USAID
FROM THE AMERICAN PEOPLE

Food for the Hungry- Mozambique

P. L. 480 TITLE II
Multi-Year Assistance Program
Final Evaluation

Submitted by Marcus L. Catsam
On behalf of Marcus Catsam Consulting LLC
Final Draft- July 9, 2013

Table of Contents

Abbreviations and Acronyms

AIDS	Acquired Immune Deficiency Syndrome
CCB	Community Capacity Building
CDC	Community Development Committee
CG	Care Groups
CSPro	Census and Survey Processing System
DHS	Demographic and Health Survey
EHA	Essential Hygiene Actions
ENA	Essential Nutrition Actions
EWS	Early Warning Systems
FANTA	Food and Nutrition Technical Assistance
FFLG	Farmer Field and Life Groups
FGD	Focus Group Discussions
FH	Food for the Hungry
FFP	USAID Office of Food for Peace
FY	Fiscal Year
Ha	Hectares
HDI	Human Development Index
HH	Households
HIV	Human immunodeficiency virus
IPTT	Indicator Performance Tracking Table
IR	Intermediate Results
ITN	Insecticide treated bed net
JAM	Joint Aid Management
Kg	Kilograms
KPC	Knowledge, Practice and Coverage
KSI	Key Stakeholder Interviews
LCL	Lower Confidence Level
LQAS	Lot Quality Assurance Sampling
M&E	Monitoring and Evaluation
MoA	Ministry of Agriculture
MoH	Ministry of Health
Mtz	Mozambican Meticais
MYAP	Multi Year Assistance Program
ORS	Oral rehydration salts
PPS	Probability Proportional to Size
PSO	Program Support Officer
SO	Strategic Objective
SPSS	IBM SPSS Statistics
ToR	Terms of Reference
UCL	Upper Confidence Level
USAID	United States Agency for International Development
VSLA	Village Savings and Loan Associations
WHO	World Health Organization

Executive Summary

Background

Over the past two decades, Mozambique has struggled to achieve economic and social stability. Among the poorest provinces, Cabo Delgado falls behind all other provinces on almost every indicator of social and economic development. In addition to low income and underdevelopment, Cabo Delgado has extremely high rates of food insecurity that impedes individual and collective human development.

Infertile, sandy soils in the province lead to low agricultural productivity, while a short agricultural season creates an extended hungry period. At the same time a lack of crop diversity creates significant vulnerability to pest infestations, drought, and other shocks. Low household purchasing power results from limited production of cash crops and poor market access exacerbated by poor infrastructure. Low literacy levels and language and cultural marginalization compound these factors, impeding vulnerable populations from engaging in income-generating activities. Cassava, the staple food crop, lacks the caloric content and nutrient density to meet the nutritional needs of pregnant and lactating women, and children under five years of age, while limited knowledge of optimal nutrition, health and hygiene practices undermine maternal and child health. As a result of these factors, more than half of all children under five in the province suffer from chronic malnutrition and over thirty percent are underweight.

To address these challenges Food for Hungry (FH) in Mozambique has implemented a five-year Multi Year Assistance Program (MYAP) with funding support from USAID's Office of Food for Peace. The MYAP was initially proposed for a three-year period and was subsequently extended to five years through no-cost extensions. Through the MYAP FH sought to: (1) improve the health and nutritional status of children 0-5 years of age; (2) to increase agricultural productivity and strengthen agricultural value chains; and (3) to increase community resiliency to shocks for 31,577 households (HH) across the districts of Nangade, Mocimboa da Praia, and Palma.

In March 2013 FH hired the services of a consultant to lead a final evaluation of the MYAP to assess the degree of achievement of proposed outcomes and impacts; to document constraints, lessons learned, and successes derived from the program; and to assess the relevance of the program's implementation strategies and approach. The evaluation did not include an anthropometric study; that study will be completed as a separate exercise between October and November 2013.

Evaluation methodology

The final evaluation was conducted using a mixed methodology. This included a population-based HH survey and qualitative research consisting of focus group discussions (FGD), key stakeholder interviews (KSI) and systematic observations at the HH level. For the HH survey a multi-stage, 30-cluster sampling design was used in line with the methodology used in the baseline survey. Thirty clusters were selected for data collection from among the total number of MYAP intervention communities through *systematic sampling* using probability-proportional-to-size (PPS). Parallel sampling was used to conduct both health and agriculture interviews at the HH level.

Three data collection teams were formed from FH staff, each consisting of one Team Leader, two Data Collection Supervisors and eight Enumerators. Each team was assigned to a project district based on language and cultural considerations. Teams were trained on data collection processes and protocols over four days, and data collection was subsequently completed over nine days between March and March 27, 2013. A total of 407 health surveys, 333 agriculture surveys, eight Focus Group Discussions, six Key Stakeholder Interviews and 72 systematic observations were completed.

A team of data entry clerks was trained to enter quantitative data into the US government's open source Census and Survey Processing System (CSPro 5.0) software with a user-friendly data template that mirrored the questionnaire to reduce error. Data entry was completed simultaneous to data collection. Initial data cleaning and verification and preliminary quantitative analysis were conducted using CSPro. Final quantitative analysis of baseline and final evaluation data was conducted in SPSS 21.0. Relevant proportions and means were generated for each indicator and t-tests were conducted to test the significance of differences in indicator values between the baseline and final evaluations. The p values of

each of the findings were subsequently verified using an Indicator Confidence Interval Calculation Worksheet provided by FH. Qualitative data was analyzed using simple trend analysis and observations from the infrastructure checklists were tabulated and processed in Excel. Analysis resulting from the quantitative and qualitative data was used to develop a final evaluation report draft for which FH staff provided feedback. That feedback was incorporated into this final report.

Findings

Of the 16 indicators measured under the ***agriculture*** component, 15 of them experienced increases between the baseline and final evaluations. Four indicator values fell below program targets, while the rest met or exceeded target values.

Both respondent farmers and FH staff confirmed through qualitative discussions that productivity has increased in participant fields and the consistent productivity growth demonstrated through the program's Annual Agriculture Surveys supports these assertions. Farmers from the program's Farmer Field and Life Groups (FFLG) believe that the technologies that FH introduced played a role in these productivity increases. They also expressed a high degree of satisfaction and confidence with the FFLG as a sustainable means to transmit technical assistance messages and support replication of best practices. FFLG members continue to meet even in the absence of FH staff. Given the staffing and resource constraints of the Ministry of Agriculture, this is an important gain that can serve as a foundation for continued farmer-to-farmer based agricultural extension support in the future.

Market links and economic opportunities have also increased as a result of the program. While there has been no significant change in the percent of HH producing cash crops, 60% of those who produce cash crops sell a portion of those crops either collectively or individually at local markets, resulting in at least $85,000 in additional income. The program's marketing activities could have been strengthened by providing training and mentoring to farmers in market analysis, negotiation, value addition or processing, and by strengthening linked businesses to ensure integral and strong value chains.

Engagement with VSLAs has also provided an opportunity for at least 3,550 men and women to engage with financial services, albeit informal and likely for the first time. They have saved over $200,000 collectively, earned $44,500 on those savings through interest income and provided much needed capital to local entrepreneurs and individuals. It might be worth exploring whether the flexibility of the current VSLA modality- allowing participants to save if they want to- may keep VSLAs from reaching their full potential as a consumption smoothing and vulnerability reduction mechanism.

Of the 12 ***health*** indicators included in the IPTT 9 of them (75%) experienced statistically significant changes in values between the baseline and final evaluations. Although indicator values fell below program targets, most of the behavior change targets may have been unrealistically ambitious, especially given that key changes were expected during a shortened Care Group cycle.

Among essential nutrition actions, breastfeeding behaviors showed marked improvement, both in terms of early initiation and exclusive breastfeeding of infants 0- 6 months old. The percent of children exclusively breastfed in MYAP project areas now exceeds the national average by almost 35 percentage points. Likewise, values for "adequate" complementary feeding (minimum dietary diversity and number of meals) improved by 25 percentage points during the project. These values- previously substantially lower than the national average- are now above that average by approximately 10 percentage points.

The percentage of caretakers who can name three signs of childhood illness and three methods to prevent HIV infection have both increased significantly during the program. Reported malaria prevention has improved thanks to high adoption of ITNs, at approximately 90% of all caregivers interviewed, representing a rate of ITN use that is 40 percentage points higher than the national average. There has also been a statistically significant decrease in reported cases of diarrhea.

Most indicator values related to water, sanitation and hygiene have all seen statistically significant increases over baseline levels as well. Caretaker access to improved water sources has nearly doubled,

and reported personal hygiene behavior has improved by approximately 40 percentage points over the baseline. More families have soap and water available to them and significantly more caretakers report washing hands at all the necessary times. There has been an increase of almost 40% in proper excreta disposal, although observations of HH latrines suggest that hygiene indicator values could improve further through refresher training on proper HH latrine maintenance and care. The vast majority of caretakers properly store water in containers with lids, although only approximately 34% treat their water. This may be the result of the costs associated with water treatment.

All the indicator values relating to ***community capacity building*** increased over the baseline. Almost 600 community leaders were trained and HCA was completed in each of the communities. Individual community leadership capacity is somewhat mixed, although given the scope of the program's activities this isn't surprising. It is clear, however, that the program has achieved a high level of community engagement and ownership through the use of local promoters for health and agriculture, training and support to create Mother Leaders for Care Groups, development and training of Farmer Field Life Groups and Community Development Committees. The leadership and technical skills that these individuals and groups have gained will provide a strong foundation for continued health and wellbeing in their families and for community development across all MYAP intervention areas.

FH support has also resulted in significant gains in community infrastructure and assets. The most important of these are the contributions to water and sanitation infrastructure. In community visits it was clear that these contributions have been an important success in the program and are likely to have contributed in important ways to the health and hygiene outcomes under the program's health component.

Conclusions and recommendations

The combination of increased productivity and increased incomes derived from FH agricultural support has contributed to statistically significant gains in both Household Food Provisioning and overall Dietary Diversity Scores, key measures of HH food access. In the remainder of the program FH might validate these conclusions through both the program's final Annual Agriculture Survey in 2013 and by compiling full marketing income and VSLA data.

Under the program's health component FH has facilitated significant improvements in essential nutrition actions, essential hygiene actions, and understanding, prevention and treatment of childhood illness. These changes are likely to have improved food utilization among the target beneficiaries by increasing overall nutrient intake and use. Some of the program's health gains are more modest than might have been expected. The modifications to the Care Group model- from a five-year cycle accommodating all children under 5 to a two-year cycle accommodating only children under two- may have played a role in these differences. Future programs should either consider a return to the standard five-year Care Group cycle or modify the Care Group training modules to match the reduced time period. The anthropometric study in late 2013 will provide an opportunity to more closely examine the relationship between the behavior and knowledge improvements highlighted here and actual rates of malnutrition.

The program's emphasis on community engagement has provided strong mechanisms for knowledge transfer and behavior change and a solid foundation for continued community development. During the remainder of the program FH should prioritize transition and sustainability planning as well as refresher training on some of the project's key messages (such as the diagnosis, prevention, and treatment of childhood illness; HH latrine use and maintenance; infrastructure maintenance) to help ensure that the program's benefits can be sustained as long as possible.

I. Introduction

In line with the evaluation Terms of Reference (TOR), approved by USAID's Office of Food For Peace (FFP), the MYAP final evaluation has three key objectives:

1) Assess the degree of achievement of the MYAP's proposed outcomes and impacts;
2) Document constraints, lessons learned, and successes derived from the program; and
3) Assess the relevance of the program's implementation strategies and approach

The audience for the evaluation findings is Food for the Hungry, the USAID Mission in Mozambique and FFP as well as other stakeholders who can benefit from the evaluation's results.

II. Overview of Program Context and Implementation

A. Overview of the food security situation in Mozambique at program start

Over the past two decades, Mozambique has struggled to achieve economic and social stability through the effects of civil war and harsh natural disasters. Rich natural resources and international support have fueled economic growth, which improved Mozambique's Human Development Index (HDI) from 171/177 countries in 2002 to 168/177 countries in 2004. Although there has been positive change in Mozambique's historically poor health and social indicators, many indicators, such as infant mortality, illiteracy and life expectancy, continue to rank among the world's worst. Cabo Delgado, among the poorest provinces, falls behind all other provinces on almost every indicator of social and economic development.

In addition to low income and underdevelopment, Cabo Delgado has high levels of underlying food insecurity. Soaring above all of the provinces in Mozambique, more than half of all children under five suffer from chronic malnutrition and thirty-four percent are underweight[1], an indicator of both chronic and acute malnutrition. Cabo Delgado's acute malnutrition rates are lower than some provinces and fall below emergency levels; however, given the high rates of chronic malnutrition in Mozambique- and the known irreversible effects of chronic malnutrition on childhood development, cognition and long-term productivity[2]- there is an important role for prevention activities through behavior change-based interventions.

Food availability is undermined by infertile, sandy soils leading to low agricultural productivity. A short agricultural season creates an extended hungry season with attendant food provisioning difficulties, while a lack of crop diversity creates significant vulnerability to shocks related to pest infestations, drought, and other exogenous shocks. At the same time, poor post-harvest crop storage leads to food loss.

An extremely low level of household purchasing power, resulting from poor market access, limited infrastructure, as well as lack of marketable products or services affect food access. Moreover, low literacy and education levels, compounded by language and cultural marginalization, particularly of women, impede vulnerable populations from engaging in income-generating activities.

Food Utilization is affected by poor diet composition and diversity, with seasonal hungry periods. The staple food (cassava) lacks the caloric and nutrient density to meet the nutritional needs of vulnerable populations, pregnant and lactating women, and children less than five years of age. At the same time, limited knowledge of optimal nutrition, health and hygiene practices impede families from fully using the resources at hand.

[1] Mozambique Demographic and Health Survey, 2003
[2] Tracking Progress and Child and Maternal Nutrition: a survival and development priority, UNICEF 2009
[3] Tracking Progress and Child and Maternal Nutrition: a survival and development priority, UNICEF 2009

B. Overview of the FH MYAP in Cabo Delgado

Through the MYAP Food for the Hungry sought to improve the health and nutritional status of children 0-5 years of age; to increase agricultural productivity and strengthen agricultural value chains; and to increase community resiliency to shocks for 31,577 households (HH) across the districts of Nangade, Mocimboa da Praia, and Palma in Cabo Delgado province. Table 1 shows the program Results Framework.

