better able to understand how things work together to improve lives and livelihoods.

Adequate staffing levels: Staffing levels need to be adequate to provide strong support early on, allowing a gradual shift to coaching instead of training. Community development, whether it is agriculture and markets or nutrition and health or both/and, is really all about people helping people to help themselves. For that approach to be effective, it requires adequate staffing levels—lots of boots on the ground—and from the start. An approach that gives more and better support in the initial phases gives communities more time to respond to the encouragement and efforts of project staff—and can be followed by a gradual pullback as local confidence develops, with project staff leading from behind, as the project moves into later phases and eventual phase-out.

Transition from training to coaching: The needs of community members and community groups will vary throughout the life cycle of a project. One needs to be sensitive to this. Ideally, project staff will be familiar with the principles of adult education—learning by doing—and be prepared to provide training at the start. This type of strong support early on can then be followed later by gradual shift to coaching instead of training.

Respect the foundational principles of agricultural development and the FFS approach: There are foundational principles to working with people in the area of agriculture and community development that need to be considered and respected in order to increase the likelihood of success. In agriculture, encouraging people to experiment with the means that they have (i.e. planting 1 kg of seed versus a whole plot and then comparing the results with the normal practice and drawing one's own conclusions) helps them to gain experience and learn for themselves—and it also minimizes the risk of a failure, which is very important for people living on the margins. Departures from these principles, which are part of the standard FFS approach, limit the usefulness of project activities and the likelihood of facilitating lasting change in crop and livestock production systems.

Adequate duration of engagement: The late start on a number of activities meant that many participants did not feel equipped to carry on without the support of project staff when it came time for phase-out and hand-over. This is a reminder that, for activities and new institutional arrangements to have a chance at being sustainable, engagement with the community around these activities needs an adequate period of time, combined with intentional efforts to make sure that the conditions for sustainability are actually in place.

Foundational activities are important—it is preferable to start with them: It is important to have a point of entry that starts with something that has an immediate impact and builds people's confidence in their ability to do something for themselves. The VSLA approach is one such entry point—especially because it is adapted to all, regardless of their socio-economic status. VSLAs are a core activity that serve to build social cohesion and develop skills, and are foundational to other livelihood interventions. They are an essential ingredient that can link to most project impacts and sustainability. Care Groups function in the same way to some extent, helping to build a sense of community and mutual support around caring for children. In this way, they too are a foundational activity and an important starting point for social and behavior change.

Local governance and institutions can be changed: Local institutions, values, and norms around land tenure, access, and management can present a challenge for effective NRM—as was seen in the lack of success at tree-planting efforts on common lands. However, there are approaches to community-based NRM that can facilitate changes to local governance arrangements and make it feasible for communities to better manage those resources and open the door for the restoration of degraded landscapes. For better and sustainable NRM (and DRM for that matter) it is critical to engage and coach a wider level of leadership and governance.

5. RECOMMENDATIONS

R1: Invest in staff, not stuff. In order to "help people to help themselves," the focus needs to be on personnel to facilitate change and not provision of goods to beneficiaries. Inputs like seed, fertilizer, buildings, and equipment are expensive. In many cases, their purchase or repair is out of reach of local populations, whereas an investment in skilled staff positions the project to help people to help themselves. However, to do this, staffing levels need to be adequate in early project stages to contextualize interventions and provide strong support. Staffing levels also need to be adequate to provide strong support early on, allowing a gradual shift to coaching instead of training. This is not to say that the project should refrain from providing any material support—but simply, that project budgets should prioritize investments in training and coaching activities that will build community capacity for self-empowerment, and be cognizant of communities' financial capacities to continue to implement successful activities without project budgetary support. As far as material inputs, the focus should be on IGAs that use local resources and improve a household's capacity to manage its budget.

R2: Involve both NGO and government technical sector specialists. One of the success factors of ASOTRY was the direct involvement of NGO technical specialists in stakeholder learning and coaching. However, this strategic choice had the unintended consequence of not valuing the involvement of government officials in the health and WASH sectors. Active involvement of both groups of experts/stakeholders at all stages of the life of a project is beneficial – during the targeting stage, in quality assurance, and in post-project monitoring.

R3: Engage and empower local governance. Intentionally working with local leaders can strengthen their ability to do their jobs. The use of joint goal setting and monitoring with communities helps to empower them for positive change. Future projects should include more explicit governance activities—going beyond forming committees to act on pre-selected activities. An example of one such approach tried by ASOTRY (at a limited scale) was GoGreen, where communities chose an activity, monitored progress themselves, and were recognized for their success.

R4: Apply an integrated natural resource management approach that engages local government. For NRM activities to have better outcomes and sustainability, the project needs to act on three aspects simultaneously. First, ensure better awareness, governance, and ownership at local and commune level, for example through the fokontany Development Committee and the fokontany Development Plan for the management of community/natural resources through joint goal setting and monitoring. Second, better integrate NRM across components, particularly farming and FFA/infrastructure activities (soil and water management, fodder crops, agro-forestry, etc.) but also VSLAs. Third, activities must suit the local agro-ecological context, be timely, and minimize the risk of failure. For example, engage staff with experience in local governance arrangements for improved NRM at fokontany and commune level to facilitate local dialogue and change around landscape management, and to use more holistic approaches such as micro-watershed management and forest/landscape restoration. The latter would also emphasize the natural regeneration of trees through FMNR rather than raising tree seedlings in nurseries and then transplanting them.

R5: Contextualize interventions according to household resources, livelihood types, and socio-economic and ecological contexts. Different livelihood categories/levels have different needs; semi-

subsistent, net buyers have different needs than net sellers, for example. For this reason, the project intervention package needs to be contextualized (socially, economically, and environmentally) for groups of households with differing levels of vulnerability, resources, and needs. Use Year One of a new project as an inception year, to deepen understanding of the characteristics, challenges, and opportunities of the socio-economic-ecological context in the project area and its different livelihood groups. Fine-tune activities so that they are doable with the resources available to households and not dependent on subsidies, even at the start. Fine-tune interventions to households' resources, needs, and vulnerability, and conduct thorough community sensitization and mobilization around project messages and activities.

R6: Involve local government and institutions. Since the project will only exist for a limited time, it is important that the project engage early on with local government and other institutions—making sure to bring government departments along: new activities and approaches need a "home" if they are to be sustainable/supported long-term. This also means actively working with communities to strengthen local governance and institutions, in particular in the management of community/natural resources through joint goal setting and monitoring. It also means actively working with government departments/ministries at the local and regional level. Involving government stakeholders from the beginning helps to guarantee that norms are respected, assures the quality of infrastructure, and ensures conformity to political directives and community needs. This can work both ways—ensuring that project activities align with government priorities and also reinforce and strengthen the capacity of those same institutions. This could include regular experience sharing that facilitates learning, exchange of ideas and possible adoption of better practices.

R7: Use the FFS approach as intended. The FFS approach developed by FAO is based on people-centered learning. It encourages learning-by-doing through field exercises that employ direct observation, discussion and decision-making (FAO, 2016, 2017, 2018). Certain principles need to be respected for farmers to achieve their goals (FAO, 2016). Working with farmers through a multi-year engagement based on the FFS approach has the greatest likelihood of initiating the process of transformation to a more productive, sustainable and resilient agriculture, which is not achieved by letting farmers randomly choose a particular crop and planting a new (but unknown to them) variety of seed. Proven approaches adapted to smallholders like CA, System of Rice Intensification, and FMNR, as well as dry- season vegetable gardens and backyard gardens, can all be experimented with using the FFS approach.

R8: Be intentional about integration across sectors and involvement of various subgroups, especially youth. Focus on project integration, impact, quality, and sustainability from the start with specific strategies, tools and monitoring. The design of all three components reflected an understanding that they were interdependent. Participants involved in multiple activities were in a position to see this too. By being intentional about this integration, it is possible to strengthen the outcomes, as each reinforces the other. A more intentional approach to youth engagement, such as through school youth clubs, would help to integrate across groups of people as well as across activity sectors. Given that the youth are the future of all communities, it is important to include schools/youth clubs/parent associations for specific project activities as they encourage sustainability and longer-term behavior change.

R9: Exploit opportunities for communication. Where people gather for an activity, it is an occasion to share information relevant to multiple objectives. For example, take advantage of FFA activities and food distribution events to share information and messaging around best practices in nutrition, agriculture, NRM, and DRM.

R10: VSLAs and Care Groups are foundational activities and should be a core component of future work. VSLAs build social cohesion and develop important skills. They are the foundation of other nutrition and livelihood interventions. VSLA activities can also serve as the base for economic and social development, especially in subsistence farming contexts, as was the case for SALOHI (Andianaonitsoa et al., 2014). Care Groups empower people to take charge of nutrition and health. Other interventions and activities can build on them.

R11: Community branding should take precedence over donor branding. A key principle of community development is for people to say, at the end of the day, "Look what we did." To the extent that donor branding of assets and management tools takes precedence over local identity, it can be counter-productive in terms of local ownership. While also acknowledging donor support, find ways to implement community branding of assets to encourage local ownership and empowerment. Management tools (e.g., registration forms, monitoring forms) should also reflect community branding.

R12: Engage the faith community in SBCC. While it is important to include local religious leaders in events to share information, their engagement also presents a tremendous opportunity to facilitate SBCC. Work with local religious leaders to identify how their religious texts and teachings are relevant to community development and social change—and can be applied to motivate positive change. For example, some religious groups have developed resources that provide teaching on gender and the role of men and women in families.

R13: Review and streamline measurement and monitoring tools. The use of standard food security and nutrition indicators is important and should be continued. However, the baseline and endline surveys were very long and need to be streamlined while also addressing the information gaps in their current versions. The long expenditure section was very cumbersome. Consider replacing it with the Poverty Probability Index, formerly known as the Progress out of Poverty Index (IPA, 2019). It is based on a series of 10 questions about a household's characteristics and asset ownership. Consider using the Women's Empowerment and Agriculture Index as an indicator of change in gender relations (Alkire et al., 2012, 2013). Not only does it measure the empowerment, agency, and inclusion of women in the agriculture sector – it also measures women's empowerment relative to men within their households. A module that characterizes livelihood assets, activities, and allocation of household resources would aid in understanding the context and developing livelihood profiles.

The survey terminology used to describe agricultural practices, techniques, etc. needs to be field-tested to ensure it is comprehensible to farmers and consistent with farmers' usage of terms. If survey results are to be consistent and reliable, the response options also need to be reviewed to ensure they include the range of practices that farmers employ.

The baseline and endline surveys should occur in the same month to ensure credibility of food security findings, and be better designed to assist answering some of the evaluation questions, such as percentage of school-age children in school, household and productive assets, land access (own, rent).

R14: Sustainability: It is important that the projects facilitate a process whereby the members of the community develop a shared vision of their community's future. A facilitated visioning process that encourages thinking about where people would like their community to be, for example, five years from now, helps to motivate and empower people to take charge of the changes they want using the resources that they have.

ANNEX A: REFERENCES

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ANNEX B: EVALUATION STATEMENT OF WORK

Statement of Work

Population-Based Final Evaluations of ASOTRY and Fararano Development Food Assistance Projects in Madagascar

INTRODUCTION

The final evaluation of the 2014 Madagascar Title II Development Food Assistance Projects (DFAPs) is the second and final phase of a pre-post evaluation strategy. The baseline study was conducted in May, 2014 and employed a mixed-method approach. It was designed to provide information on all four aspects of food security—availability, access, utilization and stability. The study investigated household food access, sanitation and hygiene, agriculture, household expenditures and assets, dietary diversity, and anthropometry among women and children. The Madagascar final evaluations will use a mixed-method approach and integrate secondary data and project monitoring data. Methods will be chosen to generate the highest quality and the most credible and robust evidence possible to answer evaluation questions.

BACKGROUND

In FY 2014, the U.S. Agency for International Development's (USAID) Office of Food for Peace (FFP) entered into two new cooperative agreements for Title II DFAPs in Madagascar, (1) the ASOTRY project implemented by ADRA and its partners: Land O'Lakes (LOL), and Association Inter-cooperation Madagascar (AIM), and (2) the Fararano project implemented by Catholic Relief Services (CRS) and its partners: ODDIT, CDD, BDEM, and Caritas.

The goal of the ASOTRY project is to reduce food insecurity and chronic malnutrition, as well as build resilience among chronically food insecure households in the most vulnerable regions of Madagascar. The project has three objectives: (1) Reduce chronic malnutrition and improve the nutritional status of pregnant and lactating women and children under five years of age; (2) Increase household and microenterprise productivity and income through appropriate market-oriented approaches, and (3) Build household resilience to withstand and mitigate the effects of shocks and natural resource degradation. ADRA utilizes nutrition and childcare best practices training, care groups, and community-led total sanitation to address the challenges of child malnutrition and illness. ADRA also aims to increase profitability of diversified agriculture products, the engagement of both women and men in diversified viable micro-enterprises, and the contribution of livestock production to household revenue and food consumption. Additionally, ADRA prioritizes the construction and maintenance of disaster mitigation infrastructure, the improvement of disaster preparedness and response systems, and the development of community-based environmental and natural resource management. The total estimated award amount is $38.1 million.

The Fararano Project goal is to reduce food insecurity and chronic undernutrition and increase resilience in three of the six USAID/FFP priority regions: Atsinanana, Vatovavy Fitovinany, and Atsimo Andrefana. The program has three objectives (1) to prevent undernutrition (for children under 1,000 days) and improve nutritional status (for children under 5); (2) to increase and diversify household agricultural

production and sustainable economic wellbeing (3) to enhance communities' resilience to shocks and reduce natural resource degradation. Fararano implements several activities to increase overall knowledge of optimal nutrition behaviors at a household and community level—including care groups, trainings, and community-led complementary feeding and learning sessions. CRS is also providing diverse seeds and promoting household gardens to improve household access to diverse and quality foods. Other interventions include WASH behavior change interventions, irrigation development, Lead Farmer training, gender-equity programming, land tenure services, value chain development, market infrastructure and information improvement, natural resource management, and disaster risk reduction. The total estimated award amount is $43 million.

EVALUATION PURPOSE & QUESTIONS

The overarching purpose of the final evaluation is to measure the development outcomes of the ASOTRY and Fararano projects. The statement of work provides a list of illustrative evaluation questions bellow and the fundamental elements that should shape the Evaluation Teams (ET) research. It is anticipated that the EY will address these, but it is not limited to working solely within this guidance.

Q1: To what extent have the projects met their defined goals, purposes and outcomes?

The ET will evaluate the contribution of ASOTRY and Fararano to USAID's efforts to reduce food insecurity among chronically food insecure households. The ET will support its determination using both quantitative and qualitative methods when discussing the following: (1) project performance on indicators against targets set by both the partners for the key FFP indicators35 of Depth of Poverty, Stunting, and Undernutrition. The evaluation will analyze the performance based on the theories of change of the projects. Using empirical evidence, the evaluation will describe the progress or non-progress along the hypothesized pathways of change to tell stories. The evaluation will review the key assumptions and adaptations to accommodate contextual changes over the past five years; (2) factors that promoted or inhibited the achievement of the project objectives, including, but not limited to the effectiveness of food-for-asset and/or cash-for-asset interventions; (3) plausibility of pathways and the determinants of achieving the key outcomes; (4) targeting strategies and their contributions to achieving project goals (especially with regard to gender and reaching the most vulnerable); and (5) the appropriateness and effectiveness of interventions on the poorest individuals.

Q2: Based on the evidence, which project outcomes are likely to be sustained?

The ET will evaluate the functionality of the institutions and systems established or strengthened by the projects independently or in collaboration with the private sector, Government of ~~Zimbabwe~~ [sic] Madagascar, community organizations, NGOs, and research organizations to achieve project outcomes and sustainability. It will support its evaluation using both quantitative and qualitative methods that explore the following: (1) the functionality and effectiveness of the systems, and institutional arrangements developed and/or strengthened to sustain the necessary and critical services; (2) coverage of project promoted practices and secondary adoption, (3) communities' perceptions on the quality, frequency, effectiveness, and sustainability of the services provided by the project; (4) progress

[35] FFP's established targets are: a minimum of 2 to 2.5 percentage point annual reduction of prevalence of stunting, a minimum of 3 to 4 percentage point annual reduction of prevalence of underweight, and a minimum of 4 percentage point annual reduction of depth-of-poverty.

towards sustainability of the service provisioning; (5) the motivation of the community and beneficiaries to demand and pay (or invest time) for the services; (6) whether the necessary resources and capacity strengthening will exist to sustain service providers; (6) the extent to which the projects leveraged other USG and non USG investments to achieve sustained outcomes as identified in the theories of change; and (7) evidence of enhanced linkages with other service providers

Q3: In each technical sector, what are the strengths of and challenges to the efficiency and effectiveness of the interventions' implementation and their acceptance in the target communities?

The ET will evaluate the effectiveness and relevance of the technical interventions, including food-for-asset and/or cash-for-asset interventions, to achieve project outcomes, and discuss those findings in relation to the projects' theories of change. It will support its determination using both quantitative and qualitative methods when discussing the following: (1) factors in the implementation and context associated with greater or lesser efficiency and effectiveness in producing Outputs of higher or lower quality; (2) the interventions and implementation processes deemed more/less acceptable to members of the target communities.

Q4: What key lessons learned and best practices should inform future projects in the country?

During the evaluation data gathering, the ET should identify best practices, strengths, and challenges in the design (including theories of change) of ASOTRY and Fararano, adaptation of design and implementation based on monitoring and evaluation findings, strategies to promote secondary adaptation, and approaches that could be considered in designing future food and nutrition security projects. The ET will use both quantitative and qualitative methods to answer the questions and discuss the following: (1) the unintended positive and/or negative consequences of the projects, and (2) ways to minimize potential unintended negative consequences and systematically capture positive consequences.

AUDIENCE & INTENDED USES

The primary audiences of the evaluation reports are ADRA and CRS (and their sub partners). USAID (FFP/Washington, USAID/Madagascar) will also learn from the evaluations. The reports will also be shared with the relevant departments of the Government of Madagascar. Findings from the final evaluation will be used to determine the performance of the two DFAPs; and inform and shape future food security projects. It is expected that all stakeholders will make extensive use of findings from the evaluations to make different presentations and bulletins as part of a wider dissemination of best practices and lessons learned. The evaluation recommendations may be used by the future applicants to design projects, to USAID to refine proposal guidelines, project policy.

FINAL EVALUATION METHODOLOGY

The final evaluation will use a mixed-methods approach and the recommendations developed should be utilization focused. The ET will begin with a desk review of project documents, validate its understanding of the projects via consultations with ADRA, CRS, their partners and FFP, conduct a population-based household survey using all implementation villages as the sampling frame, and conduct qualitative research in villages selected via non-probability sampling method. It is preferred that, if possible, the

firm conducts quantitative and qualitative components sequentially to allow the quantitative data to inform the qualitative research.

a) Desk Review

The ET should review the following documents to contextualize and refine the evaluation questions, as well as to gain an in-depth understanding about the project design, implementation, and the food security situation in the area. The ET is expected to review ASOTRY and Fararano's annual monitoring data, midterm evaluation reports, assessments conducted by the projects, and field visit reports when preparing for qualitative research. While FFP recommends the below documents for pre-evaluation learning, the literature review should not be limited to the following:

a) Project proposals
b) Pipeline Resource Estimate Proposals (PREPs)
c) Annual results reports (ARR), including Indicator Final Tracking Tables (IPTT) for final against targets
d) Midterm evaluation reports and corresponding action plans developed by the two projects
e) Baseline Study of the Title II Development Food Assistance Programs in Madagascar, 2016
f) Partner formative research and barrier analyses to better understand the context and if/how the studies influenced programming
g) Monitoring data and reports

b) Consultations

As a supplement to the desk review, consultations with ADRA, CRS, their partners, FFP staff in Washington, DC and USAID Madagascar Mission staff will allow the ET to corroborate its understanding of the design, approaches and interventions employed by each DFAP and acquired through the desk review. It is recommended that the ET engage with the staff at each organization prior to beginning fieldwork. Equally important to engaging pre-data collection is to reconnect post-data collection to "ground truth" findings with FFP/Madagascar and the partner staff. In the case of major disagreements, the program staff should provide evidence in support of the argument, and pending time constraints, the ET may revisit the field.

c) Quantitative Endline Survey

The 2019 PBS will collect data on the same population-level impact and outcome indicators[36] that were collected during the 2014 baseline survey. DFAP baseline data were collected in May, and the endline data collection should match this season. The 2019 PBS should use the same data collection instruments for the endline indicators, level of statistical precision (95 percent confidence intervals), and statistical power (80 percent) as the baseline study. The 2019 PBS design does not need to be identical to the baseline; if the projects reduced their target areas, for example, the sampling frame of households used for the baseline may need to be adjusted.

For the list of indicators, please consult with the Baseline Study of Food for Peace Development Food Assistance Projects in Madagascar.

[36] Baseline Study of Food for Peace Development Food Assistance Projects in Madagascar https://pdf.usaid.gov/pdf_docs/PA00MGDH.pdf

Note: A few additional questions may be incorporated into the household questionnaire (and any corresponding indicators added) based on the interest from the implementing agencies. All quantitative data must be made available to the public barring rare exceptions.

d) Qualitative Research

Qualitative methods will be used to collect information to answer evaluation questions and to support the interpretation of the quantitative data. The ET will design the overall qualitative study approach and should consider a variety of primary data collection methods, such as semi-structured in-depth interviews, group discussions, key informant interviews, direct observations, and case studies (the ET may choose to use the most significant change method to identify a selective set of case studies). These methods - to the maximum extent possible - will ensure that if a different, well-qualified evaluator were to undertake the same evaluation, he or she would arrive at the same or similar findings and conclusions. The ET should decide on specific methods before traveling to Madagascar, and include them in the evaluation protocol with the number of interviews, FGDs, etc., per project, in the inception report. Following discussion and agreement, the ET will finalize the methods during the team meeting in-country. The evaluation team leader and members will be responsible for interviewing the direct, indirect and non-participants in their households and communities, as well as look for evidence of ongoing learning and activities (such as home gardens, etc.). The ET will also be responsible for interviewing relevant stakeholders for the evaluation and analyzing the qualitative data. Should the ET decide to hire additional researchers to complement the data collection effort, they cannot replace the evaluation team members' role of collecting primary data using qualitative methods.

The ET will contribute to the interpretation of the quantitative results using qualitative findings. In addition to the factors specifically identified earlier as essential to responding to the evaluation questions, during its qualitative study, the ET should also consider the efficacy of the following cross-cutting interests: project management; performance monitoring; strategies to improve gender equality at the participant and project management levels; environmental considerations; and conflict sensitivity. Lastly, it is expected that the evaluation will speak to lessons learned and best practices.

The ET may find it useful to apply non-probability sampling methods to select a sub set of enumeration areas from the PBS. In selecting interview sites, the evaluation team should strategically select large-enough-yet-manageable interview sites that generally represent the target area.

As with the PBS, qualitative sampling should include both individuals who directly participated in the DFAP (participants) and those not specifically targeted with any intervention (indirect/non-participants). (The latter should be included to allow learning on spillover, triangulate the information provided by the direct participants, and to understand their perspectives on the achievements or limitations of the interventions offered by ASOTRY and Fararano. In addition, the qualitative team should interview USAID personnel, project staff, knowledgeable people from the community, local government staff, community leaders, host Government officials, and other agencies and individuals as appropriate.

e) Data Analysis and Interpretation

The ET will use inferential statistics to compare the endline data for each of the two strata with that of the baseline for that stratum, and also for the overall country level, in order to detect changes (if any) for all key indicators. The ET will conduct descriptive and inferential analyses to describe the results, as

well as various econometric analyses to identify the determinants of key outcomes and the magnitude and direction of changes. In advance of fieldwork, the evaluation team needs to develop a data analysis plan. When analyzing the data, however, the ET should not limit itself to the data analysis plan; rather, the evaluation team should keep an open and curious mind to look for correlations between variables.

In presenting the analysis, the ET needs to be cognizant about the readers' familiarity with the statistical presentation. It is preferable to describe the statistical terms in a common language and avoid jargons.

Interpreting the results is as critical as the analysis. Oftentimes, it can be difficult for a reader to fully understand the key points and utility of the findings conveyed in a report. The analysis and interpretation should be presented in a "story telling format" so that the readers can understand how the interventions influenced the anticipated outcomes through a series of intermediate level changes. While it is important for the reader to understand whether level of stunting is reduced in the area, it is equally important to understand the pathway; for example, how learning derived from project participation influenced people's practices, which in turn resulted in positive changes in food security outcomes at the household and/or community level. Similarly, it is equally important for the readers to know some of the challenges participants faced that might have prevented them from reaping the full benefits of the projects.

REPORT

The ET will produce two reports in English, not to exceed 50-pages, for each DFAP. The draft reports will be shared with the stakeholders (i.e. ADRA, CRS, FFP, and USAID/Madagascar) for review and comment over a two-week period.

The final report should include a table of contents, table of figures (as appropriate), acronyms, executive summary, introduction, purpose of the evaluation, research design and methodology, limitations, findings, conclusions, lessons learned, and recommendations.

All evaluation questions should be answered, and the evaluation methodology should be explained in detail. To ensure a high quality deliverable, the reports should reflect a thoughtful, well-researched and well-organized effort to objectively evaluate what worked in the project, what did not, and why. Where noteworthy, the discussion should highlight and discuss the outcomes and impacts on males versus females. The report must integrate the quantitative analysis from the PBS with the findings from the qualitative inquiry. While the quantitative data will be used to evaluate the theory of change of the projects, learning from the qualitative research will help to contextualize and interpret the quantitative data. The report should be drafted based on the theory of change to tell the stories. The ET can use test of difference of the relevant indicators in combination with multivariate regression results and qualitative inquiries to tell the story. The report should discuss the major assumptions made by ASOTRY and Fararano at the beginning of the project and how they changed (if at all) overtime. How the project design and or implementation were adapted to the change in context. The ET should also draw from partners' annual monitoring data, where appropriate, to substantiate findings. The report should include a section on resilience capacities.

Findings should be specific, concise, and supported by strong quantitative and/or qualitative evidence, and presented as analyzed facts/evidence/data, and not be based on anecdotes, hearsay or a compilation of people's opinions. It should include analytical methods to include appropriate tests of

differences to detect change; econometric analysis to evaluate the theories of change and to predict the determinants of key food and nutrition security outcomes based on the theoretical models; it is expected that the contractor will interpret the analytical findings.

The report should disclose limitations to the evaluation, with particular attention to the limitations associated with the evaluation methodology, e.g. selection bias, recall bias, unobservable differences between comparator groups, etc. Recommendations should be supported by a specific set of findings, and be action-oriented, practical, and specific.

It is expected that the final reports will address and incorporate feedback, as appropriate, from the reviewers. Should the ET disagree with any of the comments, it should raise this with the AOR immediately for discussion.

EVALUATION TEAM

The Evaluation Team Leaders will be responsible for designing and managing the evaluations and overseeing the work of the evaluation team members; coordinating with CRS and ADRA and their sub partners, FFP and the USAID Mission and other stakeholders; coordinating with the endline PBS team; analyzing the findings and ensuring the quality of the report. As this is a mixed-method final evaluation, in addition to the ET members, the endline survey will require extensive participation of the following personnel: Survey Method Specialist, Data Analyst, Survey Coordinator, Anthropometry Specialist, and Survey Monitors. The PBS data collection team should be hired locally. The evaluation team members will collect primary data by themselves using qualitative methods and tools. As the two projects are multi-sectoral, the ET must possess expertise and field experience with food security and multi-sectoral nutrition programming, and demonstrate an in-depth knowledge of the following technical sectors and cross-cutting areas: agriculture and off farm livelihoods, nutrition; water, sanitation, and hygiene (WASH); gender, youth, resilience, and disaster risk management.

The subject matter specialists must also possess experience and knowledge about the specific processes used by the projects (e.g., Care Groups, Farmer Field Schools, etc.)

FIELD LOGISTICS

The ET is responsible to arrange and pay for all logistics, and transportation. ADRA, CRS and the USAID Madagascar Mission may be consulted on identifying interpretation services and transportation services. The ET should request assistance from ADRA, CRS and their sub partners on making introductions, as necessary, to local ministry representatives and community leaders.

DELIVERABLES

The ET shall produce the following deliverables during the evaluation and submit to the Agreement Officer's Representative (AOR) for the associate award for review. All draft documents should be submitted in Microsoft Word or Microsoft Excel, or in the rare occasion both PDF and Word/Excel. The AOR must approve all deliverables.

List of Deliverables
Work Plan • includes a brief synthesis and timeline for the Madagascar final evaluations, with the timeline including major activities throughout the study, including dates by which field guides and training materials will be completed. *Only one work plan detailing both baseline study and final evaluation activities is required*
Monitoring Plan • includes strategies and methods that the awardee will use to monitor the field work. It should provide the timeline, benchmarks, and strategies. It should also offer the feedback loop. *Only one monitoring plan detailing both baseline study and final evaluation activities is required*
PBS Enumerator Guide, Supervisor Manual, and Anthropometry Guide* • provide revised detailed instructions on supervisor, enumerator and anthropometry trainings. Note that the PBS should use the supervisor, enumerator and anthropometry training guides developed for the baseline. Minor adjustments will be needed to accommodate the new indicators. *Only one set of guides that serves both the baseline and endline surveys is required*
PBS Data Treatment and Analysis Plan • details how the data will be cleaned, weighted, and analyzed and must include: programming specifications and editing rules for cleaning data, data dictionary codebook, SPSS syntax or Stata do files and output for all analyses and variable transformations into indicators; and • includes a descriptive, inferential, and econometric analyses plan. *Only one DTAP that serves both the baseline study and final evaluation is required, but it must clearly differentiate between the different analytical approaches used for each.*
PE Inception Report and Protocol (~20 pages for each) • briefly synthesizes the literature review; • describes the qualitative evaluation methods (including evaluation questions *contextualized based on the literature review*, sample site selection strategy and number of sites to be selected, number of interviews/discussions per project, types of interviewees) • introduces the evaluation team members and their roles; and • details how the qualitative information will be analyzed and integrated with quantitative. • present specific data collection methods by evaluation question; • identifies indicators to be collected; • discusses the quantitative and qualitative analysis methods and plan; • presents PBS sample size, design and plan, survey design, questionnaire design, site selection plan for qualitative research; and • presents the fieldwork plan (including trainings and field support/supervision, data management, quality control, recording, analysis and reporting).
Pertinent Permissions and approvals • demonstrate official approval from all relevant institutional review boards and from host country institutions to collect data, conduct the evaluation, and release data and reports, as required, as well as a statement affirming adherence to all requirements specified in USAID's Scientific Research Policy.