Table 1: FH Mozambique MYAP Results Framework

SO1. Protect and enhance livelihood capacities of vulnerable farming households via agricultural production and marketing	**SO2.** Protect and enhance human capabilities through improved health and nutritional status of pregnant women, preschool children, and HIV+ individuals	**SO3.** Increased community capacity to influence factors that affect food security and resiliency to shocks
IR 1.1: Agricultural productivity and production diversified and increased IR 1.2: Natural resource base protected and enhanced IR 1.3: Market-led income sources increased and diversified	IR2.1:Improved use of Essential Nutrition Actions (ENA) by pregnant women and mothers of young children IR2.2: Improve mother's ability to prevent, diagnose and manage diseases that exacerbate malnutrition, including dietary management of illness IR2.3: Improved access to clean water, sanitation facilities, and Essential Hygiene Actions (EHA)	IR3.1: Increased leadership capacity of existing formal and informal community leaders to address factors that affect food security IR 3.2: Increased community level economic infrastructure/assets IR 3.3: Increased ability to predict and mitigate shocks

III. Evaluation Methodology

A. Sampling

Mixed methodology

The final evaluation was conducted using a mixed methodology, consisting of a population-based HH survey, focus group discussions (FGD), key stakeholder interviews (KSI) and systematic observations at the HH level.

Quantitative Sampling

For the HH survey- the primary methodology for the comparison of program indicator values over time- a multi-stage, 30-cluster sampling design was used based on the KPC survey methodology outlined in the *KPC2000+ Field Guide*. Under these standards, separate surveys are conducted for each program target group- in this case a health survey for primary caregivers of children 0-24 months and an agriculture survey administered to identified HH heads- using parallel sampling. Under the KPC methodology, 10 surveys are administered at random within each cluster *for each target group*, for a total (target) sample size of 600 (300 for health and 300 for agriculture). This sample size generates a confidence level of 95%, with a confidence interval of approximately 10%.

The 30 clusters for the final evaluation were selected from among the total number of MYAP intervention communities (50) through *systematic sampling* using probability-proportional-to-size (PPS), ensuring that the total sample distribution was similar to the population distribution across MYAP districts. The final list of selected clusters can be found in Annex 1. In addition, in order to ensure random selection of HH for survey administration within each cluster, data collection teams

worked with community leaders to identify the community center. From that location the teams spun a bottle and began data collection at the first closest house in the direction to which the bottle pointed. Subsequent surveys were administered using the "nearest door" approach until the target number of surveys was completed per cluster. The data collection team interviewed primary caregivers of children between the ages of 0 and 24 months for the health survey, while the agriculture survey was administered to identified HH heads in each HH unit.

Qualitative Sampling
The qualitative design consisted of (1) key stakeholder interviews with project staff and MoH personnel, (2) focus group discussions with farmer groups, mother leaders and community development association and (3) structured observations of use/maintenance of key infrastructure supported by the project, including HH latrines, school/public latrines and tube/shallow wells. These methodologies were selected to provide information to complement or expand upon findings from the survey.

Key staff interviews were planned with one health and one agriculture program staff *from each project district*. Likewise one focus group discussion was planned with mother leaders, farmer groups and community development associations in each project district (for a total of 3 FGD with each group) based on random selection from among communities that were *not* included in the HH survey. At least one structured observation for each infrastructure type was also planned at the HH (latrines) and community (public/school latrines) levels in each of the 30 clusters selected for HH surveys to avoid the need for additional logistics support and to ensure efficiency in data collection.

B. Data collection instruments and process

Quantitative
The team used the same surveys for the quantitative portion of the exercise as those used for the baseline survey. Only minimal, largely cosmetic changes were made on a small number of questions to increase clarity and ensure respondent understanding. However, in order to ensure comparability between the baseline and final evaluations, no conceptual or content changes were made in the tools. During enumerator training the surveys were translated into Makonde, Kimwane and Makua, the three primary local languages of the MYAP intervention districts. Copies of the survey can be found in Annex 2.

To facilitate data collection and quality control, three data collection teams were formed from FH staff, each consisting of one Team Leader, two Data Collection Supervisors and eight Enumerators. Each team was assigned to a project district based on language and cultural considerations. Furthermore, teams were assigned to districts where they do not implement programs in order to reduce potential bias. Team Leaders were responsible for daily team planning, ensuring logistics and overall quality control as well as daily communication with the Final Evaluation Consultant. Data Collection Supervisors oversaw enumerators and supported data collection efforts, spot checking quality and providing daily feedback. Enumerators administered the survey and filled out the survey forms. In each data collection team the four enumerators were broken into two pairs. In each pair, one person administered the survey, while the other person completed the form. To further mitigate against bias and ensure accurate responses to culturally sensitive questions each pair was composed of one male and one female member. A list of data collection teams can be found in Annex 3.

Data collection training was conducted during four days. One full day was provided for Team Leaders and Supervisors, focused on ensuring understanding of the survey tools and providing a detailed overview of HH sampling and the data collection process. Subsequently, two full days of classroom-based training were provided for the full data collection teams to ensure standard understanding of survey questions and key concepts, to provide an overview of HH selection and to practice using the

tool through simulation activities. A third day of training was used to field test the full data collection process, from HH selection to survey tool administration and quality control.

A total of 407 Health surveys and 333 Agriculture surveys were administered during the survey exercise. To account for non-response and potential errors in data collection, teams were instructed to complete 11 surveys in each cluster. Data collection was completed between March 18 and March 27, 2013 (nine days). It is important to note that since the health survey was considered the "entryway" to each family, agriculture surveys were only conducted after the health survey was completed and where the household head was available for interview. As a result, the number of health surveys conducted exceeds the number of agriculture surveys.

Table 2: Total surveys completed by target group

Health	Agriculture
407	333

Qualitative

FGD and KSI were conducted directly by the Evaluation Consultant based on interview guides developed in alignment with the ToR and reviewed / approved by FH staff. An FH translator supported the FGDs by translating questions from English to Portuguese. Local field staff subsequently translated from Portuguese into the respective local language. Responses to KSI and FGDs were recorded into a notebook and subsequently transferred into electronic transcripts. Qualitative data collection tools and transcripts can be found in Annexes 4 and 5.

Table 3: Total Qualitative Interviews Conducted

Focus Group Discussions	Staff Interviews	Key stakeholder interviews
▪ 3 Farmer Field Life Groups ▪ 3 Mother Leader Groups ▪ 2 Community Development Associations	▪ 2 FH Agriculture staff ▪ 3 FH Health staff	▪ 1 MOH Provincial Nutritionist

Structured observation checklists were developed using FH technical specifications for HH latrines, school latrines and tube/shallow wells [3] to support collection of systematic, objective and quantifiable observations regarding use and maintenance of key water and sanitation-related infrastructure. These tools were reviewed and modified and subsequently translated into Portuguese. Copies of the checklists can be found in Annex 6. Observations were conducted by Data Collection Supervisors during HH surveys. Copies of original observations checklists were stored in the FH office in Pemba.

Table 4: Infrastructure Observations

- 53 HH latrine observations
- 10 school latrine observations
- 9 tube / shallow well observations

C. Data Quality, Processing and Analysis

Quality Control

To ensure the highest quality data possible quality controls were instituted at five levels during data collection and three levels during data processing.

Five levels of data collection quality control:

1) Enumerators were split into pairs to ensure complete and accurate data collection / recording based on clear segregation of duties;

2) One supervisor was assigned to two enumerator pairs. Each supervisor was required to observe each pair at least one time per day and provide clear feedback for improvement directly following the observed interviews based on a systematic *quality control checklist*;

[3] Provided by the FH Community Capacity Building Manager

3) Supervisors reviewed each of the forms of their respective teams for accuracy and completeness prior to submission to the Team Leader;

4) Team Leaders reviewed all forms for accuracy and completeness prior to submission to the FH Mocimboa de Praia office for data entry; and

5) Forms were reviewed each day prior to data entry and clarifications or corrections were requested as needed. Overall trends from this review were also fed back to the Team Leaders to support improvement and standardization.

Three levels of data processing quality control:

1) Daily on-site mentoring and oversight to address arising concerns / challenges;

2) The data entry team maintained a daily log of form numbers and identified challenges. The log was used to re-code individual questions or re-enter entire questionnaires (depending on the magnitude of challenges identified) each afternoon. In extreme cases (e.g., multiple key questions with errors) questionnaires were sent back to the field for additional clarifications; and

3) A sample of 15% of all questionnaires was re-entered (double entry) after the initial steps of data entry and correction were complete.

Data Processing and Analysis

Five data entry clerks (three Peace Corps volunteers and two local FH staff) were oriented on quantitative data entry with a user-friendly data template in CSPro5.0. The template mirrored the questionnaire to facilitate entry and to reduce error. Beginning from the third day of data collection, data entry was completed simultaneous to data collection. Data entry was completed by March 30th 2013. Original forms were stored in numerical order according to questionnaire IDs in the FH office in Pemba. Data cleaning and verification was conducted during three days in Pemba by running basic frequencies and crosstabs and crosschecking / correcting errors by referring back to the original forms. Preliminary quantitative analysis was conducted in CSPro to generate basic descriptive statistics.

Qualitative data trends were identified from FGDs and KSI by organizing the qualitative data into themes. Observations from the infrastructure checklists were tabulated and processed in Excel. Together the quantitative and qualitative data was used to provide a preliminary debriefing for Senior FH staff and stakeholders from the MoH and GoM Office for Infrastructure Development in Pemba. Staff from the USAID Mission in Maputo was invited to the debriefing; however, they were unable to attend. The debriefing in Pemba provided an opportunity to receive feedback regarding the preliminary findings from both FH staff and the external stakeholders present. This feedback, especially regarding context factors, has also been incorporated into this report.

Final quantitative (comparative) analysis of baseline and final evaluation data was conducted in SPSS 21.0. Relevant proportions and means were generated for each indicator and t-tests for independent samples were conducted to test the significance of differences between the baseline and final evaluations. The p values (statistical significance) of each of the findings were subsequently verified using the Indicator Confidence Interval Calculation Worksheet provided by FH for that purpose.

IV. Constraints and limitations

Every effort was made to reduce bias, ensure data fidelity and integrity of the information presented in this report. Nonetheless- as with the results of any data collection and analysis process- some key limitations should be kept in mind while reading this report:

- *No use of a control group*. The data that is presented does not compare the results of intervention groups with control groups, thus limiting the degree of inference regarding causality. What the analysis does measure is the degree to which changes between baseline

values and final evaluation values are statistically significant. While some effort was made through the qualitative work to identify confounding factors outside of FH support that might have contributed to these changes, those discussions (and by proxy discussions of attribution) are limited.

- *Purposive exclusion of intervention areas from the sample*: The city centers of Mocimboa da Praia and Palma were excluded from the sample based on a consensus decision taken by the evaluation management team. This decision obeyed two key factors: (1) the centers were excluded in the baseline sample; and (2) although FH did implement MYAP activities in Mocimboa city center, only health interventions were undertaken there. Given the high population density in Mocimboa (representing a full 40% of all of the MYAP health participants) it would have rendered the parallel sampling technique virtually moot, elevating the evaluation logistics costs and increasing the time required for the exercise. Based on these factors the decision was taken to only include areas with both health and agriculture activities in the sample. Likewise, three locations with extremely difficult access during the rainy season (Maculo and Ulo in Mocimboa da Praia and Lalane in Palma) were also excluded in order to facilitate data collection and efficiency of resource use. Together these five locations represent 66,148 inhabitants of the total population of 141,709 of the 50 MYAP intervention areas, or almost 47% of the total population. In other words, the sample- and the statistics derived from it- represent only slightly more than half of the full intervention population.
- *Purposive exclusion of a large proportion of health participants* from the sample. Similarly, Mocimboa da Praia city center represents a full 40% of the total MYAP health participant population, which means that almost half of the health participant population was purposively excluded from the sample. These limitations should be kept in mind when reading the findings and conclusions of the report.
- *Challenges with using FH staff for data collection*. Survey data was collected by FH staff, which does potentially introduce some bias into the data. In order to reduce such bias, staff was assigned to collect data in locations where they do not normally work. Another challenge in using FH staff was that almost half of staff assigned to the data collection task had never participated in data collection previously.[4] Although four full days were spent on training, the lack of previous experience and overall limited understanding of key survey concepts (e.g., the need for precision, an orientation to detail) led to a large learning curve, persistent challenges and the need for consistent and very close follow-up. Most challenges were addressed by sending forms back for completion or clarification. However the process of gathering multiple corrections and clarifications could have introduced slight bias into the results. Approximately 15-20% of overall survey forms required clarifications or corrections. Three forms had to be completely discarded as a result of these factors.
- *Limitations in survey instrument*. There were several questions on the agricultural survey (the entire battery of questions for sections C, D and F) that sought detailed agricultural yield, livelihoods and economic data from participants based on participant recall. Participant recall becomes less and less reliable the further away you get from the event under scrutiny (e.g., farmers have a hard time remembering precise yields the further they are from the last harvest). The decision was made *not* to modify the questionnaire significantly for these questions despite the recognition that the data would be of limited use for anything other than illustrative purposes.
- *Simultaneous qualitative and quantitative data collection*. In line with the ToR, the evaluation team undertook the quantitative and qualitative data collection activities simultaneously. This decision obeyed financial and time constraints and represented a practical and cost efficient approach to the evaluation exercise. Under ideal circumstances, qualitative and quantitative data collection should be undertaken as separate steps to ensure that any findings uncovered from the quantitative exercise can be "unpacked" and more fully explored through qualitative

[4] Based on a rapid survey of data collection staff conducted during enumerator training.

inquiry. Because in this case quantitative/qualitative data collection and analysis occurred simultaneously, some gaps remain that could not be adequately addressed.

- *Language barriers in data collection*. Although every effort was made to translate the data collection instruments into local languages (survey) and Portuguese (qualitative tools), language barriers did arise during the process. The evaluation leader spoke basic Portuguese, but FGDs and responses required double translation: from English to Portuguese to local languages, back into Portuguese and English. Every effort was made to clarify concepts; however, nuance in the FGDs was likely lost as a result of these factors. At the same time, in some locations participants spoke none of the three foreseen languages for which the survey had been translated. In these cases the languages could be spoken and understood, but translations of the survey form were conducted on the spot. This could have led to misinterpretation and misunderstanding of the questions. The estimated proportion of these occurrences was small (<10% of total); it is nonetheless important to keep in mind.
- *Lack of original (raw) baseline data*. It is important to note that the original baseline data was not available at the time of analysis as a result of significant staff overturn at FH between the baseline and final evaluations. Instead, the consultant used a version of the baseline data in Excel that included dummy (composite) variables for key indicator values such as exclusive breastfeeding, hygiene behaviors and signs of childhood illness. The original data used to develop these composite variables was not available, limiting the possibility for verification. At the same time, no data dictionary was available for the consolidated baseline dataset leading to questions about how the values were generated. However, the FH health team provided the consultant with a list of the variables from which each composite value was consolidated. This allowed for the reproduction of those values in the final evaluation dataset, thus facilitating comparative analysis in SPSS. While the baseline values generated in SPSS for the purposes of this analysis correspond in the large majority of cases to those included in the original baseline report and IPTT, there are a couple of indicator values that do not. In these cases tests of statistical significance were conducted in two ways: (1) by conducting t-tests of the differences between the new baseline values with the final evaluation values in SPSS; and (2) by comparing the confidence intervals of the original baseline values with the values of the final survey.

V. Findings- Organized by Results Framework / Indicators

A. Strategic Objective 1 (Agriculture): Protect and enhance livelihoods of vulnerable farming households

Under the agricultural component, FH proposed to protect and enhance farming livelihoods by improving food availability and access. FH proposed to achieve this by (1) increasing agricultural productivity; (2) decreasing vulnerability to shocks through crop diversification and improved storage; and (3) increasing purchasing power through cash crop production, engagement with markets and development of VSLAs. Findings for each of the indicators relating to SO1 are included below, organized by Intermediate Result. Overall impact indicators for SO are discussed at the end of this section.

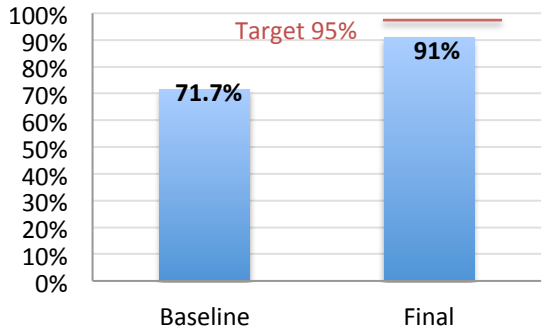
Intermediate Result 1.1: Agricultural productivity and production increased and diversified

FH proposed food source diversification as a key strategy to improve food access and availability in the target area. To that end, FH proposed: (1) promotion of protein and micronutrient-rich perennial dark green leaf crop production (moringa, cassava) to help meet demands for dietary diversity; (2) the promotion of several locally available high-protein, high-nitrogen fixing (leguminous) crops; and (3) the introduction of sustainable agricultural technologies to increase production and improve soil quality. The relevant indicators and targets for these practices are included in Table 5.

Table 5: IPTT Indicators and targets for IR1.1

Percent of HH with intensive dark green leaf production	95%
Percent of HH adopting and diversifying production by including at least 1 new leguminous nutritious food crop in farming system	90%
Percent of beneficiaries (farmers) using at least 3 sustainable agricultural technologies in the past year	70%
Percent of fruit and cashew farming training beneficiaries practicing at least two improved fruit growing techniques in the past year	60%
Percent of HH adopting sustainable non chemical grain and seed storage protection techniques	90%
Productivity (kg/ha) for: (1) Sesame (2) Groundnut (3) cow peas (4) rice (Nerica)	 Sesame: 500 Groundnut: 500 Cow peas: 550 Rice: 700

Figure 1: Percent of HH with intensive dark green leaf production

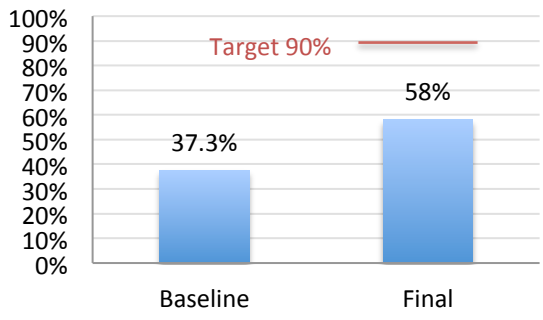


Baseline N= 300; Final N= 333
p= .000

FH promoted protein and micronutrient-rich perennial dark green leaf crop production to help meet demands for dietary diversity and support the MYAP's health objective. Dark green leaves from moringa and cassava are available even at the driest time of the year when little else is growing. Moringa in particular is high in protein, Vitamin "A" and "C", potassium, calcium and other minerals. Figure 1 shows that production of dark green leaf increased at a statistically significant level over the baseline, from 71.7% to 91% *(LCL 89.7% / UCL 94.1%)*. Given that 84% of HH produced cassava *(LCL 80.2% / UCL 88%)*, it is not surprising that the level of HH with green leaf production is high.

FH also promoted the production of several leguminous crops that are both high in protein (to support health objectives under SO2) and nitrogen content (to support improved soil). These are drought tolerant crops, appropriate for the sandy soils of the intervention districts, and according to FH agriculture staff they have low labor and input requirements, making them relatively easy to adopt. As Figure 2 illustrates, the proportion of HH incorporating at least one leguminous crop into their farming systems has increased by approximately 20 percentage points over the baseline, from 37.3% to 58% *(LCL 52.7% / UCL 63.3%)*. This change, while statistically significant, is approximately 30 percentage points below the program target.

Figure 2: Percent of HH planting at least one leguminous crop



Baseline N= 300; Final N= 333
p= .000

Table 6: Legume production

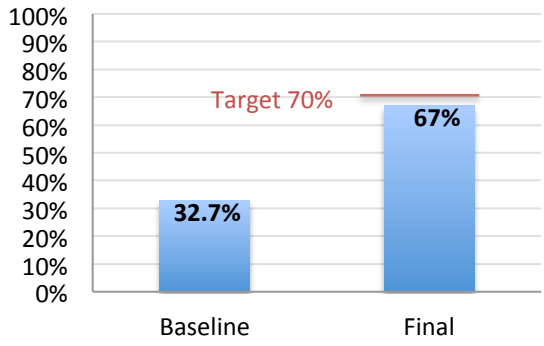
Leguminous variety	BL	Final	Sig.
Cow pea	32%	39.3%	N
Jugo bean	10%	11.7%	N
Soloco bean	0%	0.3%	N
Boer bean	1%	2.4%	N
Other beans	1%	0.9%	N
Groundnut	15%	12.3%	N
Cashew	25%	29.7%	N

It is important to note that, despite an increase in the proportion of families incorporating legumes into their HH production, there has not been a statistically significant increase in the production of *any single leguminous crop* since the baseline. As Table 6 (left) demonstrates, the overall proportion of families planting any single legume has remained the same over time. One potential factor contributing to the lack of increase may be that FH stopped distributing free legume seeds in 2011. Seeds were distributed to participants in the first three years of the program only.[5]

To support increased diversity in production and cash crop potential (covered in greater detail under IR1.3, below), FH supported improved practices for fruit tree and cashew production. Fruit tree production was not a viable production alternative as a result of the sandy soil and coastal climate of the intervention areas.[6] Support was provided for improved cashew production. In 2010 and 2011 FH distributed cashew seedlings to 1,300 farmers. They also received intensive training on cashew production techniques, including land preparation, mulching, spacing and disease and pest control. According to the 2012 FH Annual Agricultural Survey, 73% of FH beneficiaries involved in cashew production practiced at least two improved techniques in the year prior to the survey.[7] This data could not be verified, as the consultant did not have access to the original dataset from the annual survey.

To conserve and build organic matter in the soil and increase water infiltration and retention, FH promoted several sustainable technologies, including the use of green manures and cover crops, compost, crop rotation, intercropping of grains with nitrogen-fixing legumes as well as agroforestry. As Figure 3 demonstrates, the proportion of HH using at least three sustainable technologies has increased significantly over the baseline, from 32.7% to 67% *(LCL 61.9% / UCL 72%)*. This is only slightly lower than the program target.

Figure 3: Percent of HH using at least 3 sustainable technologies



Baseline N= 300; Final N= 333

p= .000

We can see in Table 7 (below) that technology use has increased across four technology categories. Adoption of composting, intercropping, crop rotation and reduced burning have all increased at a statistically significant level. Most of these increases have been by at least 20 percentage points. Reduced burning has seen the greatest change, at almost 50 percentage points. There was no change in adoption of green manure or agroforestry. Farmers in FGD also mentioned line sowing and crop spacing as key technologies

Table 7: Technology adoption

Technology	BL	Final	Sig.
Green Manure	39.3%	48.6%	N
Composting	32.0%	61.3%	Y
Intercropping	42.7%	64.6%	Y
Agroforestry	16.7%	23.7%	N
Crop rotation	17.7%	52.0%	Y
Reduced burning	30.3%	79.0%	Y

[5] Food for the Hungry Mozambique 2012 Annual Agriculture Survey report

[6] Interview with FH Agriculture Manager

[7] Unlike the other data in this report, this figure comes from the FH Annual Agriculture Survey and reflects only project participants. No specific question was included in the survey regarding cashew production techniques

introduced by the project that have helped them increase yields.

FH introduced the use of neem leaves and mango ash to protect seed and grain during storage. According to the 2012 Annual Agricultural Survey, 63% of project participants used neem and 63% used mango ash. In two FGDs with members of the Farmer Field and Life Groups (FFLG), farmers expressed frustration with organic pesticides, which they perceived as working poorly. In one case the farmers explained that FH had provided misinformation regarding a mistaken variety of tree (it looked like neem, but was actually another- unrelated- tree variety). Logically it did not work because it did not have the properties of an organic pesticide. In the other case farmers said that the neem mix did not work for root plants, explaining that pests had eaten both cassava and groundnut production treated with the remedy. Although the farmers in the second group could not provide exact figures, they suggested that this had led to large losses.

According to FH staff, the error of the first case was resolved as soon as the error was discovered. In the second case FH staff explained that neem takes as many as three years to produce seeds with strong insecticidal properties. Although the leaves can also be used as an insecticide, they are not as potent as an insecticide as the seeds. In either form neem is an effective preventive measure when used in conjunction with other methods, but alone it does not kills all insects.[8] Given the limitations of neem and the challenges with pest infestation in the MYAP program areas it is unclear why FH did not promote other pesticide alternatives in the program. When asked, FH staff explained that USAID does not allow the purchase of chemical pesticides. However, this alone seems like an insufficient explanation. It is important to note that farmers' willingness to adopt new technologies will depend largely on whether their own experience with such technologies is positive. A disappointing experience with one technology could make farmers skeptical of other new technologies in the future.

One of the key objectives of the support to agriculture was to increase production and *productivity* for key crops. As mentioned in the limitations section, the original questionnaire asked respondents to estimate yield and sales data based on recall. Although recall can be an effective method for estimating yields within a few days (or even weeks) of the harvest, recall becomes less and less reliable with the passage of time.[9] Given that the harvest to which the survey referred took place in June of 2012- a full 8 months prior to the survey exercise- the specific data regarding yields is unreliable. A more accurate way to look at performance is to look at overall trends from FH's Annual Agricultural Surveys which used LQAS sampling to collect crop cuttings and extrapolate mean productivity among sampled FH *participants* from across all program locations. Data from both the evaluation survey AND the FH Annual Agricultural Surveys are presented in Figures 4a and 4b below.

We can see in Figure 4a (below, on page 13) that the final evaluation survey data shows negative productivity growth for all crops, except rice, which showed slight improvements. At least four factors may be influencing these results:

(1) The first, mentioned above, has to do with the unreliable nature of farmer recall to describe yield data so many months after the harvest;

(2) The second is that the agricultural component might be better served by direct measurement of agricultural participants *rather than full populations*. By including data for the full population, the results may not fully capture the agricultural growth of farmers;

(3) The third factor has to do with the challenges in effectively standardizing local measurements into kilos. *At least* four different local agricultural weight measurements are used in the communities where the evaluation survey was conducted ("cans", "bags", "baskets" and "buckets"), each of which also has a range of measures (small, medium, large, etc.). While

[8] Email communication with the FH Agricultural Program Officer, May 24, 2013

[9] Diskin, Patrick, *Agricultural Productivity Indicators Measurement Guide*, Food and Agriculture Technical Assistance (FANTA), December 1997

an agricultural conversion chart was developed for use by enumerators during the survey exercise, the range of options and measures (in addition to new ones that showed up during the field exercise) led to significant extrapolation in the best-case scenario and downright guesswork in the worst case;

(4) The fourth factor may be related to the cultural context. Discussions of how much farmers produce are sensitive. This is owed to the fact that (a) farmers understand that decisions may be made about future support based on their responses and (b) much in the way that in the West it would be considered inappropriate to openly discuss salaries, some farmers may consider it inappropriate/uncomfortable to discuss agricultural yields and salaries. These factors may have resulted in underreporting.