PBS Quantitative Survey *and* Qualitative Instruments

- include both English, and Malagasy versions of the household survey (note: if any new questions are added to the instrument the awardee must back-translate the questions to English via a second translator to ensure accurate translation. The newly added question should be highlighted for east reference Following the pilot of the survey, any modifications based on field experience will again require translation and back translation to ensure accuracy).
- describe site selection methodology and factors used to select

In-country briefings to CRS and ADRA and their partners, USAID/Madagascar and other stakeholders

- Two 60-minute presentations of the major findings of the evaluation to provide an opportunity for immediate stakeholder feedback that can be considered for the revision (as appropriate and without compromising the validity or independence of the evaluation).
- One presentation to USAID/Madagascar;
- One presentation to stakeholders in Madagascar, including the DFAP partners, donors, and Government of Madagascar,

Final Evaluation Reports

- include items identified in the draft report as well as a three- to five-page executive summary of the purpose, background of the project, methods, findings, conclusions and recommendations, and the following annexes: the scope of work, tools used in conducting the evaluation (questionnaires, checklists, and discussion guides), and any substantially dissenting views by any Team member, USAID or the PVOs on any of the findings or recommendations; and
- must be 508 compliant and uploaded to the Development Clearinghouse following AOR approval.

Briefer (~ 5 page each)

- The ET will produce a 5 page briefer—one for ASOTRY and one for Fararano that provides the highlights of the key findings, lessons learned and key recommendations.

(to be submitted at the time of the final report*)

- include a separate electronic file of all quantitative data in an easily readable format that is organized and fully documented so as to facilitate use by those not fully familiar with the project or the evaluation;
- provides cleaned data, sampling weights at each stage, final sampling weights, and all derived indicators;
- includes a second final data set in CSV format that has been anonymized to protect individual confidentiality for use as a public data file in the USAID Open Data; and
- include a separate file detailing GPS coordinates of households that participated in the PBS.

**the contractor may have to submit data sets earlier for internal use only*

ANNEX C: TRAINING, DATA COLLECTION, AND QUALITY ASSURANCE

Training

TANGO organized an enumerator training in preparation for the ASOTRY and Fararano endline quantitative survey. The training took place from 13-24 May 2019. It was led by two TANGO consultants with assistance from Agence CAPSULE. The CAPSULE team included a Survey Director, Survey Coordinator, and two PBS Specialists. An independent Anthropometric Specialist led the anthropometric training and an Independent Survey Monitor provided support to the TANGO team and to all supervisors.

Household survey and listing enumerators

A team of more than 100 enumerators and field team leaders was trained over the course of the 11-day period. The training covered the following: i) study objectives and sampling methodology; ii) human subjects research training, interview norms, and survey implementation guidance; iii) introduction to the household survey and listing exercise; and iv) introduction to using tablets and data collection through Open Data Kit (ODK). During the course of the training, enumerators and field team leaders practiced the household survey both on paper (using the paper-based baseline survey) and on tablets in order to familiarize themselves with different scenarios they could encounter in the field. Throughout the course of the training, a running list of questions and possible issues to review with TANGO was kept to clarify any doubts on the questionnaire, interview process, fieldwork procedures, or data management.

Since the listing exercise and the survey were to be done concurrently (i.e., list an EA, send the results to TANGO for sampling, and return to conduct the survey) all enumerators received training on the listing survey and on developing sketch maps for use by the household survey enumerators. An exercise was developed to encourage listers and household enumerators to develop and interpret sketch maps, using the local venue as an example. This ensured enumerators and listers had a good understanding of how the data collected by the household and listing surveys were interlinked and how the two enumerator roles contributed to each other.

The supervisors were also trained on processing listing surveys, overseeing the listing exercise data collection, and quality control checks. They also received instructions to guide their introductions to the local leadership, as the listing team was the first group of enumerators that would meet households and communities during quantitative data collection.

Anthropometric enumerators

A team of 40 anthropometric enumerators participated in the first two days of the training (13-15 May 2019) alongside the household and listing enumerators. The anthropometric enumerators met in a separate space during the rest of the training period to receive a training focused on the anthropometry survey. This included sessions on i) measurement procedures for women and children on stunting and underweight indicators; ii) introduction to using tablets and data collection using ODK; and iii)

anthropometry quality control measures to be covered with field team leaders. Following the training, those who were retained as part of the team were assigned to the role of either Measurer or Measure's Assistant.

The assistant's role mainly required holding children two to five years of age in the correct position for feet and knees to get a standing height, and holding children under two years of age to correctly position the head for recumbent length measurement. The Anthropometry Specialist instructed enumerators on how to avoid recording errors. During the training, the Anthropometry Specialist conducted anthropometry standardization with volunteers Agence CAPSULE invited to the training. This included taking measurements for maternal height and weight, and children's standing and recumbent height and weight.

Supervisor training

In addition to the 11-day training, field team leaders participated in a one-day supervisor training that covered the roles and responsibilities of supervisors and the fieldwork workplan. The training was led by the TANGO team; participants were the Agence CAPSULE personnel (Survey Director, Study Coordinator, and PBS Quality Controllers), Independent Survey Monitor, and Anthropometric Specialist. The TANGO team discussed responsibilities for supervisor during each part of the survey to ensure role clarity and optimal quality control over the data collection process and data management. This was necessary given the layered approach to supervision that was established for data collection: Agence CAPSULE team members, independent consultants, and field team leaders each had specific roles to play. The team of 20 field team leaders (Supervisors), responsible for directly managing survey and anthropometric enumerators, was trained on the necessary procedures to follow when arriving at a cluster (EA), including communication with local leadership, the identification of households, and the assigning of households to enumerators.

All supervisors were instructed on procedures for data quality control and troubleshooting through the use of control sheets, spot checks, and recheck processes. Field team leaders were instructed on monitoring household survey and anthropometry enumerators' data collection closely, verifying questionnaire completeness, and data management. This included creating backup copies of data, data archiving, and transferring complete and verified questionnaires to the TANGO server.

Training location and pre-testing

All trainings took place in Antananarivo. During the course of the training, the household survey enumerators, anthropometric enumerators, and field team leaders had the opportunity to role-play data collection with volunteer members of the public who Agence CAPSULE invited to the training. This was done so they could practice introductions, gather practice survey data and enter it into tablets, and ensure coordination among data collectors.

A field pre-test was organized on 23 May, near the end of the training. It was conducted in a rural community not far from Antananarivo, so teams could have the opportunity to gather information in an environment that closely resembled the area where actual data collection would take place. It was not possible to do the pretest within the boundaries of either project due to the distance from the training site. The pre-test allowed the enumerators and field team leaders to practice the procedures to follow when arriving in each EA. Household enumerators were asked to complete one household survey, and

anthropometry enumerators were asked to measure at least one child and one woman. Field team leaders supervised each enumerator during a portion of their interview and provided feedback on the conduct of the interview. In addition to serving as a practice for the enumerators and a test of the survey tool, the pre-test allowed enumerators to practice coordinating the logistics of household interviews and anthropometric measurements. It also served as a test of the anthropometric equipment, and was helpful to understand the time needed to complete the survey, measurements, and data quality procedures.

The last day of training for household survey and anthropometric enumerators in Antananarivo was reserved for reviewing obstacles faced during the pre-test, reviewing definitions and terms in local languages, and discussing issues that needed further clarity.

Translation and back-translation

Following baseline survey procedure, the household survey questions were translated and entered into ODK in Malagasy. However, the procedure was much simpler than for the baseline since most of the Malagasy and English text was simply copied from the paper-based baseline survey and entered into the ODK code "as is." Some minor wording changes were needed to accommodate the requirements of the tablet-based format. These changes were checked via back-translation of the household survey questionnaire. Since the training was to be done primarily in French, it was also useful to have a French version of the survey in ODK. The TANGO team prepared a French version of the text for including with the ODK code—checking it internally for consistency with the English version, and working with Agence CAPSULE to make sure it corresponded to the Malagasy version. Since the French survey was not going to be used for survey administration, it was not back-translated in the same way as was done for English to Malagasy and vice versa. The process of using multiple languages is simplified in ODK since the format of the tool allows all languages for each question and each set of responses to be listed side-by-side in a table, with one column for each language. The survey itself can be switched from one language to another at any point during administration or testing. The anthropometric and listing surveys were also prepared in the three languages using the same process. The translation process was monitored by the TANGO team and closely verified by the Independent Survey Monitor to ensure accuracy.

Household survey enumerators spent a total of seven days role-playing in Malagasy with other enumerators and with the invited volunteers. Anthropometric enumerators also practiced in Malagasy with women and child volunteers throughout their training.

Field procedure manuals for enumerators and supervisors

TANGO produced a series of manuals to guide and support the teams throughout the data collection process. The manual for field team leaders includes:

- information on household and anthropometry surveys, including explanations for every question and instructions;
- terminology on agriculture, WASH practices, and food security;
- description of the anthropometry survey and measurement that was covered during training;
- instructions for operating tablets, understanding ODK, and uploading data to the TANGO server; and
- quality control sheets for leaders to conduct checks on enumerators' work.

The household survey manual and anthropometry manual focus on detailed explanations of questions from each survey and on working with ODK.

The anthropometry manual describes procedures adapted from the DHS biomarker manual for all DHS surveys worldwide. Reinforcing information from the training, it also includes enumerator instructions for cases where a child is suffering from wasting or exhibiting bilateral pitted edema.

Since the endline survey was intended to replicate the baseline survey (with the exception of some additional questions on program participation), the manuals developed for the baseline survey were used as a starting point for the manuals prepared by TANGO. This ensured that survey procedures and the understanding of terminology followed that of the baseline as closely as possible.

Data collection

Survey programming

TANGO staff converted the baseline survey questionnaire to an Excel version that was readable by ODK software. This included typing out more than 900 rows in Excel and adding columns for three languages (English, French, and Malagasy), with codes for skip patterns and constraints that would allow the survey logic to run appropriately. Prior to the team's departure for fieldwork, TANGO performed a final check and the Independent Survey Monitor did a quality control check to verify the ODK logic in all three languages before finalizing the household survey the first week of June. The programming of the listing survey and the anthropometric survey were also done using the questions from the baseline surveys; a similar process was followed for ODK programming.

Listing exercise

The listing exercise began on the 5th or 6th of June for each of the 20 teams. Agence CAPSULE obtained detailed boundary maps for each sampled EA from the *Institut National de la Statistique de Madagascar* (INSTAT), which included household counts from the 2019 census.

Lister enumerators used these maps to develop sketch maps, which included the official EA borders and sketches of infrastructure, forests, bridges, and any other natural and physical key points that would help the household and anthropometric teams locate sampled households. The entire team worked together to collect listing data and develop the maps. The supervisors traveled with the teams, introduced teams to village leaders, and followed all procedures, including quality control checks.

Each team recorded the GPS coordinates at the center of the EA they listed. Each listing team gathered household-identifying information from each dwelling in the EA, including the name of the head of household. The teams worked closely with their supervisors to avoid duplications and missing households.

The listing data for each completed EA were uploaded to the TANGO server, where the TANGO team verified them for completeness and accuracy. The Survey Director at TANGO conducted the sampling of households.[37] The selected households were provided to Agence CAPSULE in Antananarivo, who

[37] This is described in Section 3.1 of the main report.

distributed lists of households by EA to field team leaders. The field team leaders used these lists to assign households to individual household survey and anthropometry enumerators.

Household survey and anthropometric data collection

After completing the listing for an EA and receiving a list of households from TANGO, the household survey enumerators collected data from their assigned households and worked in coordination with the anthropometry enumerators to ensure that the criteria for measuring children and women were applied. In the rare cases where household survey enumerators finished their interview and moved to another household before the anthropometry enumerators arrived (sometimes they were delayed at the previous household because they had to measure multiple individuals), the teams communicated with each other regarding which children and women that needed to be measured.

The households in which no survey was conducted due to refusals or absence (after three attempts to contact the household) were not replaced; therefore, the target of 30 households per cluster was not always achieved. However, the sample size was selected to allow for non-responses. The field team leader, anthropometry enumerators, and household survey enumerators debriefed at the end of each data collection day to plan the logistics for the next day and allow the leader to perform quality control checks.

Quality Assurance

The field team leaders provided the first level of quality control by implementing spot checks and directly observing enumerators. The Survey Director, Survey Coordinator, PBS Quality Controllers, and two independent consultants provided quality oversight to the teams in the field. The TANGO team monitored data uploaded to the TANGO secure server and provided feedback to the teams. This process ensured questionnaires were reviewed daily for completeness and accuracy. In the analysis stage, data were cleaned using STATA statistical software; identifying information was removed from the final dataset.