Figure 4a: Agricultural Productivity- Final Evaluation Survey

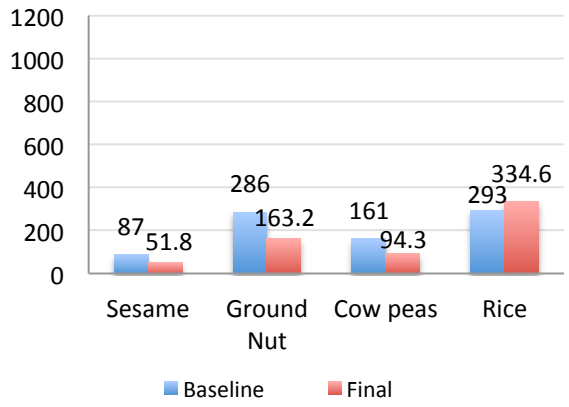
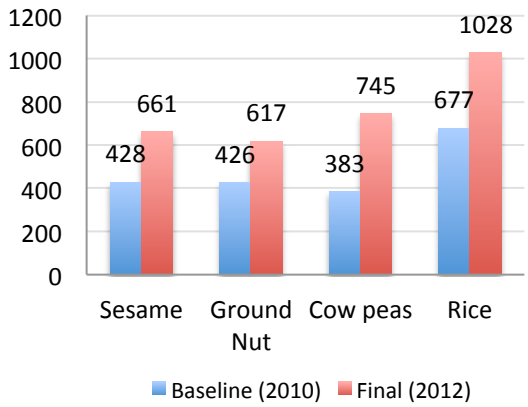


Figure 4b: Agricultural Productivity- FH Annual LQAS Surveys



The data from Figure 4b comes from the FH Annual Agricultural Surveys, with the first survey (2010) used as a proxy for the baseline and 2012 used as a proxy for the final evaluation. Assuming that the LQAS and crop-cutting methodologies were followed correctly and that data was managed and analyzed properly the annual survey data might be a more accurate reflection of overall trends in productivity for project participants. FGDs with two farmer groups and conversations with three FH agriculture staff also suggest that yields have indeed increased. Respondent farmers emphatically described gains in productivity and they attribute those gains to use of technologies promoted by FH and introduced through FFLGs. Coincidentally, according to the FH Agricultural Program Manager the data from the Annual Agricultural Surveys also aligns more closely with average productivity data for the Cabo Delgado province, further suggesting that the data may be a more accurate reflection of productivity. Figure 4b clearly shows yearly productivity increases for sesame, cowpeas, groundnut and rice.[10]

Given that multiple sources of data suggest that productivity has increased during the program- and taking into account the known methodological limitations with the baseline/final evaluation data collection instrument (described above)- it is the consultant's opinion that the results of the final evaluation likely do not accurately reflect the program's contribution to agriculture. In other words, despite the results of the evaluation survey, which suggest limited productivity gains, the other sources of data in the program indicate strongly that productivity is likely to have increased between the baseline and final evaluations.

[10] Because the consultant did not have access to the Annual Agricultural Survey raw data files the validity of these findings could not be verified.

For the final Annual Agricultural survey in 2013 it might be worth investing in an external consultant who can oversee the LQAS methodology, sampling, data collection, management and processing. This will support objective validation of the productivity figures presented above.

Overall *diversification of production* does not seem to have increased during the program. The percent of HH planting 3 or more crops has not increased significantly during the program. At the baseline 55.3% of HH planted 3 or more crops, while at the final evaluation the number had remained statistically constant at 58.3% *(LCL 53% / UCL 63.6%)*.

Intermediate Result 1.2: Natural resource base protected and enhanced

To address challenges with soil fertility, FH proposed to increase cover cropping in fields with leguminous crops to fix nitrogen and add organic matter in the soil. Other strategies to protect and improve the soil and/or increase nutrients and included reduced field burning, reduced soil tillage, and incorporation of mulch.

Table 8: IPTT Indicator and targets for IR1.2

Percent of NRM training beneficiaries that implemented 3 OR MORE improved NRM practice in their fields in the past year	50%

See the indicators regarding technologies and legume production under IR 1.1.

Intermediate Result 1.3: Market links established and households making use of economic opportunities

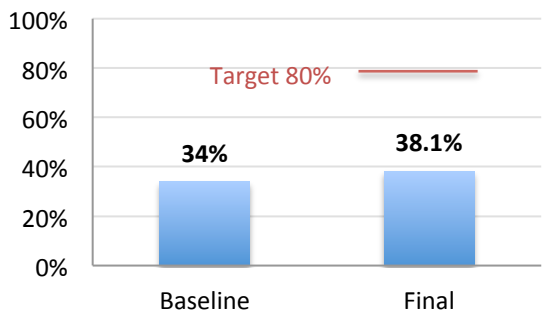
To address deficits in food access and increase community resilience, FH proposed the implementation of interventions to increase and diversify rural income, including: 1) support for production and sales of high value cash crops- sesame, cashew and groundnut; and 2) establishment of Savings Groups to mobilize community saving and encourage entrepreneurial activity.

Table 9: IPTT Indicators and targets for IR1.3

Percent of HH producing at least 1 high value improved cash crop	80%
Percent of women participating in cash crop production	50%
Average savings group distribution value per group at end of cycle	$200
Total funds generated for all savings groups per cycle (US$)	$52,800
Number of legalized associations (10 of Savings Groups)	120

The percent of HH involved in cash crop production has not increased. As Figure 5 shows, at the baseline 34% of respondent HH planted at least one cash crop (cashew, groundnut, sesame). At the final evaluation that figure is 38.1%, with *no statistically significant difference* between baseline and final evaluation.

Figure 5: Percent of HH producing at least one high value cash crop



Baseline N= 300; Final N= 333
p= .459: NO difference

Table 10 (below) further shows that there has been no significant increase in production of any of three key cash crops. According to the FH Agriculture Program Manager, these figures may have remained constant because- with the exception of sesame- FH promoted the use of improved varieties. In most cases these varieties were promoted among participants who were *already producing cash crops* and

were not introduced to new farmers. It is also important to bear in mind that while the percentage of HH producing the crops has not increased overall *productivity of cash crops has increased*, according the Annual Agricultural Surveys.

Table 10: HH participation in cash crops

Cash crop	Baseline	Final	Sig
Groundnut	15%	12.30%	N
Cashew	25%	29.70%	N
Sesame	7%	9%	N

Using the gender of HH heads as a proxy for the full population of female agriculture participants, the evaluation survey showed that *63% of female HH heads have participated in cash crop* production, approximately 13% above the target of 50%. This increase is not surprising given that this indicator value was listed as less than 5 percent in the baseline- suggesting that the value was an *estimate*. Calculating this value based on female HH heads at the baseline would have been likely to produce similar proportions to those from the final evaluation. The original baseline data was not available, making it impossible to verify this assumption.

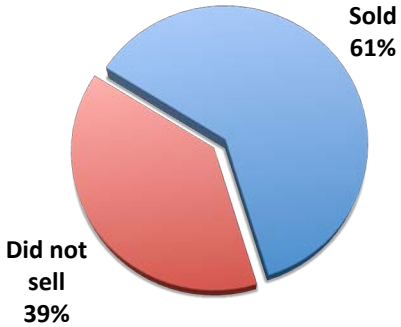
Producers of cash crops have increased their engagement with local markets. The MYAP has supported the development of 15 marketing forums through which associated farmers sell produce- mostly sesame- to a single identified buyer out of Maputo. According to data provided by the FH Agriculture team (included in Table 11), participants in forums have collectively sold a total of over 95,000kgs of sesame worth approximately $87,900. Unfortunately, no data was available regarding the number of farmers who participate in those sales, despite multiple requests for those figures. If we know, however, that 9% of all agricultural beneficiaries (total beneficiaries: 7887) produce sesame we can calculate that these collective earnings have been distributed among roughly 709 farmers (7887 x .09). This would work out to approximate sales per capita of $123.97 ($87,900 / 709). This back-of-the-envelope figure does not account for any relevant expenses incurred. Once labor costs are figured in it seems like a relatively low level of earnings.

Table 11: Sesame sales through collective marketing

DISTRICTS	2010/2011		2011/2012	
	Qty (kg)	Cash (USD)	Qty (kg)	Cash (USD)
Moçimboa	6,000	$5,357	22,629	$21,821
Palma	2,715	$2,424	6,042	$5,826
Nangade	7,500	$4018	50,268	$48,473
TOTALS	***16215 kg***	***$11,799***	***78939kg***	***$76,120***

Data management has been a weakness in the agricultural component of the program. Although there have clearly been earnings as a result of collective marketing, without the data regarding the number of people who participated in those activities it is difficult to understand the impact of these activities on mean incomes. The overall data point ($87,000) is a valuable metric only if we know how many people are sharing those profits and at what rate. It is a weakness in program's design that no indicators were included the IPTT regarding mean earnings for participants in collective marketing activities.

Figure 6: Percent of cash crop producers who sold / did not sell



Final Evaluation data only: N= 127

In terms of cash crop sales, however, Figure 6 shows that of those HH that produced cash crops, 61% sold at least part of what they produced.

While no income figures were available for those sales, the survey shows that 61% of cash crop producers earned at least some income from cash crop sales.[11] Furthermore, according to the most recent FH Annual Agricultural Survey many of the MYAP's agricultural participants sell goods individually in local markets. Although sales volume and earnings data are unavailable for those sales, we do know from the evaluation that roughly 23% of all respondents in the final evaluation (N=333) sold at least one crop in the year previous to the survey exercise. Together this data tells us that HH in the MYAP intervention areas have generated income from their productive activities.

Even with the modest success in linking farmers to collective markets, a few challenges should be highlighted. First, farmers in collective marketing depend entirely on FH for market linkages. Farmers themselves and FH staff confirmed this. Farmers have not received training in basic marketing concepts such market studies, value addition or price negotiation. Furthermore, across all intervention districts all farmers who sell through forums sell to a *single* buyer who determines the price; farmers do not actively negotiate in price or contract negotiations. At the same time, this buyer travels to the farmers to collect and pay for the produce, which means that the farmers have not built the capacity to plan and manage the logistics normally involved in collective marketing. These findings run counter to the understood purpose of collective marketing, which is to increase the negotiating and earning power of farmers. Farmers are entirely subject to the buyer. In one community we visited during FGDs, for example, respondents said that one year the buyer had reached his quota of purchases, and as a result he was no longer interested in buying from them, leaving them with a glut of product.

Conversations with FH staff suggested that these factors have been significant weaknesses in the program's marketing component. Although there have been short-term gains in sales and incomes, these gains may be unsustainable past the project's end.

FH supported the formation of savings groups (VSLAs) in order to smooth consumption and reduce vulnerability during lean periods.[12] According to data provided by the FH M&E Manager, 196 savings groups have been formed since the start of the project. Of these, 32 have been legalized. Together 3552 participants (1693 women / 1859 men) in VSLAs have generated a cumulative total of approximately $201,150[13] in savings, approximately $44,500[14] in interest income and $13,915 in social investment funds during the life of the program. The average savings group distribution for each cycle is approximately $776.50, more than $500 above the target of $200. The total of funds generated for all savings groups per cycle (mean of total savings + total interest + total social funds/ 5 years) is $51,913, slightly below the target of $52,800.

The savings and loan methodology used by FH follows the standard VSLA model introduced by local NGO Opavela, with slight adjustments in its implementation to respond to perceived local needs. In typical VSLAs members establish standard contribution amounts and timelines (e.g., weekly contributions) and impose a penalty on those members who do not pay into the savings account. According to the FH Agricultural Program Manager VSLAs supported by the MYAP have not been required to establish standard contribution amounts or penalties. FH made this decision to accommodate the extreme poverty within MYAP intervention communities and to support a high level of VSLA participation. This adaptation shows strong responsiveness to community concerns; however, it may also decrease the effectiveness of the intervention as a means to smooth consumption and reduce vulnerability to shocks. Those people who are "too poor" to consistently contribute to VSLAs may be only slightly less vulnerable to shocks than they were prior to their participation and may be far less prepared for shocks relative to their peers who contribute regularly.

[11] Baseline data was not available for cash crop sales, making comparison impossible
[12] Telephone discussion with FH Food Security Director, April 19, 2013
[13] Mtz 6,023,527 converted to US $, based on exchange rate of 1USD = 29. 9449Mtz, based on rates found on www.xe.com
[14] Mtz 1,333,757 converted to US $, based on exchange rate of 1USD = 29. 9449Mtz, based on rates found on www.xe.com

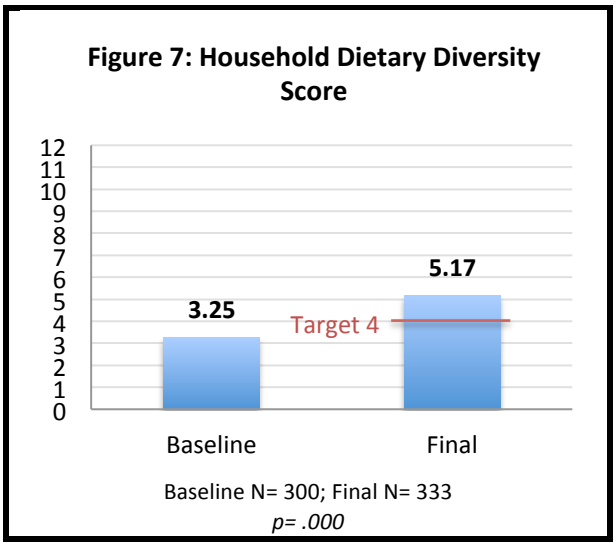
Likewise, under a flexible implementation model the risk associated with loans dispersed through the VSLAs may also be disproportionately distributed among the members who have contributed the most, effectively increasing their vulnerability as well.[15] It is important to note that none of these assumptions was verified due to limited access to the program's VSLA data.

Nonetheless it is clear is that FH's support for VSLAs has led to increased income through interest earnings while providing 3,500 men and women access to more than $200,000 in available capital for livelihoods investment or other household consumption needs.

Impact indicators for SO1 are included in Table 12

Table 12: IPTT Indicators and targets for SO1

Average HH Dietary Diversity Score	4
Average number of months of adequate food provisioning	>10.5



According to FANTA, household food access is the ability to acquire sufficient quality and quantity of food to meet all household members' nutritional requirements for productive lives. HH access to food depends on the ability of households to obtain food from their own production, stocks, purchases, gathering, or through food transfers of one kind or another. Access to food also depends on the resources available to individual HH members. The Household Dietary Diversity Score measures the mean number of different food groups consumed during a defined time period and is a strong proxy indicator of the socio-economic status of the household, reflecting their relative ability to access food in appropriate quantities and quality.