ANNEX D: PROJECT INDICATORS

Table 4: Project Indicators

Food security indicators (Module C)
Prevalence of households with moderate or severe hunger (HHS), overall and by gendered household type
Average Household Dietary Diversity Score (HDDS)
Average Coping Strategies Index (CSI)
Poverty indicators (Module H)
Per capita expenditures (USD 2010), overall and by gendered household type
Percent of people living on less than $1.90/day, overall and by gendered household type
Mean depth of poverty, overall and by gendered household type
Sanitation and Hygiene (WASH) indicators (Module F)
% of households using an improved source of drinking water
% of households practicing correct use of recommended household water treatment technologies
% of households that can obtain drinking water in less than 30 minutes (round trip)
% of households using improved sanitation facilities
% of households in target areas practicing open defecation
% of households with soap and water at a handwashing station commonly used by family members
Agricultural indicators (Module G)
% of farmers who used financial services in the past 12 months, overall and by sex
% of farmers who practiced value chain activities promoted by the project in the past 12 months, overall and by sex
% of farmers who used at least **three** sustainable agriculture (crop, livestock, NRM) practices and/or technologies in the past 12 months, overall and by sex
% of farmers who used at least **two** sustainable crop practices and/or technologies in the past 12 months, overall and by sex
% of farmers who used at least **two** sustainable livestock practices and/or technologies in the past 12 months, overall and by sex
% of farmers who used at least **two** sustainable NRM practices in the past 12 months, overall and by sex
% farmers who used improved storage practices in the past 12 months, overall and by sex
% of farmers who used agricultural or livestock services in the past 12 months
Women's health and nutrition indicators (Module E and Anthropometry)
Prevalence of underweight women
Minimum Dietary Diversity - Women (MDD-W)
Women's Dietary Diversity Score (WDDS)
Percent of births receiving at least 4 antenatal care (ANC) visits
Contraceptive Prevalence Rate

Children's health and nutrition indictors (Module D and Anthropometry)
Prevalence of underweight children under 5 years of age, overall and by sex
Prevalence of stunted children under 5 years of age, overall and by sex
Prevalence of wasted children under 5 years of age, overall and by sex
% of children under age 5 with diarrhea in the last two weeks, overall and by sex
% of children under age 5 with diarrhea treated with oral rehydration therapy (ORT), overall and by sex
Prevalence of exclusive breast-feeding of children under six months of age, overall and by sex
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD), overall and by sex
Gender indicators (Module J)
% of men and women who earned cash in the past 12 months, overall and by sex
% of men and women in union and earning cash who make decisions alone about the use of self-earned cash, by sex
% of men and women in union and earning cash who make decisions jointly with spouse/partner about the use of self-earned cash, by sex
% of men and women with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices, overall and by sex
% of men and women in union with children under two who make maternal health and nutrition decisions alone, by sex
% of men and women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner, by sex
% of men and women in union with children under two who make child health and nutrition decisions alone, by sex
% of men and women in union with children under two who make child health and nutrition decisions jointly with spouse/partner, by sex

ANNEX E: DATA SOURCES: INTERVIEWS, FOCUS GROUPS AND ASSET OBSERVATIONS

Key Informant Interviews

Organization/affiliation, location	Name	M	F	Stakeholder type/title
*We have kept the names of ADRA and partner staff interviewed but removed those of other respondents to protect confidentiality.				
ADRA, Antananarivo				
	Mr. Maisoa Andriafanomezana	1		Agriculture director (previously was Specialist on Agriculture and Animal Husbandry for ASOTRY
	Mr. John Ravelomanantsoa	1		ASOTRY Program Manager for ADRA
	Mr. Zafy Martin	1		Gender and socio-organization Coordinator
	Volahavana Ifaliako		1	Health Nutrition and Hygiene Specialist
	Rado Ravonjiarivelo	1		Former WASH and environment specialist Currrent Environment and WASH Director
	Zafy Martin	1		Gender and socio-organization Coordinator
	Yves Rasolofohery	1		WASH Specialist
	Hasina	1		Was Assistant in Infrastructure for ASOTRY
Land O' Lakes				
	Rabetaliana Faly	1		Chief of Party (LOL), Program Manager ASOTRY
Community Leaders				
Fokontany Voenana	--	1		Chef de fokontany
Fokontany Manarinony, commune Tsarasaotra	--	1		Chef de fokontany
Fokontany Mahazoarivo, commune de Fandriana	--	1		Chef de fokontany
Fokontany Ambondromisotra	--	1		Chef de fokontany
Fokontany Ambohibaihena 2, commune Mahasoabe	--	1		Chef de fokontany
Fokontany Andohaoahamahainty	--	1		Chef de fokontany

Organization/affiliation, location	Name	M	F	Stakeholder type/title
*We have kept the names of ADRA and partner staff interviewed but removed those of other respondents to protect confidentiality.				
Fokontany Ambohimandroso, commune Ambohimandroso	--	1		Administrative community leader
Fokontany Ambohimandroso, commune Ambohimandroso	--	1		Chief of fokontany
Fokontany Belamonty, commune Soaserana	--	1		Chef de fokontany
Fokontany Soaserana Centre, commune Soaserana	--	1		Chef de fokontany
Fokontany Ambatolahimavo, commune Ambalakely	--	1		Chef de fokontany
Fokontany Belamoty	--	1		Chef de fokontany
Government				
Ministry of Water, Fianarantsoa	--		1	Water Sanitation and Hygiene Regional Director, Haute Matsiatra
Ministry of Health, Haute Matsiatra Region, Fianarantsoa	--		1	Responsible for TB and communicable diseases, Haute Matsiatra
Ministry of Health, Lalangina district, Fianarantsoa	--		1	Chief of district Health Department
Commune Soaserana	--	1		Mayor of commune
Commune Ambalakely	--	1		Local government – Maire of the commune
Private Sector				
Wholesaler in central market, Fianarantsoa	--		1	Business woman – wholesaler buying and selling seed, offering training on seed cleaning and storage
Cercle régional des agricultures malgaches (CRAM), Fianarantsoa	--		1	Private Sector – Responsable du bureau de Fianarantsoa
Cercle régional des agricultures malgaches (CRAM), Fianarantsoa	--		1	Private Sector – Director of Fianarantsoa office
Fianarantsoa	--	1		Directeur de la Direction Régionale de l'Industrie

Organization/affiliation, location	Name	M	F	Stakeholder type/title
*We have kept the names of ADRA and partner staff interviewed but removed those of other respondents to protect confidentiality.				
Fianarantsoa	--	1	2	DRAEP – Chef Service Elevage; Responsible Production de Végétaux; Responsable Santé Animale
Cooperatives				
Local cooperative Trano Fitotoam Bary “Ficoarana” (“development”) in fokontany Voenana	--	1		Secretary
Tree Nurseries and Related				
Local tree nursery in fokontany Voenana	--	1		Nursery manager for the local nursery used by ASOTRY
Fokontany Ramampiray	--	1		Nursery man
fokontany Ambodirano	--	1		AUP/Nursery man
Participant in reforestation in fokontany Andronomalaza	--	1		Landowner who contributed land for tree planting
Lead Mothers and Fathers				
Betioky Sud	--		1	Lead mother
Beroy Nord, commune Beroy	--		1	Lead mother
Fokontany Ambatomena, commune Anjoma	--	1		Lead father
Fokontany Madiorano, commune Ivoamba	--	1		Lead father
Fokontany Andohasoamahainty, commune Ampitana, Ambohimahasoa	--	1		Lead father
Community Health Volunteers (CHV)				
CSB	--	1		CHV
Fokontany Bedia, commune Sahambavy	--		1	CHV
Fokontany Andrefankidona, commune Ambohimandroso	--		1	CHV
Other				
Commune Ambodimisotra	--		1	Gender Focal Point

Organization/affiliation, location	Name	M	F	Stakeholder type/title
*We have kept the names of ADRA and partner staff interviewed but removed those of other respondents to protect confidentiality.				
Fokontany Ambondromisotra	--	1		Adjoint au Maire
Fokontany Ambondromisotra	--	1		Community Livestock Worker
Betioky Sud	Yves Rasolofohery	1		WASH specialist
Fokontany Belamoty	--	1		President FBA
Fokontany Beroy Sud, commune Beroy	--		1	President of goat farmer association
Soaseràna, commune Soaseràna	--		1	Agent de santé, CSB Soaseràna

Summary Data, Focus Group Discussions

Location	# of male participants	# of female participants	Type of FGD (e.g., youth, lead farmers)
Fokontany Voenana, commune Soavina	6	1	VSLA
	3	1	Farm Business Association (FBA)
	1	3	Community Health Volunteers (CHV)
	3	4	Lead Mothers and Lead Fathers
		12	Model Mothers
	2	2	Disaster Risk Management Committee (DRMC)
Fokontany Soavina, commune Soavina	4		Father Leaders
		8	Mother Leaders
Fokontany Ambodimisotra, commune Ambodimisotra		5	Model mothers
	2	9	Lead Mothers and Lead Fathers
	3	6	Community Health Volunteers (CHV)
	3	9	VSLA
Fokontany Ambondromisotra	5	2	*Association des Usagers des Pistes (AUP)/ Association des Usagers de l'Eau (AUE)*
	1	5	VSLA Agents Villageois (AV)

Location	# of male participants	# of female participants	Type of FGD (e.g., youth, lead farmers)
	3	1	Agricultural Collection Center (ACC)
Fokontany Andronomalaza	1	6	Livestock Marketing Group (LMG) + VSLA
	8	2	CLGRC
Fokontany Mahazoarivo, commune de Fandriana	7	1	Villagers
Fokontany Manarinony	3	9	*Agents Communautaires* + Lead Mothers + Lead Fathers
Fokontany Ambohibarihena II		12	VSLA (12) + FFS (2)
	4	3	Association of Water Users (AUE)
Fokontany Ambohibaihena 2, commune Mahasoabe	9	3	CHV (3) and non-beneficiaries of ASOTRY Program (9)
Fokontany Antotohazu	3	6	VSLA (6) + AUE (3) + CLGRC (3) + FFS (1)
Fokontany Ambohimiarina	3	4	FFS (4) + VSLA (7) + CLGRC
Fokontany Ambatolahimavo	1	7	Village Agent (AV) + FFS (7) + VSLA (6) + Association of Road Users (AUP) (1)
Fokontany Andohasoamahainty, commune Ampitana, Ambohimahasoa	1	1	Mother leaders
Fokontany Andohaoahamahainty	3	9	VSLA, DRMC
Fokontany Ambalavola	5	6	VSL, DRMC, literacy, AUP, FFS
Fokontany Bedia	1	10	VSL, FFS, FBA
	2	1	CLGRC, Président+Adjoint fokontany
Fokontany Ramampiray	6	4	Mixed group: VSLA, FFS, FBA
	3		DRR
Fokontany Ambodirano		12	Mixed group: VSLA, FFA
	3		Non-beneficiaries (FFA)
Fokontany Ambohimandroso	6	7	Mixed group: VSLA, FFS, FBA
	4	2	Mixed group: DRR, AUP
	1	1	CPE

Location	# of male participants	# of female participants	Type of FGD (e.g., youth, lead farmers)
Fokontany Ambohimiadana	6	1	Mixed group: AUP, DRR
Fokontany Ambalavola, commune Ampitana, Ambohimahasoa	3	9	Mother leaders, Father leaders and CHVs
Fokontany Bedia, commune Sahambavy	1	6	Youth
Fokontany Antotohazo, commune Sahambavy	2	2	CHV (2 female) and non-beneficiaries of ASOTRY Program (2 old male)
	4	7	Father leaders, mother leaders
Fokontany Ambohibarihena 2, commune Mahasoabe		12	Female youth
Fokontany Ambohimiarina, commune Sahave		3	CHV (2 young and 1 old ones)
		9	Mother leaders (2) and model mothers (7)
Fokontany Ambohimiarina, commune Ambalakely		4	Mother leaders
Fokontany Andrefankidona, commune Ambohimandroso	3	4	Young children aged 7 to 10
		2	Mother leaders
Fokontany Ambatomena, commune Anjoma		4	CHV (1), model mothers (3)
Fokontany Madiorano, commune Ivoamba		2	CHV
Fokontany Ramampiray, commune Mahasoabe	1	2	CHV
		4	Mother leaders
		9	Model mothers
		7	Youth
Fokontany Ambohimandroso, commune Ambohimandroso	6		Beneficiary villagers
	1	1	Mother leader and father leader
Fokontany Ambohimiadana, commune Ambohimandroso		3	CHV
		3	Mother leader

Location	# of male participants	# of female participants	Type of FGD (e.g., youth, lead farmers)
Fokontany Beroy Nord, commune Beroy	5		VSL (4), FFS (2), Community Agents (1), CLGRC (1), President fokontany
Fokontany Beroy Sud	7		Mixed group: VSL, FFS Ag, FFS goats, SAP, CLGRC
		11	Mixed group: VSL, FFS Ag, Community Agents
Fokontany Belamoty	5	5	Mixed group: VSL, FBA, AUP/AUE
Betioky Sud		7	Mother leaders and model mothers
Fokontany Beroy Sud, commune Beroy	3	1	CHV
		4	Mother leaders
Fokontany Belamonty, commune Soaserana	4	4	Youth aged 14 to 22
		8	Mother leaders (4) and model mothers (4)
Fokontany Soaserana Centre, commune Soaserana	7	1	FFS (3), SAP Agent, community livestock worker (2), Community Agents (2)
Soaseràna, Betioky Sud		7	CHVs and mother leaders
Soaseràna, Betioky Sud	5		Youth

Summary Asset Observations

Location	Type of asset	Description and observations
Fokontany Voenana, commune Soavina	Road	Rebuilt with assistance of ASOTRY. Appears to have an active committee and plan for maintenance.
	Agriculture Collecting Centre (ACC) – Rice mill and community grain storage	Handed over to a local cooperative on 1/Sept/19. Met with secretary and president (separately). Appears to have a plan for sustainability. Grain storage is empty at present.
	FBA – grain storage depot, oil press and peanut sheller	The FBA has 80 members, in two sub-groups. This group of 40 built a storage depot with contributions from members (30% and ADRA/ASOTRY, 70%) as well as purchased a peanut sheller and press for making peanut oil. Received instruction in preparing peanuts from ASOTRY
	Nutrition	A dryer for preserving foods for use outside of the harvest period: one dryer per commune, available for the entire community to use, managed by the CHV
	GMP equipment (scales, Shorr board)	In good condition
	Communication tools	Still in good condition
Fokontany Ambondromisotra	Road	4.2km. 2 broken fords. Looks OK. Active AUP
	Irrigation Canal & Dam Wall	4km. Silted up. AUE struggling to keep working. Dam wall rehab appears unfinished
	Rice mill and grain storage	Operational since January 2019. Broken mill for first 3 months.
Fokontany Ambohibarihena II	Water taps + rehabilitation of irrigation canal	Met with the AUE (Association of Water Users). Two components: water taps in village plus rehabilitation of water canal the brings water down to fields from hill (have photos showing 2 taps and also the valley where the water comes from.
Fokontany Ambohimiarina	Road	Rebuilt with assistance of ASOTRY.
Fokontany Ambohipo	ACC + rice mill	Met with the president of the “Miray Soa” ACC. Showed us a very neat and tidy storage depot with bags of rice marked with their owner’s names. Did not see the rice mill as it was not operating in the morning—very few clients at this time of year so it only opens in the afternoon.

Location	Type of asset	Description and observations
Fokontany Andrefankidona, commune Ambohimandroso	Go green	Broad space with newly planted trees around villages planted by community as recommended by ADRA
	Sanitation	Newly built latrines made with local material, kept clean and without bad smell
	Risk and disaster management	Training book intended for local risk and disaster committee. Well appreciated by the committee because it helps them to mitigate risks (eg.: destruction of a cracked home by the community around which children are used to playing)
	Water supply	Community-led water supply with manual pumping. Easy to use for children
Fokontany Ambodirano	Road	
Fokontany Ambohimandroso	Road rehab	And leaky spring box
	Rain Gauge	
Fokontany Ambohimiadana	Roads	
Fokontany Ambatomena, commune Anjoma	Agriculture	Organic waste composting used as fertilizer for agriculture
	Farming	Poultry, ox and pig farming
Fokontany Soaserana Centre, commune Soaserana	Road	Arrived in fokontany via the improved road which connects 3 fokontany in commune Soaserana. Road seems well maintained, but it is only one year since it was completed. The 3 fokontany each do a quotisation of their residents to raise the 30,000 Ariary they contribute every 3 months for its maintenance.
Fokontany Beroy Nord, commune Beroy	Kitchen garden	Plantation of tomatoes, green pepper which were newly adopted
Fokontany Belamoty	Road	
	Water Point	
	Animal Watering Hole	

ANNEX F: COMPARISON OF BASELINE – ENDLINE INDICATORS

Table 5: Comparison of baseline and endline indicators – ASOTRY

Indicator	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]	Number of Observations	
					Baseline	Endline
FOOD SECURITY INDICATORS						
Prevalence of households with moderate or severe hunger (HHS)	19.2	24.4	5.2	ns	2,427	976
Male and female adults	18.1	21.5	3.4	ns	1,994	745
Adult female, no adult male	25.4	33.7	8.3	ns	306	166
Adult male, no adult female	21.2	33.8	12.7	ns	120	55
Child, no adults	NA	NA	NA	ns	7	10
Average Household Dietary Diversity Score (HDDS)	3.9	3.8	0.0	ns	2,427	762
Coping Strategies Index	37.6	45.8	8.2	ns	2,427	959
POVERTY INDICATORS						
Per capita expenditures (as a proxy for income) of USG targeted beneficiaries[2]	$1.31	$1.44	0.1	ns	2,426	969
Male and Female Adults	$1.31	$1.50	0.2	+	1,993	739
Adult Female no Adult Male	$1.22	$1.14	-0.1	ns	306	166
Adult Male no Adult Female	$1.56	$1.60	0.0	ns	120	54
Child No Adults	NA	NA	NA	ns	7	10
Prevalence of poverty: Percent of people living on less than $1.90/day	82.9	78.4	-4.5	ns	2,426	980
Male and Female Adults	83.2	76.8	-6.4	*	1,993	748
Adult Female no Adult Male	83.7	87.6	3.9	ns	306	167
Adult Male no Adult Female	69.0	69.8	0.7	ns	120	55
Child No Adults	NA	NA	NA	ns	7	10
Mean depth of poverty	38.1	38.6	0.5	ns	2,426	980
Male and Female Adults	37.8	36.6	-1.1	ns	1,993	748
Adult Female no Adult Male	43.7	47.0	3.2	ns	306	167

Indicator	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]	Number of Observations	
					Baseline	Endline
Adult Male no Adult Female	31.3	36.7	5.4	ns	120	55
Child No Adults	NA	NA	NA	ns	7	10
WASH INDICATORS						
Percentage of households using an improved source of drinking water	29.2	27.2	-2.0	ns	2,427	978
Percent of households in target areas practicing correct use of recommend household water treatment technologies	26.8	36.3	9.5	**	2,427	977
Percent of households in target areas practicing boiling	25.7	35.0	9.3	*	2,427	978
Percent of households in target areas practicing bleaching	2.1	6.9	4.8	***	2,427	978
Percent of households in target areas practicing filtering	0.4	0.6	0.2	ns	2,427	978
Percent of households in target areas practicing solar disinfecting	0.1	0.3	0.2	ns	2,427	978
Percentage of households that can obtain drinking water in less than 30 minutes (round trip)	84.3	72.2	-12.1	**	2,427	978
Percent of households using improved sanitation facilities	2.4	0.9	-1.6	*	2,427	978
Percent of households in target areas practicing open defecation	43.7	37.6	-6.1	ns	2,427	978
Percent of households with soap and water at a handwashing station commonly used by family members	5.4	7.8	2.4	ns	2,427	978
AGRICULTURAL INDICATORS						
Percentage of farmers who used financial services in the past 12 months	7.9	20.7	12.8	***	2,776	1,105
Male farmers	8.0	21.9	13.9	***	1,939	624
Female farmers	7.8	19.3	11.5	***	837	481
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	50.3	27.1	-23.2	***	2,776	1,116

Indicator	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]	Number of Observations	
					Baseline	Endline
Male farmers	51.9	30.3	-21.7	***	1,939	629
Female farmers	46.7	23.1	-23.6	***	837	487
Percentage of farmers who used at least **three** sustainable agriculture (crop, livestock, NRM) practices and/or technologies in the past 12 months	68.5	64.4	-4.0	ns	2,776	818
Male farmers	70.1	68.3	-1.8	ns	1,939	479
Female farmers	64.9	59.0	-6.0	ns	837	339
Percentage of farmers who used at least **two** sustainable crop practices and/or technologies in the past 12 months	75.4	50.8	-24.7	***	2,776	1,148
Male farmers	76.3	54.1	-22.3	***	1,939	646
Female farmers	73.4	46.4	-26.9	***	837	502
Percentage of farmers who used at least **two** sustainable livestock practices and/or technologies in the past 12 months	38.6	34.1	-4.5	ns	2,776	1,148
Male farmers	41.7	38.0	-3.7	ns	1,939	646
Female farmers	31.3	29.0	-2.3	ns	837	502
Percentage of farmers who used at least **two** sustainable NRM practices in the past 12 months	2.6	2.4	-0.2	ns	2,776	818
Male farmers	2.8	2.9	0.1	ns	1,939	479
Female farmers	2.1	1.6	-0.5	ns	837	339
Percentage of farmers who used improved storage practices in the past 12 months	81.2	74.0	-7.3	+	2,749	1,093
Male farmers	81.9	76.8	-5.1	ns	1,921	629
Female farmers	79.7	70.2	-9.5	*	828	464
Percentage of farmers who used agricultural or livestock services in the past 12 months	7.2	13.6	6.5	**	2,749	1,093
Male farmers	7.5	13.6	6.0	**	1,921	629
Female farmers	6.4	13.7	7.3	**	828	464
WOMEN'S HEALTH AND NUTRITION INDICATORS						

Indicator	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]	Number of Observations	
					Baseline	Endline
Prevalence of underweight women	22.2	15.7	-6.4	*	2,243	918
Minimum Dietary Diversity - Women (MDD-W)	20.8	13.3	-7.5	**	2,491	986
Women's Dietary Diversity Score (WDDS)	3.3	2.9	-0.4	**	2,491	986
Percent of births receiving at least 4 antenatal care (ANC) visits[3]	49.7	62.1	12.4	**	1,262	483
Contraceptive Prevalence Rate	46.9	39.0	-7.9	ns	1,320	509
CHILDREN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of underweight children under 5 years of age (Total)	31.4	15.9	-15.5	***	1,902	755
Male	31.5	17.7	-13.8	***	963	374
Female	31.3	14.2	-17.1	***	939	381
Prevalence of stunted children under 5 years of age (Total)	53.6	39.4	-14.2	***	1,902	755
Male	57.5	41.9	-15.6	***	963	374
Female	49.7	36.9	-12.8	**	939	381
Prevalence of wasted children under 5 years of age (Total)	6.0	2.9	-3.1	**	1,902	755
Male	6.4	3.8	-2.6	*	963	374
Female	5.6	2.0	-3.6	**	939	381
Percentage of children under age 5 with diarrhea in the last two weeks (Total)	20.5	17.1	-3.3	ns	1,983	779
Male	20.5	16.3	-4.2	ns	1,014	392
Female	20.5	18.0	-2.5	ns	969	387
Percentage of children under age 5 with diarrhea treated with ORT (Total)	48.5	53.1	4.6	ns	392	135
Male	44.6	56.4	11.8	ns	200	66
Female	52.6	50.0	-2.6	ns	192	69
Prevalence of exclusive breast-feeding of children under six months of age	53.3	46.2	-7.0	ns	202	81
Male	55.9	48.4	-7.5	ns	100	46

Indicator	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]	Number of Observations	
					Baseline	Endline
Female	50.6	43.2	-7.4	ns	102	35
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	9.5	5.9	-3.6	ns	555	228
Male	9.9	6.7	-3.2	ns	285	108
Female	9.2	5.3	-3.9	ns	270	120
GENDER INDICATORS						
Percentage of men and women who earned cash in the past 12 months	58.0	36.1	-21.8	***	3,977	1,496
Percentage of men who earned cash in the past 12 months	79.0	48.5	-30.5	***	1,986	747
Percentage of women who earned cash in the past 12 months	37.0	23.8	-13.2	*	1,991	749
Percentage of men in union and earning cash who make decisions alone about the use of self-earned cash	14.7	9.5	-5.1	*	1,449	313
Percentage of women in union and earning cash who make decisions alone about the use of self-earned cash	25.5	17.4	-8.1	*	642	151
Percentage of men in union and earning cash who make decisions jointly with spouse/partner about the use of self-earned cash	65.7	64.7	-1.1	ns	1,449	313
Percentage of women in union and earning cash who make decisions jointly with spouse/partner about the use of self-earned cash	60.9	69.7	8.7	ns	642	151
Percentage of men and women with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	72.1	78.2	6.2	+	1,248	353
Percentage of men with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	66.1	81.7	15.5	**	547	172

Indicator	2015 Baseline	2019 Endline	Raw Difference (Endline - Baseline)	Significance Level[1]	Number of Observations	
					Baseline	Endline
Percentage of women with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	76.8	78.2	1.4	ns	701	181
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	17.5	22.3	4.8	ns	541	137
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	41.7	29.4	-12.3	*	548	146
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	40.0	53.0	12.9	*	541	137
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	36.9	51.2	14.3	**	548	146
Percentage of men in union with children under two who make child health and nutrition decisions alone	7.8	31.0	23.2	***	541	137
Percentage of women in union with children under two who make child health and nutrition decisions alone	42.9	27.9	-15.0	**	548	146
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	45.0	49.2	4.2	ns	541	137
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	44.2	59.3	15.0	**	548	146

[1] ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001

[2] Expressed in constant 2010 USD

[3] Women age 15-49 with pregnancy in the past 5 years

NA : Not available, cell has less than 30 observations

ANNEX G: COMPARISON OF BASELINE – ENDLINE INDICATORS BY PROJECT PARTICIPATION STATUS AND BY GEOGRAPHICAL ZONE

Table 6: Comparison of baseline and endline indicators by project participation status and by geographic zone - ASOTRY

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
FOOD SECURITY INDICATORS														
Prevalence of households with moderate or severe hunger (HHS)	19.2	9.4	56.4	24.4	25.5	23.8	9.1	54.4	ns	ns	ns	ns	ns	ns
Male and female adults	18.1	9.4	57.7	21.5	23.7	20.3	8.7	57.9	ns	ns	ns	ns	ns	ns
Adult female, no adult male	25.4	11.8	57.9	33.7	35.6	32.5	13.4	50.5	ns	ns	ns	ns	ns	ns
Adult male, no adult female	21.2	3.6	46.3	33.8	17.4	38.7	4.1	53.7	ns	ns	ns	*	ns	ns
Child, no adults	NA	NA	NA	NA	NA	NA	NA	NA	ns	ns	ns	ns	NA	NA
Average Household Dietary Diversity Score (HDDS)	3.9	4.2	2.5	3.8	4.0	3.7	4.5	2.6	ns	ns	ns	+	+	ns
Coping Strategies Index	37.6	25.1	85.3	45.8	53.7	41.3	32.9	71.8	ns	*	ns	**	***	ns
POVERTY INDICATORS														
Per capita expenditures (as a proxy for income) of USG targeted beneficiaries[2]	$1.31	$1.40	$0.93	$1.44	$1.39	$1.47	$1.69	$0.97	ns	ns	ns	ns	**	ns
Male and Female Adults	$1.31	$1.39	$0.93	$1.50	$1.45	$1.54	$1.69	$0.96	+	ns	+	ns	**	ns

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Adult Female no Adult Male	$1.22	$1.42	$0.78	$1.14	$1.18	$1.11	$1.41	$0.91	ns	ns	ns	ns	ns	ns
Adult Male no Adult Female	$1.56	$1.80	$1.26	$1.60	$1.32	$1.69	$2.50	$1.04	ns	ns	ns	ns	+	ns
Child No Adults	NA	NA	NA	NA	NA	NA	NA	NA	ns	ns	ns	ns	NA	NA
Prevalence of poverty: Percent of people living on less than $1.90/day	82.9	81.1	90.5	78.4	78.2	78.4	73.2	88.6	ns	+	ns	ns	*	ns
Male and Female Adults	83.2	81.5	91.2	76.8	76.5	77.0	73.0	87.4	*	*	+	ns	*	ns
Adult Female no Adult Male	83.7	78.9	94.3	87.6	85.8	88.6	83.4	91.1	ns	ns	ns	ns	ns	ns
Adult Male no Adult Female	69.0	66.3	72.5	69.8	77.1	67.6	41.3	88.7	ns	ns	ns	ns	+	ns
Child No Adults	NA	NA	NA	NA	NA	NA	NA	NA	ns	ns	ns	ns	NA	NA
Mean depth of poverty	38.1	34.3	54.0	38.6	38.5	38.6	30.3	54.9	ns	ns	ns	ns	*	ns
Male and Female Adults	37.8	34.3	54.1	36.6	36.5	36.8	30.4	54.2	ns	ns	ns	ns	+	ns
Adult Female no Adult Male	43.7	36.1	60.5	47.0	47.1	46.9	34.9	57.2	ns	ns	ns	ns	ns	ns
Adult Male no Adult Female	31.3	26.0	37.9	36.7	38.8	36.0	11.8	53.3	ns	ns	ns	ns	*	ns
Child No Adults	NA	NA	NA	NA	NA	NA	NA	NA	ns	ns	ns	ns	NA	NA
WASH INDICATORS														
Percentage of households using an improved source of drinking water	29.2	26.7	38.9	27.2	30.3	25.5	23.2	35.1	ns	ns	ns	ns	ns	ns

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Percent of households in target areas practicing correct use of recommend household water treatment technologies	26.8	32.3	5.9	36.3	45.0	31.3	35.2	38.4	**	***	ns	**	ns	***
Percent of households in target areas practicing boiling	25.7	31.0	5.3	35.0	41.8	31.1	34.6	35.7	*	***	ns	*	ns	***
Percent of households in target areas practicing bleaching	2.1	2.3	1.2	6.9	12.9	3.6	6.3	8.1	***	***	ns	***	**	*
Percent of households in target areas practicing filtering	0.4	0.5	0.0	0.6	0.5	0.6	0.1	1.4	ns	ns	ns	ns	ns	ns
Percent of households in target areas practicing solar disinfecting	0.1	0.1	0.0	0.3	0.6	0.2	0.0	1.0	ns	ns	ns	ns	ns	ns
Percentage of households that can obtain drinking water in less than 30 minutes (round trip)	84.3	88.8	67.4	72.2	72.1	72.2	79.9	57.0	**	**	**	ns	**	ns
Percent of households using improved sanitation facilities	2.4	3.0	0.2	0.9	0.3	1.2	1.3	0.0	*	***	ns	ns	+	ns
Percent of households in target areas practicing open defecation	43.7	38.7	62.6	37.6	35.9	38.5	18.3	75.2	ns	ns	ns	ns	***	ns