As Figure 7 (above) shows, there has been a statistically significant change in the *HH Dietary Diversity Score* from 3.25 at the baseline to 5.17 at the final evaluation, a full point above the target. On average, HH consume almost two more food groups now than they did at the baseline. We can see in Table 13 that food group consumption patterns have changed significantly across almost all food groups, with the exception of grains, fish/seafood and dairy products which have all remained statistically unchanged. Seafood is a staple food, available with relative ease in program communities along the coast. Consumption was reasonably high at the baseline and remained statistically constant at the final evaluation. Those communities that do not consume seafood are likely to be further inland, where seafood consumption would represent an

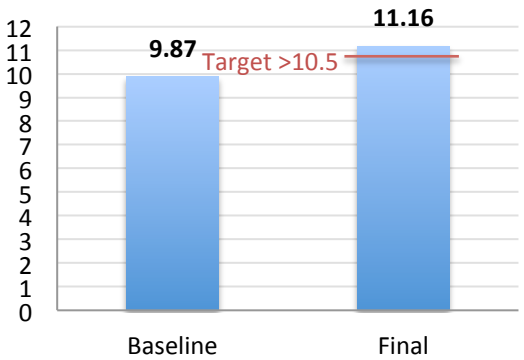
Table 13: Consumption by Food Group

Food Group	BL	Final	Sig.
Cereals	95.3%	97.9%	N
Roots / tubers	13.3%	30.6%	Y
Vegetables	42.3%	61.3%	Y
Fruits	25.3%	41.7%	Y
Meat, poultry	7.0%	21.0%	Y
Eggs	4.0%	12.3%	Y
Fish / seafood	60.3%	63.7%	N
Legumes	9.7%	44.7%	Y
Dairy	2.7%	3.0%	N
Oils or fats	22.0%	68.5%	Y
Sugar, honey	18.0%	33.6%	Y
Miscellaneous	25.3%	36.0%	Y

[15] The flexible nature of VSLA contributions may also help explain why aggregate savings seems lower than one might expect after five years of programming: since savings were optional, overall savings rates might be lower than they would have been under a model with minimal required contributions.

additional cost for families. This would have been true both before and after the intervention, explaining the lack of change. Grains are the staples of the local diet. Unsurprisingly, more than 95% of respondents at both the baseline and final evaluations consumed these items. Dairy consumption has remained consistently low at both the baseline and final evaluations. This is because there is no local production of dairy in Cabo Delgado. Because of the remote location of the province the vast majority of dairy products (such condensed, evaporated or powdered milk) are imported, making them prohibitively expensive for most poor families. As a result of their cost, most families choose to consume other more accessible items.

Figure 8: Average number of months of Adequate Food Provisioning

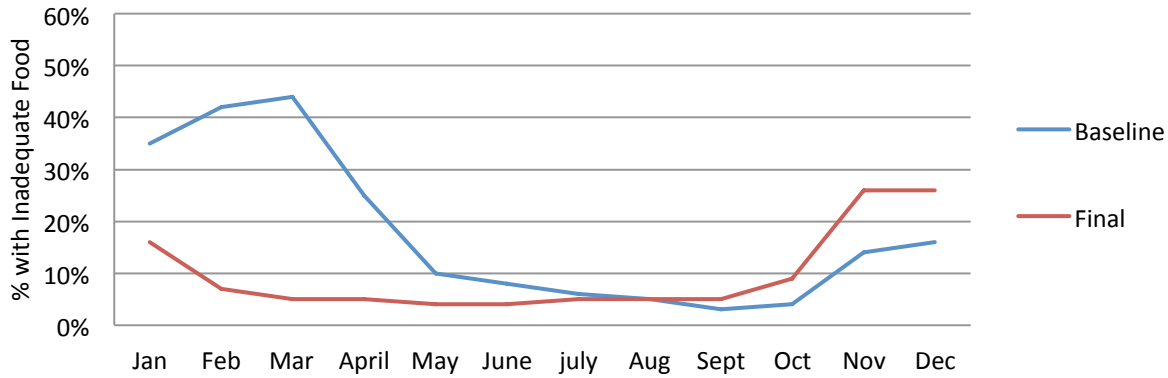


Baseline N= 300; Final N= 333
p= .000

A HH's ability to meet its food needs often varies due to factors like the quality of crop production (for any number of reasons, including climate factors, soil quality, input quality, etc.) and an increase or decrease in income sources. If we look at Figure 8 we can see that the mean number of Months of Adequate Household Food Provisioning has experienced a statistically significant increase, from 9.87 to 11.16, achieving the target for the program.

Figure 9 (below) shows that peak hunger occurs between November and March in both data sets; however, the magnitude of hunger experienced between January and March reduced dramatically at the final evaluation.

Figure 9: Months of Adequate HH Food Provisioning in Comparative Perspective



Overview and Discussion of Agriculture Findings

Table 14 Comparative Summary of Baseline and Final Agricultural Indicator Values for SO1

Indicator	BL	FE	% Point / Numerical Difference	Sig.
IMPACT: Livelihoods protected and enhanced				
Average number of months of adequate food provisioning	9.87	11.16	+1.29	**Y**
Average Household Diversity Score	3.25	5.17	+1.92	**Y**
Production diversified and productivity increased				
Percent of HH with intensive dark green leaf production	71.7%	91%	+19.3%	**Y**

Percent of HH adopting and diversifying production by including at least 1 new leguminous nutritious food crop in farming system	37.3%	58%	+20.7%	**Y**
Percent of beneficiaries (farmers) using at least 3 sustainable agricultural technologies in the past year	32.7%	67%	+34.3%	**Y**
Percent of fruit and cashew farming training beneficiaries practicing at least two improved fruit growing techniques in the past year	0	73%	+	**NA**
Percent of HH adopting sustainable non chemical grain and seed storage protection techniques	0	63%	+	**NA**
Productivity (kg/ha)* (1) Sesame (2) Groundnut (3) Cow peas (4) Rice (Nerica) *Data from Annual Agricultural Survey)	 428 426 383 677	 661 617 745 1028	 +233 +191 +362 +351	**NA**
Natural resource base enhanced and protected				
Percent of NRM training beneficiaries that implemented 3 OR MORE improved NRM practice in their fields in the past year	32.7%	67%	+34.3%	**Y**
Market links and economic opportunities				
Percent of HH producing at least 1 high value improved cash crop	34%	38.1%	+4.1%	**N**
Percent of women participating in cash crop production	<5%	63%	+	**NA**
Average savings group distribution value per group at end of cycle	0	$776.50	+	**NA**
Total funds generated for all savings groups per cycle (US$)	0	$51,913	+	**NA**
Number of legalized associations (10 of Savings Groups)	0	32	+	**NA**

Of the 16 indicators included in the IPTT for agriculture[16], 15 of them experienced positive change. Of the 6 for which statistical tests of significance were conducted, 5 of them experienced statistically significant change. Four indicator values fell below program targets, while the rest met or exceeded target values.[17]

For *production and diversification*, overall outcomes were somewhat mixed, with a significant increase in the percent of HH planting dark green leaf vegetables and incorporating at least one leguminous plant into their production. At the same time, however, no single leguminous crop has seen statistically significant increases in production nor has there been any statistically significant increase in the percent of farmers planting three or more crops, suggesting that overall production diversification objectives may have fallen short. If we use the yield/production data derived from the FH Annual Agricultural Survey (which, for reasons described above may be somewhat more reliable than the yield data from the final evaluation) then it appears as if productivity has increased across all four of the program's target crops. These figures should be viewed cautiously, however, since the data could not be verified. Nonetheless, it is important to note that both farmers and FH staff also confirmed through qualitative discussions that they have seen increases in productivity. If possible it is advisable that FH work with an external consultant to facilitate the final Annual Agriculture Survey to validate the results presented in this report.

[16] The indicators regarding technology adoption under IR1.1 and NRM under IR1.2 are the same. They are counted once.
[17] Productivity values from the FH Annual Agricultural Survey (and NOT the Final Evaluation survey) are being used here

There was a high degree of adoption of sustainable agriculture practices to *enhance and protect the natural resource base*. With the exception of green manuring and agroforestry all other technologies promoted by the program saw statistically significant increases. While the impacts of these practices were not measured or verified during the evaluation exercise, farmers from the program's FFLGs expressed the belief that the technologies were at least partially responsible for gains in production. The one exception was with organic pesticides. These were viewed as ineffective by farmers in FGD, and FH staff confirmed that the use of neem may have undermined that component altogether. Farmers are satisfied with FFLGs as a sustainable means to transmit technical assistance messages and support replication of best practices among farmers, and they confirmed that they meet as groups even in the absence of FH staff. Given the staffing and resource constraints of the Ministry of Agriculture, this is an important benefit that can serve as the foundation for continued farmer-to-farmer based agricultural extension support in the future.

Market links and economic opportunities have increased as a result of the program. While there has been no significant change in the percent of HH producing cash crops, at least 60% of those who produce cash crops are selling a portion (or all) of them either collectively or individually at local markets. Data provided by FH staff regarding income from collective marketing and VSLAs was not verifiable, but taken at face value at least $130,000 in *new* income ($87,000 from sesame sales + $44,500 in interest income from VSLAs) has been generated through those activities, not including any income generated through additional individual marketing activity. Furthermore, the total collective savings of VSLAs represents at least $200,000 of available capital through loans from VSLA funds.

Farmers have not received training to support increased market-based production. Farmers have not gained skills in market analysis, negotiation, value addition or processing, and the program has not strengthened other linked business to ensure integral and strong value chains. As a result marketing gains may be short-lived. Farmers *are* selling collectively through markets, but that is the result of good timing, the persistent support of FH and the unusual circumstances that bring the buyer to them, rather than expecting them to transport to the buyer. Farmers are dependent on FH for the existing market linkages in the program; without the ongoing support of FH and the existing interest on the part of the buyer that linkage will not be sustained.

VSLAs are working: HH are saving money, earning interest and giving/receiving loans. It might be worth exploring whether the flexibility of the groups may keep VSLAs from reaching their full potential as a consumption smoothing and vulnerability reduction mechanism. Since the most vulnerable can always find reasons not to save, they be perennially at risk. Furthermore, this arrangement could increase the vulnerability of members who do contribute regularly by disproportionately placing the risks for VSLA loans on their shoulders.

Overall sustainability of the agriculture program could be at risk when the program ends since the Ministry of Agriculture does not have the material or human resources capacity to provide ongoing follow-up or extension support. The MoA has a list of formally "recognized" volunteers, including the 149 community-based agricultural promoters who have worked with FH agricultural and VSLA participants. However, the Ministry has logistics challenges and resource constraints that do not allow them to provide any kind of incentives for the volunteers, which means ongoing support is unlikely to happen in any meaningful way.

Despite these challenges, the program's agricultural component has achieved results in production levels and income generation that are likely to have contributed to increased food access.

B. Strategic Objective 2 (Health): Protect and enhance human capabilities through improved health and nutritional status of pregnant women, preschool children and HIV+ individuals

To address food utilization, FH promoted positive health and nutrition behaviors for children 0- 24 months of age. The program used the Care Group model to: 1) improve nutrition behaviors and practices; 2) strengthen home management of illness; and 3) promote Essential Hygiene Behaviors. At the same time, FH supported the reduction of fecal and water borne diseases through improved access to clean water and sanitation facilities. Findings for each of the indicators relating to these interventions are included below, organized by Intermediate Result.

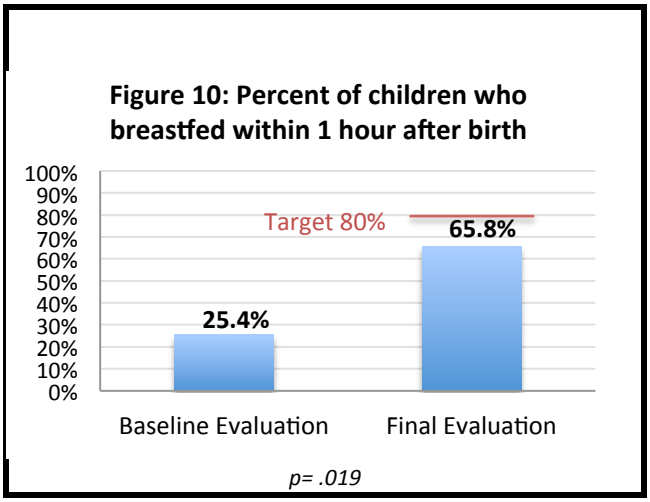
Intermediate Result 2.1: Improved use of Essential Nutrition Actions (ENA) by pregnant women and mothers of young children.

Appropriate breastfeeding and complementary feeding practices play a significant role in improving the health and nutrition of young children and confer significant long-term benefits during adolescence and adulthood. The relevant indicators and targets for FH activities related to ENA are included in Table 15.

Table 15: IPTT Indicators and targets for IR2.1

Percent of children 0-6 months of age who started breastfeeding within one hour after birth	80%
Percent of children 0-6m who were exclusively breastfed in the last 24h	90%
Percent of children 12-15 months of age who received breast milk during the previous day	98%
Percent of infants 6-8 months of age who received solid, semi-solid or soft foods during the previous day	98%
Percent of breastfed and non-breastfed children 6-24 months of age who received solid, semi-solid or soft foods, with the minimum required dietary diversity and minimum number of times a day	98%
Percent of caregivers who took their child aged 0-24m for an evaluation of nutritional status in the last four months	95%

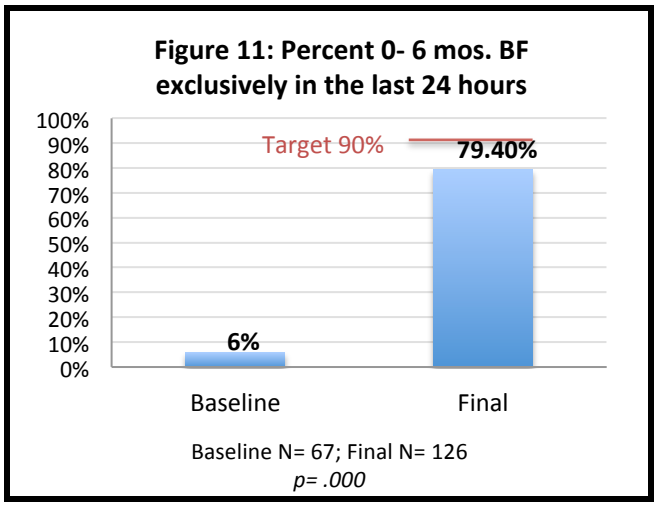
Figure 10 shows that a total of 65.8% *(LCL 61.2% / UCL 70.5%)* of children aged 0-6 months across the program districts *breastfed within one hour of birth*, representing a statistically significant increase over the baseline. According to WHO, infants who breastfeed within the first hour interact more with their mothers, stay warmer and cry less. Early breastfeeding has also been linked with decreased neonatal mortality. Additionally, a causal association between early breastfeeding and reduced infection-specific neonatal mortality has been reported, supporting the recommendation of early initiation.[18] Breast milk has anti-infective properties that help to protect the infant against infections.