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Percent of households with soap and water at a handwashing station commonly used by family members	5.4	6.7	0.6	7.8	10.7	6.1	9.7	4.1	ns	*	ns	*	+	+
AGRICULTURAL INDICATORS														
Percentage of farmers who used financial services in the past 12 months	7.9	9.6	1.6	20.7	33.5	13.0	19.6	23.5	***	***	*	***	**	***
Male farmers	8.0	9.4	2.2	21.9	35.3	13.5	20.5	25.3	***	***	*	***	**	***
Female farmers	7.8	9.9	0.6	19.3	31.1	12.2	18.3	21.5	***	***	ns	***	+	***
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	50.3	55.3	31.8	27.1	31.9	24.2	29.7	21.3	***	***	***	+	***	ns
Male farmers	51.9	56.4	34.4	30.3	34.3	27.8	33.8	21.5	***	**	***	ns	***	+
Female farmers	46.7	52.6	26.6	23.1	28.7	19.5	24.0	21.0	***	***	***	+	***	ns
Percentage of farmers who used at least **three** sustainable agriculture (crop, livestock, NRM) practices and/or technologies in the past 12 months	68.5	80.3	24.1	64.4	69.2	61.6	76.2	25.5	ns	ns	ns	+	ns	ns
Male farmers	70.1	81.5	24.9	68.3	72.7	65.6	80.0	28.1	ns	ns	ns	ns	ns	ns
Female farmers	64.9	77.6	22.6	59.0	64.0	55.9	70.6	22.1	ns	ns	ns	ns	ns	ns

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Percentage of farmers who used at least **two** sustainable crop practices and/or technologies in the past 12 months	75.4	87.3	31.1	50.8	52.9	49.5	62.0	24.8	***	***	***	ns	***	ns
Male farmers	76.3	88.2	29.5	54.1	56.2	52.8	65.3	26.4	***	**	**	ns	***	ns
Female farmers	73.4	85.0	34.4	46.4	48.5	45.2	57.5	23.0	***	***	***	ns	***	ns
Percentage of farmers who used at least **two** sustainable livestock practices and/or technologies in the past 12 months	38.6	44.8	15.2	34.1	35.3	33.4	44.7	9.6	ns	ns	ns	ns	ns	ns
Male farmers	41.7	48.2	16.4	38.0	37.8	38.2	48.6	12.0	ns	ns	ns	ns	ns	ns
Female farmers	31.3	36.8	12.9	29.0	31.9	27.2	39.5	6.7	ns	ns	ns	ns	ns	ns
Percentage of farmers who used at least **two** sustainable NRM practices in the past 12 months	2.6	3.3	0.2	2.4	4.9	0.8	2.9	0.5	ns	ns	+	*	ns	ns
Male farmers	2.8	3.5	0.0	2.9	5.3	1.4	3.5	0.9	ns	ns	ns	ns	ns	ns
Female farmers	2.1	2.6	0.6	1.6	4.2	0.0	2.0	0.0	ns	ns	*	*	ns	ns
Percentage of farmers who used improved storage practices in the past 12 months	81.2	85.5	65.2	74.0	71.7	75.4	80.5	59.2	+	+	+	ns	ns	ns
Male farmers	81.9	86.4	64.0	76.8	72.0	79.8	83.5	59.9	ns	+	ns	*	ns	ns

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Female farmers	79.7	83.4	67.7	70.2	71.4	69.4	76.1	58.3	*	ns	*	ns	+	ns
Percentage of farmers who used agricultural or livestock services in the past 12 months	7.2	8.4	2.7	13.6	29.7	3.5	9.2	23.6	**	***	**	***	ns	***
Male farmers	7.5	8.7	2.9	13.6	29.7	3.3	9.1	24.6	**	***	**	***	ns	***
Female farmers	6.4	7.6	2.3	13.7	29.6	3.8	9.4	22.4	**	***	ns	***	ns	**
WOMEN'S HEALTH AND NUTRITION INDICATORS														
Prevalence of underweight women	22.2	19.6	35.4	15.7	18.1	14.2	12.1	25.4	*	ns	**	ns	***	ns
Minimum Dietary Diversity - Women (MDD-W)	20.8	23.2	9.7	13.3	16.5	11.3	16.8	5.5	**	ns	**	+	*	+
Women's Dietary Diversity Score (WDDS)	3.3	3.5	2.5	2.9	3.0	2.9	3.2	2.4	**	+	**	ns	*	ns
Percent of births receiving at least 4 antenatal care (ANC) visits[3]	49.7	49.7	49.7	62.1	65.7	59.7	63.8	58.8	**	**	*	ns	**	ns
Contraceptive Prevalence Rate	46.9	54.3	16.7	39.0	40.9	37.7	51.4	8.1	ns	ns	ns	ns	ns	*
CHILDREN'S HEALTH AND NUTRITION INDICATORS														
Prevalence of underweight children under 5 years of age (Total)	31.4	33.8	25.2	15.9	14.7	16.9	17.3	14.1	***	***	***	ns	***	**
Male	31.5	33.8	25.7	17.7	14.0	20.6	17.5	17.9	***	***	**	ns	***	+

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Female	31.3	33.9	24.7	14.2	15.5	13.1	17.1	10.7	***	***	***	ns	***	***
Prevalence of stunted children under 5 years of age (Total)	53.6	59.4	38.7	39.4	37.7	40.7	46.6	30.0	***	***	**	ns	***	+
Male	57.5	62.6	44.4	41.9	39.4	43.8	46.4	35.3	***	***	**	ns	***	ns
Female	49.7	56.1	32.9	36.9	35.9	37.6	46.8	25.3	**	*	*	ns	+	+
Prevalence of wasted children under 5 years of age (Total)	6.0	5.4	7.5	2.9	3.8	2.2	1.7	4.4	**	+	***	ns	***	ns
Male	6.4	5.6	8.4	3.8	4.5	3.2	2.5	5.7	*	ns	+	ns	*	ns
Female	5.6	5.2	6.6	2.0	3.1	1.1	0.9	3.3	**	ns	***	ns	**	ns
Percentage of children under age 5 with diarrhea in the last two weeks (Total)	20.5	19.1	24.0	17.1	20.4	14.7	16.3	18.2	ns	ns	*	+	ns	ns
Male	20.5	19.7	22.3	16.3	21.3	12.7	15.8	17.0	ns	ns	**	*	ns	ns
Female	20.5	18.3	25.8	18.0	19.5	16.9	16.8	19.4	ns	ns	ns	ns	ns	ns
Percentage of children under age 5 with diarrhea treated with ORT (Total)	48.5	48.5	48.6	53.1	59.3	46.6	44.9	62.1	ns	+	ns	ns	ns	ns
Male	44.6	47.0	39.4	56.4	61.1	50.8	51.6	62.6	ns	+	ns	ns	ns	ns
Female	52.6	50.1	57.0	50.0	57.4	43.4	37.7	61.7	ns	ns	ns	ns	ns	ns
Prevalence of exclusive breast-feeding of children under six months of age	53.3	60.1	38.1	46.2	54.7	41.7	54.7	29.8	ns	ns	ns	ns	ns	ns
Male	55.9	61.5	45.8	48.4	63.3	43.1	60.1	28.2	ns	ns	ns	ns	ns	ns

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Female	50.6	59.0	28.3	43.2	48.0	38.8	47.7	32.4	ns	ns	ns	ns	ns	ns
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	9.5	11.7	4.4	5.9	5.2	6.5	9.5	1.1	ns	ns	ns	ns	ns	ns
Male	9.9	13.2	1.4	6.7	6.9	6.5	10.0	0.0	ns	ns	ns	ns	ns	ns
Female	9.2	10.0	7.2	5.3	3.5	6.6	9.0	1.7	ns	+	ns	ns	ns	ns
GENDER INDICATORS														
Percentage of men and women who earned cash in the past 12 months	58.0	57.1	61.7	36.1	35.1	36.8	42.2	19.4	***	***	***	ns	**	***
Percentage of men who earned cash in the past 12 months	79.0	78.5	81.1	48.5	47.2	49.3	55.8	28.4	***	***	***	ns	***	***
Percentage of women who earned cash in the past 12 months	37.0	35.8	42.5	23.8	23.0	24.3	28.7	10.4	*	**	+	ns	ns	*
Percentage of men in union and earning cash who make decisions alone about the use of self-earned cash	14.7	10.2	33.1	9.5	10.9	8.8	9.9	7.5	*	ns	*	ns	ns	**
Percentage of women in union and earning cash who make decisions alone about the use of self-earned cash	25.5	26.0	23.6	17.4	28.3	11.2	18.5	9.0	*	ns	***	+	+	+

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Percentage of men in union and earning cash who make decisions jointly with spouse/partner about the use of self-earned cash	65.7	70.6	45.4	64.7	65.9	63.9	68.1	47.2	ns	ns	ns	ns	ns	ns
Percentage of women in union and earning cash who make decisions jointly with spouse/partner about the use of self-earned cash	60.9	64.3	47.7	69.7	59.7	75.3	69.6	69.7	ns	ns	*	ns	ns	+
Percentage of men and women with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	72.1	76.9	60.2	78.2	77.3	79.0	85.3	67.3	+	ns	+	ns	*	ns
Percentage of men with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	66.1	71.8	52.3	81.7	84.5	79.6	87.9	69.0	**	***	*	ns	**	+
Percentage of women with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	76.8	80.8	66.6	78.2	75.0	80.8	83.2	72.2	ns	ns	ns	ns	ns	ns

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	17.5	13.6	27.0	22.3	17.6	26.4	19.1	28.6	ns	ns	ns	ns	ns	ns
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	41.7	43.3	37.8	29.4	31.2	27.8	23.9	37.1	*	+	*	ns	***	ns
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	40.0	42.9	33.2	53.0	53.9	52.2	53.1	52.8	*	ns	ns	ns	ns	+
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	36.9	38.6	32.7	51.2	50.7	51.7	57.9	41.9	**	+	*	ns	**	ns
Percentage of men in union with children under two who make child health and nutrition decisions alone	7.8	6.2	11.8	31.0	32.1	30.1	31.1	30.9	***	**	***	ns	***	**
Percentage of women in union with children under two who make child health and nutrition decisions alone	42.9	44.3	39.6	27.9	29.0	27.0	28.0	27.8	**	*	**	ns	**	+

Indicator	Baseline 2015 (BL)			Endline 2019 (EL)					BL-EL Comparison (Sig.)			Endline Comparison by Participation Status (Sig.)	BL-EL Comparison by Geographic Zone (Sig.)	
	All HHs (I)	Central Highlands (II)	South (III)	All HHs (IV)	Direct Participants (V)	Indirect Participants (VI)	Central Highlands (VII)	South (VIII)	All HHs (IX)	Direct Participants (X)	Indirect Participants (XI)	Direct vs. Indirect Participation (XII)	Central Highlands (XIII)	South (XIV)
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	45.0	48.6	36.5	49.2	48.4	50.0	45.6	56.3	ns	ns	ns	ns	ns	+
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	44.2	45.5	41.0	59.3	59.4	59.2	63.6	53.3	**	*	*	ns	**	ns

1 ns = not significant, † p<0.1,* p<0.05, ** p<0.01, *** p<0.001

2 Expressed in constant 2010 USD

3 Women age 15-49 with pregnancy in the past 5 years

NA: Not available, cell has less than 30 observations

NOTE:
The household survey asked respondents whether they participated regularly in any of the project activities. Respondents who answered "Yes" are considered direct participants. Respondents who answered "No" or "Don't know" are considered indirect participants. Households with missing information on project participation are not included in the BL-EL comparison by participation status (Columns X and XI) nor in the endline comparison by participation status (Column XII).

ANNEX H: ADDITIONAL TABLES

Table 7: Estimated population in the endline survey area by project (Madagascar, 2019)

	Overall	ASOTRY	Fararano
Total Population	1,097,731	480,300	617,431
Male	547,184	241,200	305,984
Female	550,547	239,100	311,447
Respondent is a woman of reproductive age (15-49)	246,776	105,118	141,657
Respondent is a pregnant woman of reproductive age (15-49)	20,878	9,123	11,755
Respondent is married/in a union and a woman of reproductive age (15-49)	144,506	59,314	85,191
Respondent had a live birth within the last 5 years & is a woman of reproductive	119,798	49,526	70,271
Respondent is a child under 5	185,020	78,794	106,225
Male	93,810	40,263	53,548
Female	91,209	38,532	52,678
Respondent is a child under 6 months of age	16,056	7,770	8,287
Male	8,877	4,540	4,337
Female	7,179	3,230	3,949
Respondent is a child 6-23 months of age	53,297	21,870	31,427
Male	27,496	10,289	17,207
Female	25,801	11,582	14,220
Respondent is a farmer	298,318	129,372	168,947
Male	171,345	73,831	97,514
Female	126,974	55,541	71,433

Table 8: Household characteristics by project (Madagascar, 2019

	Overall	ASOTRY	Fararano
Total households	228,082	94,109	133,973
Adult Female no Adult Male	37,916	16,319	21,597
Adult Male no Adult Female	17,184	5,367	11,817
Male and Female	170,186	71,389	98,797
Child No Adults	2,796	1,034	1,762
Gendered household type (Percent of households)			
Adult Female no Adult Male	16.6	17.3	16.1
Adult Male no Adult Female	7.5	5.7	8.8
Male and Female	74.6	75.9	73.7
Child No Adults	1.2	1.1	1.3
Average household size (Number of persons)	4.8	5.1	4.6
Percent of households with children under 5 years of age	56.8	57.6	56.3
Percent of households with a child 6-23 months of age	22.9	22.5	23.1
Percent of households with a child under 6 months of age	6.6	7.6	5.9
Household headship (Percent male)	76.3	74.3	77.7
Education level of head of household (Percent of households)			
No formal education	32.5	28.8	35.2
Pre-primary	1.8	3.3	0.7
Primary	39.1	45.2	34.7
Secondary	25.1	22.0	27.4
Higher	1.5	0.7	2.1
Number of responding households	2,073	980	1,093
Adult Female no Adult Male	349	167	182
Adult Male no Adult Female	147	55	92
Male and Female Adults	1,556	748	808
Child No Adults	21	10	11

Note: Adults are defined as individuals 18 or older.