[18] *Essential Nutrition Actions Improving Maternal-Newborn-Infant and Young Child Health and Nutrition*, World Health Organization, 2011. Found on May 13, 2013 at: http://www.who.int/nutrition/EB128_18_backgroundpaper2_A_reviewofhealthinterventionswithaneffectonnutrition.pdf

Colostrum, the milk produced in the first few days, is the first "essential immunization".[19] The increase in this indicator is approximately 14 percentage points lower than the target. However, it is important to highlight that in the Cabo Delgado context the colostrum is traditionally considered "dirty" milk. In the context of such strong negative cultural connotations for early breastfeeding the initial target might have been unrealistic.

As we can see in Figure 11, *exclusive breastfeeding among children between 0- 6 months* has also increased since the baseline, increasing approximately 70 percentage points since the start of the program. Current EBF has reached a level of 79.4% *(LCL 72.3% / UCL 86.4%)*, a level slightly lower than the program target. Exclusive breastfeeding for the first six months is an unequalled way of providing ideal food for the healthy growth and development of infants. Breast milk is the natural first food for babies, it provides all the energy and nutrients that the infant needs for the first months of life, promoting sensory and cognitive development, and protecting against infectious and chronic disease. Exclusive breastfeeding reduces infant mortality due to common childhood illnesses such as diarrhea or pneumonia, and helps for a quicker recovery during illness. Thereafter infants should continue to breastfeed up to 2 years of age (or beyond).[20]



In terms of breastfeeding for older children, the *percent of children 12- 15 months of age who received breast milk in the 24 hours prior to the survey* remained unchanged between the baseline and final evaluations (96% at baseline, 94% at final evaluation). This indicator was high at baseline, with targets set at only 4 percentage points above initial levels.

All infants should start receiving foods in addition to breast milk from 6 months onwards. As Table 16 demonstrates, *introduction of solid, semi-solid or soft foods for children between 6 and 8 months* old showed no significant increase over the baseline, evidenced by the slight overlap between the confidence intervals of the baseline and final evaluation proportions; the proportion of children between 6 and 8 months who receive complementary feeding is likely to lie somewhere between the baseline and final values.

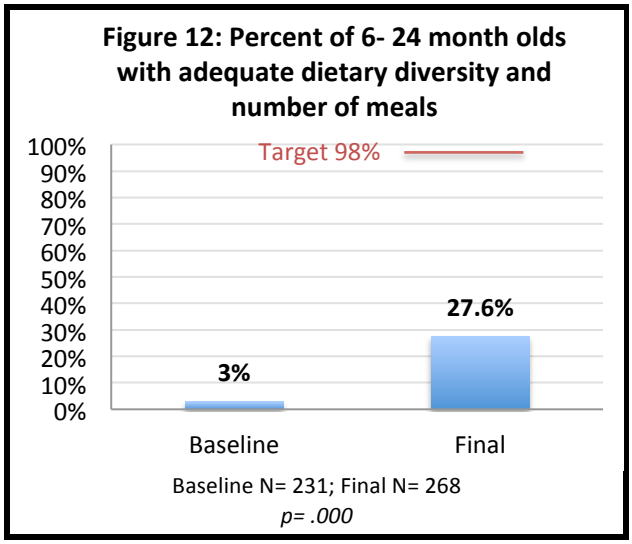
Table 16: Complementary Feeding

Percent of children between 6- 8 months who received any solid, semi-solid or soft foods during the previous day	**B.L. %**	**LCL**	**UCL**	**F. E. %**	**LCL**	**UCL**
	78%	65.4%	90.7%	95.9%	90.4%	100%

[19] Infant and Young Child Feeding Summary Sheet, Save the Children; found on May 29, 2013 at: http://www.savethechildren.org/atf/cf/%7B9def2ebe-10ae-432c-9bd0-df91d2eba74a%7D/Summary-Sheets-All.pdf

[20] http://www.who.int/nutrition/topics/exclusive_breastfeeding/en/; found on May 10, 2013

When we look at the *adequacy of complementary feeding* we can see in Figure 12 that, although there has been a statistically significant increase over the baseline, the frequency and variety of foods to cover the nutritional needs of children between 6- 24 months falls below the program target of 98%. At the final evaluation 27.6% *(LCL 22.3% / UCL 33%)* of children between 6- 24 months receive adequate diversity and sufficient meals per day, approximately 70 percentage points below the target for the program. This indicator is a complex composite of minimum number of meals and minimum dietary diversity for the age groups of 6- 8 months and 9- 24 months. When we look at the indicator by age group, we see a similar pattern across both groups. For children between 6- 8 months, only 26.5% receive adequate dietary diversity and number of meals (defined as 4 food groups and at least 2 meals per day). For 9- 24 months, 27.9% receive adequate dietary diversity and number of meals (defined as 4 food groups and at least 3 meals). Given the complexity of this indicator the program target of 98% was highly unrealistic especially since the baseline value was close to 0.



Regular Growth Monitoring and Promotion (GMP), is a key part of identifying children with growth deficiencies and preventing further nutritional and health deterioration. Health personnel have weighed the majority of children regularly both before and after the intervention. There was a statistically significant change from 83.3% to 93.7% *(LCL 91.2 / UCL 96.1%)*. It is important to note, however, that the interpretation of the MoH health card posed a challenge for survey enumerators. The MOH card includes both a weight-for-age graph and an area to note the weight-for-age and the next appointment date. The cards were filled out inconsistently within and across project areas, and in many cases the cards did not note the date of the previous weighing session. Interviewers estimated dates based on their individual understanding and interpretation of the cards, which is likely to have introduced bias in the data. Nevertheless, it was clear that the majority of children are being weighed regularly.

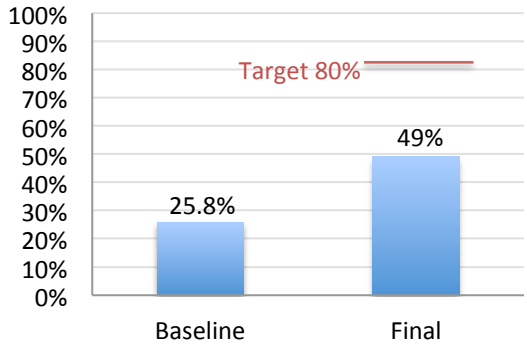
Intermediate Result 2.2: Improve mothers' ability to prevent, diagnose, and manage common childhood illnesses

Under IR2.2 FH proposed to address: increased knowledge about the signs of childhood illness, prevention of diarrhea (through promotion of exclusive breastfeeding; hand-washing with sand or ash using household hand-washing stations, care of household water and food, promotion of household latrine construction); prevention and treatment of malaria; and increased knowledge about HIV prevention. The indicators and targets under IR 2.2 are included in Table 17.

Table 17: IPTT Indicators and targets for IR2.2

Percentage of participant caregivers of children age 0–24 months who know at least three signs of childhood illness that indicate the need for treatment	90%
Percentage of pregnant women or caregivers of children 0-24m who can name three methods of preventing HIV	70%
Proportion of caregivers of children 6-24m of age who gave the same or more food during a childhood illness in the past two weeks	85%

Figure 13: Percent who know at least 3 signs of childhood illness



Baseline N= 295; Final N= 404

p= .000

The *percent of caregivers of children 0- 24 months who can identify three or more signs of childhood illness* has increased over the baseline at a statistically significant level. As Figure 13 shows, 49% *(LCL 44.1% / UCL 53.9%)* know at least three signs of illness. While this represents a gain of more than 20 percentage points, the achievement falls approximately 30 percentage points short of the program target of 80%. Given that this is an indicator measuring *knowledge* and not practices / behavior we would expect to see higher gains. Knowledge is usually the easiest level of result to influence, as it is typically the most linear input-output relationship in a project intervention.

Table 18 provides a break down of knowledge levels by typical danger sign between the baseline and final evaluations. As the table shows, there has been virtually no change in knowledge levels regarding danger signs on 6 out of 7 key signs. The only one that showed statistically significant change since the baseline is "appears unwell, won't play". None of the others have seen any improvement over the time of the MYAP.

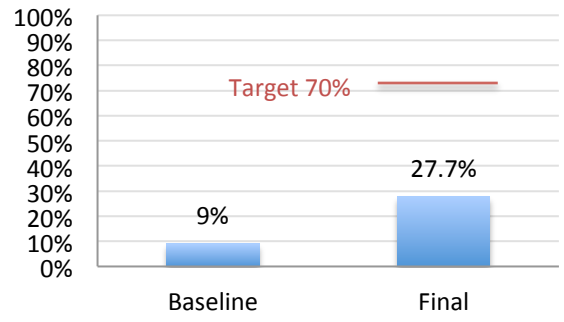
Table 18: Recognition of signs of illness, by sign

Sign of illness	***BL***	***Final***	***Sig.***
Appears unwell, won't play	60%	70%	**Y**
Won't eat or drink	33%	41%	**N**
Lethargic, difficult to wake	6%	5%	**N**
High fever	88%	87%	**N**
Rapid or difficult breathing	7%	13%	**N**
Vomits everything	8%	14%	**N**
Convulsions	3%	1%	**N**

A total of 26.2% of caregivers reported that their child between 0- 24 months had diarrhea in the two weeks previous to the survey. This represents a statistically significant decrease compared to the baseline of 36.8%, suggesting that behaviors related to prevention have begun to change, even if slightly. More details regarding hygiene factors that influence diarrhea are included under the section for IR2.3, below.

Malaria prevention has also improved since the baseline. Bed net ownership (all types) saw a statistically significant increase from 73.6% at the baseline to 86.4% *(LCL 83% / UCL 89.7%)* at the final evaluation. The percent of children sleeping under bed nets did not increase significantly over the baseline; however, the percent of HH with treated bed nets increased dramatically, from 36.8% at the baseline to 90.5% *(LCL 87.5% / UCL 93.6%)* at the final evaluation. Even if the proportion of children sleeping under bed nets has remained the same, almost three times more children are sleeping under ITNs.

Figure 14: Percent who can name 3 or more HIV prevention methods



Baseline N= 266; Final N= 394

p= .000

The percent of respondents who have heard of HIV/AIDS has increased over the baseline, from 89.9% *(LCL 86.4% / UCL to 93.3%)* to 98.5 *(LCL 97.3% / UCL 99.7%)*. Likewise, the *percent of caregivers who can name at least three methods for preventing HIV* has increased. As Figure 14 (above) demonstrates, there has been an increase of

approximately 20 percentage points. Nonetheless, the achievement is also approximately 40 percentage points below the program target. Like with the indicator regarding signs of childhood illness, this indicator measures knowledge and not practices or behavior; as a result we would expect achievement to have been higher.

The percent of children experiencing fever in the two weeks prior to the survey remained constant between the baseline and final evaluations (52%, 58%, no significant difference). There was also no statistically significant difference between those who took their child to the hospital when he/ she had fever between the baseline and final. There is, however, a statistically significant difference in the time between the onset of fever and the visit to hospital. At the baseline 53.6% of caregivers took their child to the hospital at the onset of fever (within one day), while this figure increased to 76.5% *(LCL 69.3% / UCL 83.6%)* at the final evaluation, suggesting that there has been an improvement in malaria care seeking behavior.

Table 19 (below) shows key values of the indicators relating to home-based care. There has been no significant change over the baseline in the *proportion of caregivers providing a sick child with the same or more food during illness*. There has also been no significant change in the proportion of caregivers who breastfed a sick child the same or more during illness, suggesting that household care is still lacking. Likewise, there has also been no significant change in the percent of children who received oral rehydration salts (ORS) during diarrhea, although at both the baseline and final evaluation it is important to note that the percent of children receiving ORS was relatively high.

Table 19: Key treatment indicators

Indicator	**B.L. %**	**LCL**	**UCL**	**F. E. %**	**LCL**	**UCL**
Percent of caregivers who gave children 0-24 months the same or more food during illness	37.5%	26.3%	48.7%	51.2%	40.6%	61.7%
Percent of caregivers who breastfed children 0- 24 months the same or more during illness	51.1%	47.3%	66.9%	69.2%	60.4%	78.1%
Percent of children 0- 24 months who received ORS during diarrhea	85.2%	77.4%	92.9%	62.4%	52.5%	72.2%

Intermediate Result 2.3: Improved access to clean water, sanitation facilities and essential hygiene behaviors (EHB)

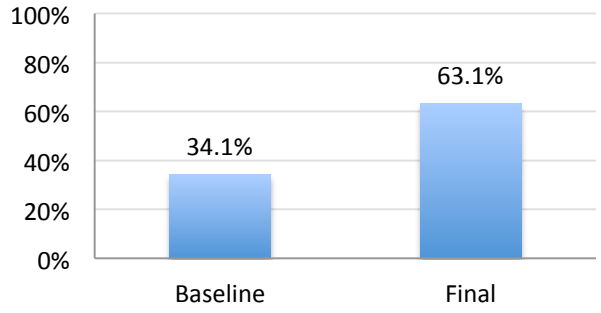
According to the original project design, many households in the target had a low level of access to and use of potable water and proper sanitation facilities at the start of the program. To decrease household vulnerability to unclean water and poor sanitation, FH constructed wells and public latrines, promoted construction of simple HH latrines and provided training for improved hygiene behaviors through Care Groups. The IPTT indicators and targets under IR2.3 are included in Table 19.

Table 20: IPTT Indicators and targets for IR2.3

Percentage of beneficiary caregivers demonstrating proper personal hygiene behaviors	95%
Percentage of beneficiary caregivers demonstrating proper environmental hygiene behaviors	95%
Proportion of caregivers demonstrating proper food/water hygiene behaviors	40%

FH and partner JAM constructed a total of 52 wells, including 17 tube wells and 35 shallow wells across 30 communities (approximately 60% of all communities in the MYAP).[21] As Figure 15 shows, access to improved water sources has approximately doubled during the life of the program *(LCL 58.4% / UCL 68.7%)*. This is a statistically significant change over the baseline. Furthermore, of those with access to an improved water source, 95% percent have access year-round and can access the water source within a 10-minute (median) walk from their home. It is important note, albeit anecdotally, that during several field visits for qualitative discussions the team observed a high level of use of wells constructed with FH support. In each location the wells were in constant use by community members.