Table 9: Food groups consumed (percentage of households) (ASOTRY)

	Overall	ASOTRY
Cereals	83.2	79.7
Root, tubers and plantains	64.9	72.2
Vegetables	53.3	59.4
Fruits	14.0	16.1
Meats, organs, blood	17.2	16.0
Eggs	5.2	2.7
Fish and seafood	24.6	11.9
Pulses/legumes/nuts	31.3	31.8
Milk and milk products	6.8	5.2
Oil/fats	38.6	30.2
Sugar/honey	49.4	44.8
Other miscellaneous	14.4	10.5
Number of responding households	*1677*	*762*

Table 10: Type of sanitation facility and source of drinking water (percentage of households) (ASOTRY)

	Overall	ASOTRY
Improved, not shared sanitation facility		
Flush piped to sewer system	0.1	0.0
Flush to septic tank	0.6	0.0
Flush to pit latrine	0.3	0.1
Ventilated improved pit latrine	0.1	0.2
Pit latrine with slab	0.9	0.5
Number of households	*2,068*	*978*
Improved, shared sanitation facility		
Flush piped sewer system	0.0	0.0
Flush to septic tank	0.5	0.0
Flush to pit latrine	0.1	0.1
Ventilated improved pit latrine	0.6	0.4
Pit latrine with slab	2.5	1.3
Number of households	*2,068*	*978*
Non-improved sanitation facility		
Flush to somewhere else	0.3	0.4
Flush to don't know where	0.1	0.0
Latrine without slab/open pit	45.5	59.3
No facility/bush/field	47.9	37.6
Hanging latrine (pile)	0.1	0.0
Other	0.4	0.0
Number of households	*2,065*	*976*
Improved source of drinking water		
Piped into home	0.0	0.0
Piped into yard or plot	0.0	0.0
Public tap/standpipe	7.3	7.1
Tube well or borehole	4.3	9.1
Protected well	7.8	3.6
Protected spring	4.4	7.4
Number of households	*2,068*	*978*
Non - Improved source of drinking water		
Unprotected well	21.1	6.6
Unprotected spring	25.1	38.3
Tanker truck	0.1	0.0
Surface water (River/Dam/Lake/Pond/Stream/Canal/Irrigation Channel)	12.3	12.5
Digging into a dry river bed	1.4	3.1
Number of households	*2,068*	*978*
Water availability		
Water is generally available from this source year-round (% 'Yes')	77.6	83.1
Water was unavailable for a day or more during the last two weeks (% 'No')	79.2	86.3
Number of households	*2,064*	*976*

Table 11: Financial services used by farmers (percentage of households) (ASOTRY)

	Overall	ASOTRY
Credit	8.5	8.0
Agro-dealers	1.3	0.8
Contract farming	1.3	0.3
Village savings groups	0.6	0.5
Farmers associations/coops	0.8	0.5
MFI (Micro-finance Institution)	0.5	0.1
Middlemen	0.0	0.0
NGO (non-government organization)	3.0	4.6
Government institution	0.9	1.3
Non-cash loans	0.8	0.4
Input/cash from buyers	0.1	0.0
Other	0.8	0.5
Did not take agricultural credit	91.5	92.0
Number of farmers	*2311*	*1104*
Savings	12.8	9.8
Village savings and loan	7.2	6.9
MFI	2.4	1.1
Cooperative	0.4	0.4
Post Office	0.3	0.0
Commercial banks	0.9	0.3
Mobile banking	2.9	1.8
Other	2.7	3.2
Did not save	84.5	87.1
Number of farmers	*2354*	*1107*
Agricultural Insurance	12.9	11.6
Number of farmers	*2417*	*1146*

Table 12: Value chain activities (percentage of farmers) (ASOTRY)

	Overall	ASOTRY
Purchase Inputs	1.4	1.4
Mobile financial services	0.8	0.2
Financial services other than mobile	0.3	0.5
Training and extension services	2.6	2.5
Contract Farming	3.8	1.6
Solar drying	18.6	18.8
Storage (warehousing)	9.8	8.6
Processing produce	12.0	7.5
Trading or marketing produce	6.8	4.4
None of these activities	69.7	72.9
Number of farmers	*2370*	*1116*

Table 13: Sustainable agricultural practices (percentage of farmers) (ASOTRY)

	Overall	ASOTRY
Crops		
Manure	49.4	71.0
Compost	26.9	46.4
Mulching	7.8	7.2
Weed control	32.9	33.7
Row planting	15.4	15.3
Contour planting	8.2	6.0
Terracing	6.4	10.9
Early planting or planting with first rains	16.7	17.6
Use of improved crop seeds	11.5	15.0
Crop rotations	24.6	27.1
Intercropping	27.9	28.9
Use of natural pesticides (chili, beer, etc...)	3.3	5.2
Use of chemical pesticides	8.0	6.1
Use of guano fertilizer	1.2	1.3
Irrigation management	9.5	8.2
Conservation agriculture/farming	2.6	2.2
Rice-fish farming	1.9	3.7
Use of straw	8.0	14.1
Inter-season planting	9.7	13.7
Did not use any of these practices in the past 12 months	22.4	10.6
Number of responding farmers	*2,182*	*1,069*
Livestock		
Improved animal shelters	11.6	8.1
Vaccinations	54.0	66.2
Deworming	39.1	50.0
Homemade animal feeds made of locally available products	31.3	29.6
Animal feed supplied by stockfeed	3.3	2.0
Pen feeding	15.7	13.4
Fodder protection	1.2	0.3
Used the services of community animal health workers/paravets	2.7	1.0
Race selection	5.3	5.9
Building and livestock machinery	1.6	0.3
Did not practice any of these activities in the past 12 months	25.6	19.6
Number of responding farmers	*1,576*	*815*
Natural resource management		
Management or protection of watersheds	7.3	3.4
Agroforestry	9.5	6.3
Reforestation	13.1	13.3
Sustainable harvesting of forest products	3.5	1.9
Did not practice any of these activities in the past 12 months	74.7	80.7
Number of responding farmers	*1,545*	*794*

Table 14: Improved storage practices (percentage of farmers) (ASOTRY)

	Overall	ASOTRY
Storage practices		
Improved granary	3.4	3.0
Underground storage	3.8	5.0
Warehousing	31.2	34.1
Triple bag	77.5	81.1
Minitank	3.2	2.2
Did not use any storage practices	4.5	4.3
Number of farmers	*1,750*	*848*

Table 15: Program participation by survey respondent households (ASOTRY)

	ASOTRY Overall	Central	South
Participation in project activities			
Yes	36.3	34.2	40.3
No	63.7	65.8	59.7
Number of respondent households	*980*	*659*	*321*
Type of project activities in which households participated			
Received food rations	77.0	75.1	80
Received cash transfer	27.2	15.9	46
Received food rations or cash transfer	82.0	79.3	87
Participated in nutrition training	55.2	47.0	69
Participated in agr training	53.3	40.4	75
Participated in agr OR nutrition training	66.0	57.9	79
Participated in agr AND nutrition training	42.5	29.6	64
Participated in other activities	24.1	21.8	28
Participated in agr OR nutrition OR other activities	72.8	66.3	84
Number of respondent households	*365*	*228*	*137*
Number of activities respondent was involved in			
Average number	2.4	2.0	3
Participated in 2 or more activities	69.1	62.5	80
Participated in 3 or more activities	46.9	35.0	67
Number of respondent households	*365*	*228*	*137*

Table 16: Assistance received and shocks experienced (ASOTRY)

	ASOTRY Overall	Central	South
Types of assistance received:			
Food	24.9	16.4	41.7
Cash	12.0	4.5	26.5
Crop inputs	4.3	2.5	7.8
Livestock inputs	0.9	0.3	2.0
Kit d'urgence	0.1	0.2	0.0
WASH inputs	2.9	0.5	7.7
Other	1.3	1.0	2.0
Mean number of types of assistance received	0.5	0.3	0.9
Received assistance from 1 or more sources in the past 6 months	31.7	21.4	51.8
Number of respondent households	*944*	*633*	*311*
Types of shock experienced:			
Drought	36.3	26.9	53.7
Flood or water logging	27.5	40.0	3.9
Strong winds or storms	34.0	40.6	21.5
Crop disease or crop pests	31.3	29.5	34.6
Livestock disease or deaths	17.4	22.3	8.2
Loss of job/non-payment	2.3	2.7	1.6
Large fall in sale price of crops	16.0	22.6	3.6
Large rise in prices of food	27.3	29.6	22.9
Death in household	5.6	5.0	6.8
Break-up of household	1.8	1.3	2.7
Illness	35.4	28.8	47.9
Theft	5.6	7.3	2.4
House damaged due to fire	0.0	0.0	0.0
End of aid	0.6	0.9	0.0
Other	0.8	0.6	1.2
Mean number of shocks experienced	2.5	2.6	2.3
Experienced 1 or more shocks in the past 12 months	81.3	79.0	85.5
Experienced 4 or more shocks in the past 12 months	29.2	33.8	20.5
Number of respondent households	*954*	*634*	*320*

Table 17: Height and BMI of non-pregnant women 15-49 years of age (percentage) (ASOTRY)

	Overall	ASOTRY
Percent less than 145 cm	6.1	6.0
Mean body mass index (BMI)	21.2	21.0
Normal		
18.5-24.9 (total normal)	72.5	77.0
Underweight		
<18.5 (total underweight)	16.4	15.7
17.0-18.4 (mildly underweight)	12.0	11.2
<17 (moderately and severely underweight)	4.4	4.5
Overweight/obese		
≥25 (total overweight or obese)	11.1	7.3
25.0-29.9 (overweight)	9.4	6.6
≥30.0 (obese)	1.7	0.6
Number of non-pregnant women of reproductive age	*1,918*	*918*

Table 18: Stunting, underweight and wasting by age (months) (percentage) (ASOTRY)

	Overall	ASOTRY
Prevalence of stunted children under 5 years of age		
<6	18.8	17.8
6-11	20.1	24.8
12-17	39.4	53.1
18-23	50.8	58.2
24-29	39.9	47.6
30-35	41.2	44.8
36-41	42.3	39.3
42-47	31.0	36.4
48-53	36.6	41.8
54-59	26.8	26.1
Prevalence of underweight children under 5 years of age		
<6	11.7	8.5
6-11	18.6	16.5
12-17	13.9	21.5
18-23	20.6	22.1
24-29	20.0	19.7
30-35	15.4	14.8
36-41	15.8	13.0
42-47	13.9	17.4
48-53	14.3	14.7
54-59	17.0	9.1
Prevalence of wasted children under 5 years of age		
<6	3.3	0.6
6-11	4.4	4.0
12-17	3.0	6.4
18-23	2.9	5.1
24-29	4.3	4.6
30-35	2.3	1.4
36-41	3.9	4.1
42-47	1.9	0.0
48-53	2.4	1.4
54-59	1.1	0.0
Number of children under 5 years of age	*1,549*	*755*

Table 19: Components of minimum acceptable diet, children 6-23 months (percentage) (ASOTRY)

	Overall	ASOTRY
Breastfed children 6-8 months		
Minimum meal frequency (2 or more)	57.2	51.1
Minimum dietary diversity (4 or more) - 7 food groups	7.5	6.1
Grains, roots and tubers	82.4	77.5
Legumes and nuts	12.8	8.5
Dairy products (milk, yogurt, cheese)	7.3	14.2
Flesh foods (meat, fish poultry, liver/organ meat)	22.2	21.5
Eggs	0.5	0.0
Vitamin A-rich fruits and vegetables	31.7	30.5
Other fruits and vegetables	12.3	10.3
Number of children	*83*	*40*
Breastfed children 6-8 months		
Minimum meal frequency (3 or more)	42.5	41.8
Minimum dietary diversity (4 or more) - 7 food groups	16.8	12.9
Grains, roots and tubers	87.8	87.5
Legumes and nuts	14.9	15.6
Dairy products (milk, yogurt, cheese)	11.7	12.3
Flesh foods (meat, fish poultry, liver/organ meat)	33.4	25.4
Eggs	4.2	0.8
Vitamin A-rich fruits and vegetables	57.1	61.0
Other fruits and vegetables	25.4	18.1
Number of children	*297*	*150*
Non-breastfed children 6-23 months		
Minimum meal frequency (4 or more + 2 milk)	5.1	4.8
Minimum dietary diversity (4 or more) - 6 food groups	9.4	2.7
Grains, roots and tubers	82.0	95.9
Legumes and nuts	24.3	31.4
Dairy products (milk, yogurt, cheese)	14.4	11.0
Flesh foods (meat, fish poultry, liver/organ meat)	42.8	13.4
Eggs	2.5	0.0
Vitamin A-rich fruits and vegetables	47.9	49.3
Other fruits and vegetables	14.2	7.1
Number of children	*92*	*39*

Table 20: Breastfeeding status, children 0-23 months of age (percentage) (ASOTRY)

	Overall	ASOTRY
Not breastfeeding		
<2	7.1	8.9
2-3	4.9	9.3
4-5	9.7	15.3
6-8	0.0	0.0
9-11	3.9	7.2
12-17	19.5	15.8
18-23	45.3	33.9
Exclusively breastfed		
<2	42.7	50.1
2-3	50.7	60.7
4-5	23.9	30.4
6-8	2.1	4.9
9-11	3.1	5.8
12-17	1.2	1.5
18-23	2.7	2.1
Breastfed and plain water only		
<2	21.6	24.9
2-3	10.1	15.4
4-5	9.7	13.0
6-8	4.6	8.9
9-11	3.7	6.9
12-17	1.2	0.6
18-23	0.0	0.0
Breastfed and non-milk liquids		
<2	17.4	14.2
2-3	10.9	0.0
4-5	3.6	3.2
6-8	4.9	2.3
9-11	3.8	2.0
12-17	0.0	0.0
18-23	0.0	0.0
Breastfed and other milk		
<2	1.7	0.0
2-3	2.7	5.1
4-5	4.1	0.0
6-8	1.1	2.7
9-11	0.0	0.0
12-17	0.0	0.0

	Overall	ASOTRY
18-23	0.0	0.0
Breastfed and complementary foods		
<2	9.4	1.9
2-3	20.8	9.6
4-5	49.1	38.2
6-8	87.3	81.2
9-11	85.6	78.1
12-17	78.1	82.1
18-23	52.0	64.0
Number of children	*621*	*310*

NOTE: The results for these subgroup analyses are based on small sample sizes and may be unreliable.

ANNEX I: MULTIPLE REGRESSION ANALYSIS

Multivariate Analysis Methods

An exploratory analysis was undertaken to see if program participation was associated with better outcomes, controlling for other variables such as household assets and household size. The five estimation equations all have binomial (yes/no) dependent variables. Logit equations estimate the probability that i) households experienced moderate or severe food insecurity ii) CU5 were underweight or iii) stunted, iv) farmers adopted at least three sustainable agricultural practices and v) farmers used financial services. These outcomes represent households, children and farmers. Three of the dependent variables (underweight, stunting and use of financial services) are indicators that showed significant change between baseline and endline, whereas the other two did not. Equations are of the form:

$$p(Y_i = 1) = \alpha + \beta X_i + \epsilon_{it}$$

Where Y_i is the outcome of interest for household or individual *i* and X is the set of explanatory variables.

The remainder of this section describes the equations and variables in more detail.