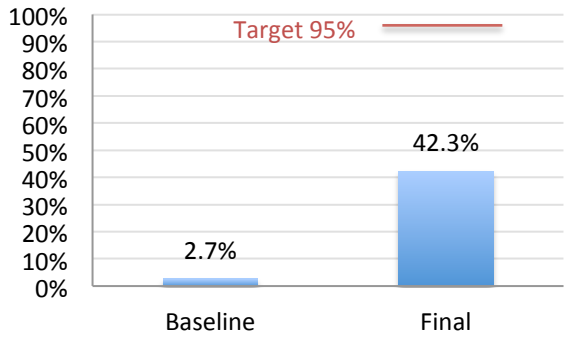
Figure 15: Percent of caregivers with access to improved water sources



Baseline N= 299; Final N= 404
p= .000

Hand washing is one of the most effective means of preventing diarrheal diseases, along with safe stool disposal and safe and adequate household water supply. Evidence suggests that improved hand washing can have a major impact on public health and significantly reduces diarrheal disease and acute respiratory infection- the two leading causes of childhood mortality. Because hand washing with soap can prevent the transmission of a variety of pathogens, it may be more effective than any single vaccine or hygiene behavior. During the course of the MYAP there has been a statistically significant increase in the *percent of caregivers demonstrating proper personal hygiene* behaviors. This is a composite indicator that measures (1) whether caregivers report washing their hands at two or more appropriate times and (2) whether they have available water and soap/ash for hand washing. Figure 16 illustrates that composite personal hygiene behaviors have increased approximately 40 percentage points over the baseline to 42.3% *(LCL 37.5% / UCL 47.1%)*. Despite the increase, achievement on this indicator is still approximately 50 percentage points below the program target. If we look at hand washing behaviors alone, the percent of caregivers who report washing their hands at two or more appropriate times has virtually doubled, from 42.5% at the baseline to 83.4% (LCL 79.8% / UCL 88%). This change is statistically significant.

Figure 16: Percent of caregivers practicing proper personal hygiene



Baseline N= 299; Final N= 404
p= .000

Table 21 illustrates the detail regarding hand washing. The only response that did not change since the baseline is "never." Approximately 5% of respondents do

Table 21: Hand washing practices

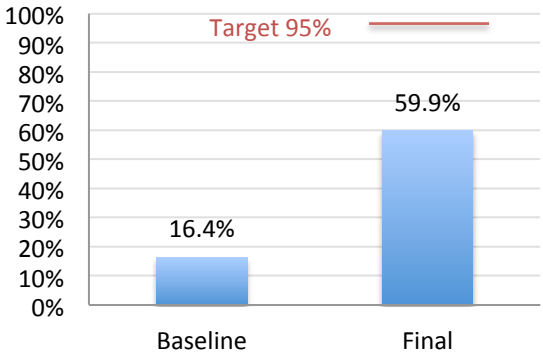
Hand washing	*BL*	*Final*	*Sig.*
Never	9%	5%	N
Before Food preparation	44%	88.5%	Y
Before giving food to children	22%	62.8%	Y
After defecating	33%	70.3%	Y
After caring for a child who defecated	27%	55.3%	Y

[21] FH Mozambique program data provided on April 5, 2013

not wash their hands at any of the appropriate / necessary times. One category that still seems low in comparative perspective is the percent of respondents who wash their hands after caring for a child who defecated. It increased by approximately 30 percentage points but is still far less common than the other responses.

Proper environmental hygiene is a key component to ensuring the health of young children. As Figure 17 shows there has been a statistically significant increase in the *percent of HH practicing proper environmental hygiene,* from 16.4% at baseline to 59.9% *(LCL 55.1% / UCL 64.7%)* at the final evaluation. Achievement is approximately 35 percentage points below the target. It is important to point out that in the baseline questionnaire the question referring to disposal of children's feces was phrased as "where did children go to the bathroom?" as opposed to "where did you dispose of children's feces?" The question was not modified in order to ensure comparability of responses between the baseline and final evaluations; however, the phrasing of the question may have also affected its interpretation by respondents.

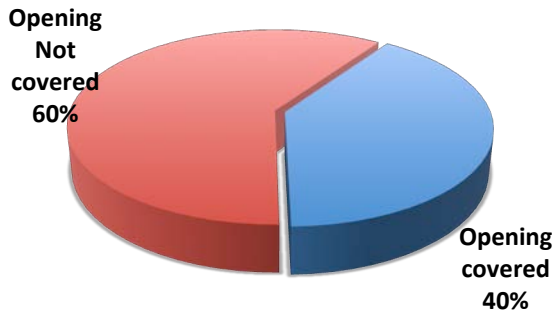
Figure 17: Percent demonstrating proper environmental hygiene



Baseline N= 299; Final N= 404
p= .000

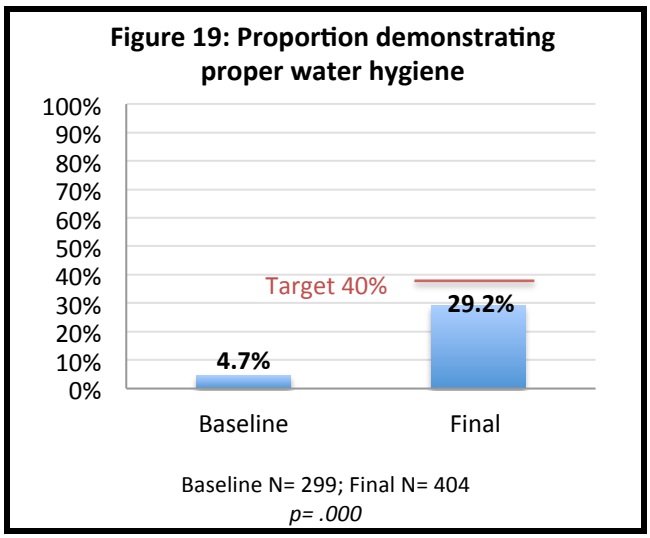
When we think about environmental hygiene we must also consider the overall practices of the family. To reduce open defecation and support the program's hygiene component FH promoted HH latrines. While FH did not provide materials, they did provide training and orientation on a simple model for HH latrines using locally available materials. The latrine is a simple dug pit (unlined), covered with a crosshatch of sticks and mud with a small opening left for defecation and urination. During fieldwork it was clear that these latrines were widely replicated across MYAP intervention communities. Based on 53 individual case observations, the latrines are used regularly at the HH level. However, as Figure 18 shows, only 40% of observed latrines had a cover for the latrine's opening, creating a potentially significant disease vector at the household level. Given that the purpose of the latrines was to improve environmental hygiene, this finding is important as it potentially undermines that purpose.

Figure 18: Percent of HH latrines with a "lid" for the opening



N= 53
NO test of statistical significance performed

The indicator regarding *water hygiene behaviors* measures the degree to which caregivers take proper measures to both treat and store water as a means to preventing diarrhea. As Figure 19 shows, this indicator value has seen a statistically significant changed from 4.7% at the baseline to 29.2% *(LCL 24.8% / UCL 33.6%)* at the final evaluation. This falls approximately 10 percentage points below the program target. If we look individually at the component indicators, approximately 34% of caregivers practice any single water treatment method, while almost all (98%, N= 392) store their water in containers with lids. This suggests that water treatment is the major barrier to overall improved food and water hygiene. It is unclear why this is the case, although the increased costs of water treatment may be a partial explanation. To boil water, firewood is required. Firewood takes time to collect, and boiling enough water for a family would dramatically increase both the amount of firewood and the time required to collect it. Additionally, boiling water takes time and leaving it out to cool is sometimes a challenge if a family only has a limited number of pots and they are needed for the next meal.[22]



Overview and Discussion of Health Findings

Table 22 Comparative Summary of Baseline and Final Health Indicator Values for SO2

Indicator	BL	FE	% Point Difference	Sig.
Essential Nutrition Actions				
% 0-5.9 who started breastfeeding one hour after birth	25.4%	65.8%	+40.4%	Y
% 0-5.9m who were exclusively breastfed in the last 24h	6%	79.4%	+73.4%	Y
% 12-15 months of age who received breast milk in the previous day	96%	94%	-2%	N
% 6-8 months of age who received solid, semi-solid or soft foods during the previous day	78%	95.9%	+17.9%	N
% 6-23m who received solid, semi-solid or soft foods, minimum dietary diversity and # of meals	3%	27.6%	+24.6%	Y
% 0-23.9m who received nutritional evaluation in the last 4 months	83.3%	93.7%	+10.4%	Y
Diagnosis, prevention and treatment of illness				
% Caregivers of children 0–23 who know at least 3 signs of childhood illness that indicate the need for treatment	25.8%	49%	+23.2%	Y
% Of pregnant women or caregivers of children 0-23m who can name 3 methods of preventing HIV	9%	27.7%	+18.7%	Y
% Caregivers of children 6-23.9m who gave the same or more food during a childhood illness in the past two weeks	37.5%	51.2%	+13.7%	N
Water, sanitation and hygiene				
% Caregivers demonstrating proper personal hygiene behaviors	2.7%	42.3%	+39.6%	Y
% Caregivers demonstrating proper environmental	16.4%	59.9%	+43.5%	Y

[22] Email correspondence with FH Health Advisor, May 24, 2013

hygiene behaviors				
% Caregivers demonstrating proper food/water hygiene behaviors	4.7%	29.2%	+24.5%	**Y**

Of the 12 health indicators included in the IPTT 9 of them (75%) experienced statistically significant changes in values between the baseline and final evaluations. Three (25%) did not experience statistically significant change over the program period. All indicator values fell below the expected targets for the program, although the behavior change targets may have been unrealistically ambitious, especially given the two-year window within the modified Care Group model.

Among *essential nutrition actions*, breastfeeding behaviors showed marked improvement, both in term of early initiation and exclusive breastfeeding of infants 0- 6m. The percent of children breastfed within one hour of birth still falls behind the national average of 76% (DHS 2011), but the percent of children exclusively breastfed in MYAP project areas now exceeds the national average (42.8%) by almost 35 percentage points at 79.4%. Continued breastfeeding of children 12-15m was already very high at the baseline, essentially reaching the target before the project began, and the survey results show that those behaviors continued through the project.

Rates of complementary feeding for children 6- 8 months did not change during the project. Those values were already higher than the national average of 68.5% (DHS) at baseline. However, values for "adequate" complementary feeding (minimum dietary diversity and number of meals) improved by 25 percentage points during the project. Before the MYAP those values were 12 percentage points below the national average of 15%; they are now above that average by approximately 10 percentage points.

The indicator values regarding *diagnosis, prevention and treatment of illness* are the most variable. Although the percentage of caretakers who can name at least three signs of illness has increased from 26% to 49%, none of the individual measures of knowledge for any of the individual signs has changed at a statistically significant level since the baseline. This was particularly surprising since these indicators gauge knowledge rather than behaviors.

There has been a statistically significant change in cases of diarrhea. These are presumably linked with improved feeding habits as well as improved hygiene and sanitation (under IR2.3), thus helping prevent diarrheal disease. Malaria prevention has also improved thanks to high adoption of ITNs, at approximately 90% of all caregivers interviewed. This represents a rate of ITN use that is 40 percentage points higher than the national (rural) average of 49% (DHS). Reports of fever at the final evaluation remained at par with level of the baseline, which may be due to the fact that the proportion of children *sleeping* under nets has not changed significantly. One might also expect that some of these cases of fever are due to other causes, although the survey did not request details regarding the causes of fever. The percent of caregivers with knowledge of three or more methods to prevent HIV has also increased.

Achievement for treatment of Illness is somewhat mixed. On the one hand there has been no increase in the proportion of caregivers who bring their child to the hospital when he/she has a fever, but on the other hand there has been a statistically significant increase in the proportion of caregivers who do so within a day of the outbreak of fever. This suggests both increased vigilance and understanding of the potential gravity of fever among young children. At the same time, however, there has been no statistically significant change in the percent of caretakers who provide the same or more food OR the same or more breast milk during illness.

Indicator values related to *water, sanitation and hygiene* have all seen statistically significant increases over baseline levels. Caretaker access to improved water sources has nearly doubled, from

34% to 63%. Personal hygiene behaviors have also increased significantly- by approximately 40 percentage points over the baseline. More families have soap and water available to them and significantly more caretakers report washing hands at all the necessary times. Strangely, a relatively low proportion of caretakers (55%) report washing their hands after caring for a child who has defecated.

Environmental hygiene outcomes are mixed. There has been statistically significant increase in proper excreta disposal- from 16% to 60%. At the same time, observations of more than 50 HH latrines showed potential disease vectors resulting from improper maintenance and care.

Indicator values for water treatment and water storage are also variable. Ninety-eight percent of caretakers store water in containers with lids, but only approximately 34% use any water treatment method. When taken as a composite value only approximately 29% of caretakers show both proper storage and treatment of water. Nonetheless, this represents a statistically significant increase of 25 percentage points over the baseline value of 4%.

Some of the health gains have been more modest than might have been expected. There are three related factors that may explain this, all of which are linked to the way the Care Group methodology was implemented in the MYAP:

(1) The time frame of Care Group support- by design the MYAP envisioned support through Care Groups only during the 0-24 month interval of children's lives rather than the 0- 60-month time period envisioned in the original Care Group model. Sustained behavior change in most contexts is likely to require more than two years of training and follow-up. And without sustained follow up for both children and mothers after children turn two, the gains in behaviors and knowledge could reverse. In short, the modifications of the CG model from a five-year to a two-year process may have limited both short-term achievement and long-term sustainability. Future programs might consider including mothers of all children under five and keeping them participating in the CGs for the full length of the project. This would be more consistent with the intention of the Care Group model.

(2) Incentive plans for Mother Leaders reduced participation in Care Groups- while it is clear that Care Groups support widespread replication of appropriate knowledge, practices and behavior, Mother Leaders in all FGD pointed to high attrition among participant mothers as a key factor undermining results. When asked why this happened mothers across all FGDs unanimously echoed that the distribution of *capulanas* (colorful traditional wraps) to Mother Leaders had created large tensions between Mother Leaders and many participant mothers. The capulanas were part of FH's strategy to provide a non-monetary incentive to Mother Leaders for their work in Care Groups. The capulanas- printed with the program's key messages regarding nutrition and health- resulted in significant jealousy. According to Mother Leaders across all FGDs as many as half of all mothers of 0- 23.9 stopped participating in Care Group sessions as a result. This would help explain why some of the key indicators- especially regarding knowledge- were lower than might have been expected. This finding is supported by the quantitative data, which shows that only 70% of mothers had received a health promotional visit in the previous month. Fewer than half had received more than one visit.