Table 21 shows the variables included in each equation. Equations have several variables in common: a survey round variable, coded 0 for baseline and 1 for endline. This variable accounts for unmeasured factors affecting all households between surveys. In the case of Madagascar, one of these is the environmental shocks from cyclones, which have occurred fairly regularly. It also provides an estimate of the magnitude of change between survey rounds, controlling for other variables. Gender decision-making indicators were also included in all equations. More specifically, these were: joint decision-making on the use of cash income; joint decision-making regarding maternal health and nutrition, and joint decision-making regarding child health and nutrition. Decision-making indicators ranged from 0-2. Households scored 2 if at least one male and one female adult reported joint decisions, 1 if one or the other reported joint decisions and 0 otherwise. Control variables included in all equations are:

- **Household size:** A count of household members.
- **Gendered household type:** Four categories: male- and female- adult-headed households, female-adult-headed household, male-adult-headed household, and child-headed households.
- **Household education:** The percentage of adults (18 and older) with a primary level of education and another as the percentage of adults with more than a primary level of education.
- **Non-food assets:** Includes all non-food expenditures. Equations include non-food expenditures instead of total expenditures because it is considered to be less endogenous.[38]
- **Geographic zone:**[39] Included to account for differences in livelihood zones, access to markets and other geographic factors.

[38] Total expenditures (including food) and outcomes, such as adequate food consumption, are endogenous, meaning that it is difficult to determine whether food consumption causes food expenditures to change, or changes in food expenditures cause food consumption to change.

[39] The regions Amoron'i mania and Haute Matsiatra are in the Hauts Plateaux area, which is referred to as the Central Highlands zone. The region of Atsimo Andrefana is in the south, a hotter and drier area, and is referred to as the Southern zone.

The remainder of this section describes the equations and variables in more detail.

Table 21: Multivariate equations and explanatory variables

	Households	Children under 5	Farmers	
	Moderate or severe food insecurity	Underweight/stunting	Adoption of 3 or more sustainable agricultural practices	Use of financial services
Project variables	Food or cash assistance	HH received food assistance	Participation in agricultural training	Participation in agricultural training
		HH received cash assistance	Value chain activities	Value chain activities
	Participation in nutrition or agricultural training or other project activities	HH participation in training	Use of improved storage practices	Use of improved storage practices
WASH	Access to safe drinking water	HH access to safe drinking water		
	Soap and water at handwashing station	HH use of soap and water at handwashing station		
Gender decision-making	Joint decisions about cash income	Joint decisions about cash income	Joint decisions about cash income	Joint decisions about cash income
	Joint decision-making about MHN	Joint decision-making about MHN	Joint decision-making about MHN	Joint decision-making about MHN
	Joint decision-making about CHN	Joint decision-making about CHN	Joint decision-making about CHN	Joint decision-making about CHN
Individual variables		Child's age		
		Child's sex	Farmer's sex	Farmer's sex
		Diarrhea in HH		
		Education level of mothers with children under 2 in HH		
		Natural mother lives in household		
		Number of children under 5 in household		
Control variables	Survey round (dummy)	Survey round (dummy)	Survey round (dummy)	Survey round (dummy)
	Household size	Household size	Household size	Household size
	Gendered household type	Gendered household type	Gendered household type	Gendered household type
	Household education	Household education	Household education	Household education
	Non-food expenditures	Non-food expenditures	Non-food expenditures	Non-food expenditures
	Geographic zone	Geographic zone	Geographic zone	District

Moderate or severe food insecurity is one of the categories of the household hunger scale (HHS). The HHS indicator did not change significantly between baseline and endline, whereas one would have expected it to decline. This equation includes variables measuring household participation in programming, examining whether households receiving food or cash transfers, or whether those participating in nutrition or agricultural training or other programming fared better than those who did not. Food or cash assistance are each a dummy variable, taking the value of 0 or 1 whether a household received food or cash assistance. The training/participation variables are each dummy variables, taking the value of 0 or 1 for household participation in nutrition or agriculture training programs or other project activities. WASH and gender decision-making indicators were also included in the equation.[40] Two of the WASH indicators—*practicing correct use of recommended household water treatment technologies* and *use of soap and water at a handwashing station* were chosen because they increased between baseline and endline, whereas *use of an improved drinking water source* was an important project outcome. Multivariate analysis explored whether these increases translate to better outcomes. All households were included in the equation.

Stunting and underweight equations include all CU5. These equations provide information about chronic and acute child health and nutrition. Both indicators improved between baseline and endline (see main report). The equations looked at programming (child health and nutrition programming in particular) as well as other factors that influence the indicators, possibly providing recommendations for future programs. They include individual (child) level variables for the child's sex and age. They also included household-level dummy variables (coded 0 or 1) measuring whether the household received food assistance, cash transfers, one or more children in the household had diarrhea in the past 2 weeks and whether the natural mother of one or more children resided in the household, whether one or more mothers (caregivers) had a primary education, and more than a primary education. An age-squared variable allows for a non-linear relationship between age and stunting or underweight, which tend to be worse among younger children. The equations do not include children's diet because those data were only collected for children 0-23 months. They also do not include birthweight, vaccination and other information that may affect stunting and underweight because surveys did not collect those data.

Agricultural outcomes are measured by two equations. The equations include all farmers with access to land or livestock. The first is the probability that *farmers use at least three sustainable agriculture practices* which, according to bi-variate analysis (presented in the main report), did not actually change from baseline to endline. Besides variables in common with other equations, the equation looks specifically at the effects of participation in agricultural training on sustainable practices as well as participation in value chain activities and the use of improved storage practices. Each of these is coded 1 for participants/adopters and 0 for those who did not participate/adopt.

In contrast to the use of sustainable agricultural practices, *use of financial services* increased from baseline to endline. This equation includes participation in value chain activities, use of improved storage practices and participation in agricultural training as explanatory variables. Although we don't link the equations, results examine the relationship between the two.

[40] See the main report for a description of the indicators and baseline/endline values.

Multivariate Analysis Results

Multiple regression analysis was undertaken to further explore the underlying factors associated with changes in several of the key project outcome and impact variables. The specific variables that were examined in this analysis are:

- Farmers' use of financial services
- Farmers' adoption of at least three sustainable agricultural practices
- Households with moderate or severe food insecurity (HHS)
- Underweight of CU5
- Stunting of CU5

The regression analysis measured the contribution of a number of variables to explain variation in these outcome and impact variables. General categories of explanatory variables were applied in all the regression analyses:

- **Survey round:** a dummy variable for survey round (0=baseline, 1 = endline) was included to measure the changes in the dependent variables independent of any of the other explanatory variables in the model
- **Program participation:** these dummy variables were included to measure the extent to which changes in the dependent variables are associated with the respondents' participation in project-supported activities.
- **Gender variables:** that measure gender characteristics of the respondents, including the reported joint participation of women and men in relevant decision-making.
- **Household characteristics:** that measure household demographic characteristics, including gendered household type, education characteristics of household members.
- **Non-food expenditures:** as a measure of household wealth.
- **Geographic zones:** a dummy variable for the Southern zone (Central Highlands is the excluded comparison zone), to account for any geographic factors not captured in the other explanatory variables.

Table 22 reports the results from the regressions estimating the probability that a farmer used financial services and the probability that farmers adopted at least three sustainable agricultural practices. *Use of financial services* showed a significant increase from baseline to endline, controlling for all the other explanatory variables in the equations, whereas there was no significant change in the adoption of sustainable agricultural practices. Participation in agricultural trainings and participation in value-chain activities are associated with greater use of financial services. On the other hand, all three program variables are associated with greater levels of adoption of sustainable agricultural practices.

Female farmers are not more likely to adopt sustainable practices or use financial services than male farmers. Households that have men and women who practice joint decision-making are not more likely to use financial services or adopt sustainable agricultural practices.[41] Information about gendered household type provides more information about female decision-making. There appears to be no difference in either the use of financial services or the likelihood of adopting sustainable agricultural practices among households with or without male or female decision-makers.

[41] However, those who engage in joint decision-making about CHN are slightly less likely to use financial services ($p = 0.08$)

In these regression models, a variable measuring non-food expenditure as a proxy for household assets was included as an explanatory variable to measure the effect of wealth on use of financial services, or adoption of sustainable practices. This wealth variable is not associated with either the use of financial services of the adoption of sustainable agricultural practices, suggesting that access to savings is not a requirement to use financial services or to adopt these practices. It is important to note that the likelihood of adoption of sustainable agricultural practices decreases significantly in the South, which is much drier and where there is a greater emphasis on livestock production.

Table 23 provides estimates from the regressions of child nutrition variables: underweight and stunting. The probability of stunting and that a child is underweight both declined from baseline to endline, after controlling for all other variables in the model.

With respect to program participation, both the receipt of cash transfers as well as food rations were significantly associated with underweight, where children in households that received either were less likely to be underweight. While the sign on the coefficients for stunting were the same, they were not statistically significant. Participation in nutrition training was positively associated with a higher likelihood of both underweight and stunting, which seems counterintuitive. However, it should be noted that nutrition training was targeted at households with children who were not well nourished. In essence, this is an indication that those who were more likely to be underweight or stunted were involved in programming targeted at this condition. The only WASH variable associated with the nutrition variables was the correct use of household water treatment technologies, which was positively related to the likelihood of stunting. Again, this may be understood as indicating that households who had a malnourished child were more actively involved in a Care Group and learned the importance of clean water for improved nutrition.

Child age is strongly associated with higher likelihood of both underweight and stunting (the negative coefficient on the squared age term means that this effect is relatively less for older children than for younger). Female children were less likely to be stunted than males. On the other hand, households that had children who had diarrhea in the last two weeks were not more likely to be underweight or stunted.

The education level of the caregivers in the household and whether or not the child's natural mother is in the household the child were not related to either underweight or stunting. On the other hand, overall education level of the household was weakly associated with lower levels of underweight but not stunting.

In terms of household characteristics, children in households with more CU5 were more likely to be stunted and underweight. There was also a greater likelihood that children in a male-headed household were stunted. It is important to note that the levels of both nutritional indicators are significantly lower in the South in contrast to the Central Highlands.

Table 24 presents regression results for household food security. The dependent variable is households reporting that they were moderately or severely food insecure based on the HHS. Overall, the probability that a household reported inadequate food security did not change from baseline to endline, controlling for other factors.

Households in which there was joint-decision making regarding CHN were more likely to be food insecure, all else equal. On the other hand, the likelihood of being food insecure was slightly less for

larger households. Households with a higher percentage of adults with more than a primary education were much less likely to be food insecure, all else equal. And finally, households in the South were much more likely to be food insecure.

Table 22: Regression results for use of financial services and adoption of sustainable agricultural practices[a]

Dependent variable	Use of Financial Services		Adoption of Sustainable Agriculture Practices	
Survey round (Baseline)				
Endline	0.87	***	-0.05	
Program participation and adoption of practices				
Practiced at least one value chain activity in the last 12 months	0.48	**	0.45	**
Farmers who used improved storage practices in the past 12 months	-0.14		0.54	**
Participated in agricultural training	1.36	***	0.91	***
Gender variables				
Female farmer	-0.06		-0.08	
Joint decisions on cash (0, 1 or 2)	0.11		0.03	
Joint decisions about MHN (0, 1 or 2)	0.33		-0.09	
Joint decisions about CHN (0, 1 or 2)	-0.49	+	-0.02	
Household characteristics				
Household size	-0.02		0.07	*
Gendered household type (Male and female headed HH)				
Male headed HH - no adult females	-0.61		-0.10	
Female headed HH - no adult males	-0.23		-0.40	
Child headed HH - no adults	0.72		-1.50	
Percent of adults with primary education	0.32		0.87	**
Percent of adults with more than a primary education	0.89	*	1.27	***
Household assets				
Non-food expenditure	0.14		-0.05	
Geographic zone (Central Highlands)				
Southern zone	0.16		-1.94	***
Constant	-3.00	***	-0.33	
Observations	3,797		3,488	

[a] Symbols indicate that estimated coefficients are statistically significant at the † p<0.1,* p<0.05, ** p<0.01 and *** p<0.001 levels of confidence.

Table 23: Regression results for child nutrition variables, underweight and stunting of CU5[b]

Dependent variable	Underweight (%<-2sd)		Stunting (%<-2sd)	
Survey round (Baseline)				
Endline	-0.96	***	-0.55	*
Program participation and adoption of practices				
Received food rations	-0.43	+	-0.32	
Received cash transfer	-0.83	+	-0.22	
Participated in nutrition training	0.77	**	0.35	+
WASH practices				
Households using an improved drinking water source	0.11		0.15	
Cleansing agent and water at handwashing station	0.32		-0.14	
Practicing correct use of recommended household water treatment technologies	0.13		0.24	*
Child characteristics				
Child age (months)	0.06	***	0.12	***
Child age (months) squared	-0.00	***	-0.00	***
Female child	-0.14		-0.24	**
Child in household had diarrhea in last 2 weeks	0.14		0.08	
At least one mother in household has primary or higher level of education	-0.09		0.11	
At least one natural mother lives in household	0.16		0.10	
Gender variables				
Joint decisions on cash (0, 1 or 2)	-0.16		-0.03	
Joint decisions about MHN (0, 1 or 2)	0.10		0.03	
Joint decisions about CHN (0, 1 or 2)	0.13		-0.04	
Household characteristics				
Household size	0.05	+	0.02	
Count of children under 5 in household	0.24	*	0.21	*
Gendered household type (Male and female headed HH)				
Male headed HH - no adult females	0.10		1.03	*
Female headed HH - no adult males	0.13		0.03	
Child headed HH - no adults	0.00		-0.78	
Percent of adults with primary education	-0.07		0.02	
Percent of adults with more than a primary education	-0.57	+	-0.25	
Household assets				
Non-food expenditure	-0.06		-0.09	
Geographic zone (Central Highlands)				
Southern zone	-0.69	**	-0.98	***
Constant	-1.97	***	-1.47	***
Observations	2,635		2,638	

[b] Symbols indicate that estimated coefficients are statistically significant at the † p<0.1,* p<0.05, ** p<0.01 and *** p<0.001 levels of confidence.

Table 24: Regression results for household food security status (based on HHS of moderate to severe food insecurity)[c]

Dependent variable	Moderate to severe food insecurity	
Survey round (Baseline)		
Endline	0.01	
Program participation and adoption of practices		
Received food rations	0.22	
Received cash transfer	-0.35	
Participated in nutrition training	-0.47	
Participated in agricultural training	0.57	
Participated in other activities	-0.50	
WASH practices		
Households using an improved drinking water source	-0.12	
Cleansing agent and water at handwashing station	-0.01	
Practicing correct use of recommended household water treatment technologies	0.01	
Gender variables		
Joint decisions on cash (0, 1 or 2)	-0.10	
Joint decisions about MHN (0, 1 or 2)	-0.24	
Joint decisions about CHN (0, 1 or 2)	0.33	*
Household characteristics		
Household size	-0.07	*
Count of children under 5 in household	0.10	
Gendered household type (Male and female headed HH)		
Male headed HH - no adult females	-0.47	+
Female headed HH - no adult males	-0.18	
Child headed HH - no adults	-1.70	*
Percent of adults with primary education	-0.27	
Percent of adults with more than a primary education	-1.83	***
Household assets		
Non-food expenditure	-0.21	
Geographic zone (Central Highlands)		
Southern zone	2.12	***
Constant	-1.25	***
Observations	3,401	

[c] Symbols indicate that estimated coefficients are statistically significant at the † p<0.1,* p<0.05, ** p<0.01 and *** p<0.001 levels of confidence.