(3) The current course of modules is not appropriate for a two-year Care Group cycle- there are currently nine modules in the program, each of which is taught over the course of approximately 6 months. This means that it would take almost 5 full years to get through all 9 modules. This suggests that NO SINGLE mother in the program has received all nine modules. In fact, under this model, any single mother would only receive approximately half of the full modules during her time in the Care Group. This may help explain the relatively low performance on the key knowledge indicators. For future programs where USAID requests the implementation of Care Groups for only the 0- 24 month age group it might make sense to consider reducing the length of the modules (and the schedule of trainings) to ensure that all participant mothers receive all relevant messages during their time in the

Care Groups. Refresher training could be provided on an ongoing basis throughout the life of the program.

Despite these challenges, the changes in indicator values suggest that MYAP's health activities have led to changes in key behaviors that serve as the foundation for *better food utilization*. Through improved feeding practices, improved hygiene, decreased diarrhea and improved prevention/treatment of other illnesses such as malaria children receive- and can properly utilize-food. Changes in the status of nutrition among participant populations will be verified during the anthropometric exercise in October-November 2013.

C. Strategic Objective 3 (Community Capacity Building): Increased community capacity to influence factors that affect food security and resiliency to shocks

The Community Capacity Building component of the MYAP sought to develop community capacity to promote and sustain local development initiatives by (1) building the capacity of existing formal and informal community leaders; (2) supporting the development of local infrastructure and capacity or their maintenance; and (3) increasing community capacity to mitigate shocks. In short, this SO underpins the health and agriculture findings by ensuring that local communities have the skills and experience to manage and prioritize community development. Findings for the indicators relating to SO3 are included below, organized by Intermediate Result.

Intermediate Result 3.1: Increased leadership capacity of existing formal and informal community leaders to address factors that affect food security

Under IR3.1, FH built the capacity of Community Development Committees to play an active role in community development efforts.

Table 23: IPTT Indicators and targets for IR3.1

Number of HCA/PRA conducted and reports prepared	48
Number of CDC leaders participating in training	1162
Percent of CDC members who are women	38%

FH formed 48 CDCs, consisting of between 10 and 12 members selected through a process of community consensus. CDC members were trained in internal governance, roles and responsibilities, approaches, community development and conflict resolution. A total of 570 CDC members were trained across all target communities. FH implemented a total of 768 trainings. In total 33% of CDC members across all communities are women. Given that many of the intervention communities are Muslim- where community participation among women is limited by culturally-prescribed gender norms- this represents an important achievement.[23]

FGD were planned with three CDCs in three different communities (one in each district) in order to gauge leadership capacity and the overall capacity of CDC members as community leaders. As a result of scheduling conflicts, only two FGDs were completed. Of the FGDs conducted only one showed a basic understanding of CDC roles and responsibilities, development plans (past and future) and sustainability plans for community infrastructure projects (solar powered improved water pump and market stall). The other group could not describe the purpose or function of their CDC or provide any details regarding the community development activities or infrastructure projects that had been implemented with FH support. The FGDs gave a mixed impression of the CDCs. Although clearly two FGDs are not representative of all CDC capacity, they do illustrate the likely variation that exists in CDC capacity.

[23] FY09 Annual Results Report

The weaker of the two CDCs said that FH CCB staff/volunteers did not visit their community very regularly, which might provide partial insight into the observed skills deficits. Community capacity building requires significant time and human resource accompaniment to be successful. It does seem that consistent follow-up might have been a challenge given the geographic scope of the program and the limited staff compared to the program's other components. The differences in staffing levels are clear: (1) the Health team has a Manager, two Coordinators, seven Program Support Officers (PSOs) and 45 community-based health and nutrition facilitators; (2) the Agriculture team has a Manager, an Agriculture Coordinator, a Savings Coordinator, six Agricultural PSOs, three savings PSOs and 149 community-based agriculture and savings promoters; (3) the community capacity-building team has a Manager, a coordinator and nine PSOs.[24] Although the CCB team coordinates with the other programs' community-based staff, it is easy to imagine that the significantly smaller CCB staff would face difficulties in ensuring consistent follow-up.

According to the M&E Manager, while CDC training is tracked, overall capacity of the groups is not systematically measured. Such efforts could help to identify specific skills gaps and support appropriate planning based on identified problem areas.

Intermediate Result 3.2: Increased community level economic infrastructure/assets

FH supported CDCs across MYAP communities in the development of community-level infrastructure, including (1) Access roads and small bridges; (2) improved wells to protect against contamination at source, (3) market stalls and (4) first aid facilities. Indicators and targets for this IR are included below.

Table 24: IPTT Indicators and targets for IR3.2

% of CDCs that complete community development projects	92%
# of community development projects completed	66
Amount contributed by community for small-scale community projects (US$)	$97,000

As of April 5, 2013 a total of 87.5% (42 of 48) of all CDCs had completed infrastructure projects, approximately 4.5 percentage points (two CDCs) below the target. In total, CDCs have completed 68 community infrastructure projects. [25] These projects refer to infrastructure activities undertaken in partnership between the CDC and FH, in which the CDC prioritized projects and secured labor, while FH provided basic materials for their construction, such as tin roofing and cement. The market stalls, meeting spaces and schoolrooms are very simple structures, in most cases essentially four pillars and a roof. In addition to planning, coordination and construction, part of the CDC role is to ensure that the community infrastructure is adequately used and maintained. Although the timeframe of the evaluation did not permit systematic observations all of the CDC community projects, during the two CDC FGDs, observations of two market stalls were conducted (in two communities across two districts). Construction on one had been halted since October due to the illness of the mason who had agreed to complete the structure free of charge (community contribution), while the other although complete, was not being used. FH staff also mentioned at least one other market stall that had been completed but was not utilized.

Table 25: CDC Projects

Project type	Number
Schoolrooms	28
Tube wells/shallow wells	5
Market stalls	14
Health posts	14
Bridges/road repair	3
Maternal care center	1
Meeting spaces	3

When asked about this, FH staff explained that the stalls were not being used as a result of delays on

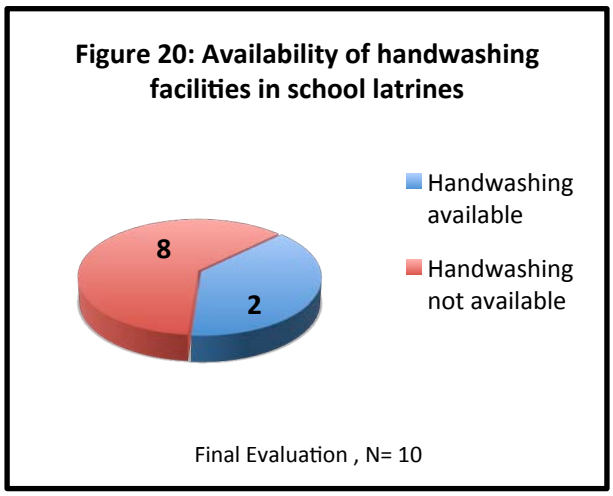
[24] FH MYAP Organizational and Staffing Structure Chart, updated August 2012
[25] This data is derived from a table provided by the FH M&E Manager on April 5, 2013

the part of the district governments, who must approve and then formally "inaugurate" community infrastructure before it can be used by the communities. It is unfortunate that items that have been prioritized by communities have not received the same degree of priority on the part of local government officials. This might be an area where FH could exert a bit more influence.

In addition to this basic infrastructure, the FH Community Capacity Building team oversaw water and sanitation infrastructure development and training in support of the project's health component (SO2). For this purpose, the MYAP subcontracted with Joint Aid Management, a South African NGO, to construct school/public latrines as well as tube wells and shallow wells. As mentioned under SO2, a total 17 tube wells and 35 shallow wells (52 wells in total) were constructed across 30 communities (approximately 60% of all communities in the MYAP). This is likely to have contributed to the increased access to improved water sources cited under the health component. At the same time, JAM supported the construction of 45 school latrines. Public latrines were not constructed. As mentioned above, the community capacity building team also provided orientation and training for the construction of simple pit latrines. The evaluation team completed structured observations of nine wells, ten school latrines and 53 HH latrines built under this component of the program to gauge quality of use and maintenance.

Observations of the tube wells and shallow wells (nine total, 5% of those constructed) showed that all wells were- unsurprisingly- regularly used. According to conversations with a community member, water from one of the wells (in Mitumbate, Mocimboa) is constantly red, rusty and salty, which means it is unsuitable for consumption. Six of the wells (66% of all observations) showed pooled water around the water collection chamber. Although pooled water will be difficult to avoid altogether at an open well, if unchecked over time it could become a vector for mosquito-borne illness such as malaria or even elephantiasis, both of which are endemic. Three of the wells presented constant leaks around the pump. Although five of the communities visited have water committees,[26] maintenance seems to be a nascent issue with the wells. Given that the program has not yet ended, one might expect these small challenges to grow once the program ends.

Observations of the 10 school latrines (approximately 20% of the total constructed) showed that four of them (40%) were not used regularly, eight (80% of observations, 18% of total constructed) offered no area for hand washing and three (30%) were not maintained, exhibiting high grass around the structure. Again, when asked about these findings FH staff explained that the protocol for latrines is similar to that described above regarding market stalls: upon completion of infrastructure the MoH assumes responsibility for maintenance through a system in which both a teacher and a student are selected to be responsible for the hygiene and sanitation of the latrine. The latrines were formally "delivered" to the MoH by FH. Based on MoH policy, it was subsequently the responsibility of the school to ensure proper use and maintenance. Unfortunately this has not happened.



It is important to mention that there were challenges in the relationship between JAM and FH. FH staff offer two explanations for these challenges: (1) JAM's faith-based identity and perceived

[26] The structured observations included a small section with questions, asked to passersby/community members/well users

compatibility of vision with FH at the time of MYAP proposal development[27] may have outweighed technical considerations, (2) the Northern Mozambican context proved to be difficult for JAM from a technical perspective. Activities were not properly budgeted for the unique drilling and technical requirements of coastal communities, and they did not plan accordingly. JAM left Mozambique without completing all the activities under their contract.

As mentioned under the health section of this report, HH have shown a high degree of acceptance of HH latrines. Based on 53 observations, 100% of the latrines show regular use. Seventy percent of the latrines are kept clean (free of grass, other natural growth or human debris). As mentioned above, in 60% of cases the latrine opening does not have a cover, creating a potential disease vector. One of the primary concerns with the latrines is related to their design. The pit is unlined, and the remaining structural elements are made of mud and sticks. Most families cannot afford even simple roofing materials. As a result 80% of observed latrines did not have roofs, making them precarious, especially during the rainy season. Several HH mentioned that their latrines had already collapsed at least once. On the one hand it makes sense to use a simple design requiring few costly inputs. On the other hand, encouraging the use of unlined pit latrines with a stick and mud platform in a place with six months of rain presents potential health and safety risks, as well as presenting a threat to sustainability.

Mother Leaders in FDGs mentioned that although the participation of husbands/partners had improved since the program began, male participation continues to be an important factor in facilitating or blocking HH-level behavior change. One of the biggest challenges was in getting husbands to support latrine construction (latrine *use* has not been a challenge. Once the latrines are built, husbands use them). As one mother described, many men would tell their wives, "you're the one participating in the training; you build the latrine." Although FGDs with Mother Leaders suggest that this barrier has reduced, the latrine design itself should help facilitate the transition and not work as a barrier to change. Latrines that require re-building (digging) every year may become a barrier to behavior change. The harder behavior change is (e.g., the more work it requires) the less likely it is to take hold and be sustained.

Given the challenges with school latrines (e.g., their limited use and maintenance- and the unclear link to the target age group of children 0-24 months) and the cost of building them, it might have made more sense to invest those resources in a slightly more durable HH latrine design.

Intermediate Result 3.3: Increased ability to predict and mitigate shocks

The purpose of this component was to provide communities with basic understanding of early warning systems (EWS) and mitigation processes to increase resiliency against shocks such as destruction of crops by animals, drought or illness. The indicators and targets for IR3.3 are included below:

Table 26: IPTT Indicators and targets for IR3.3

Number of communities with improved infrastructure to mitigate the impact of shocks	44
Number of communities with disaster early warning and response systems in place	46
Number of months of increase of adequate food provisioning	.5
Number of assisted communities with safety nets to address the needs of their most vulnerable members	46

In the second year of the program risk management committees were formed and trained in all program intervention communities. With support from FH, 44 risk management committees formed

[27] According to FH Program Director, JAM has undergone a change in organizational identity over the last few years and they no longer publicly identify as a faith-based organization.

EWS, including the use of radios, flags and drums to share information within the community. According to FH staff, the early warning systems are essentially defunct. Most of the intervention communities do not experience disaster or emergency situations very commonly, making them impractical and unsustainable.

A total of 37 communities have completed infrastructure to mitigate shocks (under IR3.2). The most relevant of these are wells (five), market stalls (14), health posts (14), bridge and road repair (three) and the construction a small maternal care center.

A total of 196 VSLAs across 50 communities have accumulated a total of $18,195 in social investment funds to act as safety nets in case of emergencies or unexpected occurrences at the community level.

Overview and Discussion of Community Capacity Building findings

Table 27 Comparative Summary of Baseline and Final CCB Indicator Values for SO3

Indicator	BL	FE	% Point / Numerical Difference	Sig.
Increased community leadership capacity				
Number of HCA/PRA conducted and reports prepared	0	48	+	**NA**
Number of CDC leaders participating in training	0	570	+	**NA**
Percent of CDC members who are women	0	33%	+	**NA**
Increased community infrastructure and assets				
% of CDCs that complete community development projects	0	87.5%	+	**NA**
Number of community development projects completed	0	68	+	**NA**
Amount contributed by community for small-scale community projects (US$)	0		+	**NA**
Prediction and mitigation of shocks				
Number of communities with improved infrastructure to mitigate the impact of shocks	0	37	+	**NA**
Number of communities with disaster early warning and response systems in place	0	44	+	**NA**
Number of months of increase of adequate food provisioning	9.87	11.16	+ 1.29	**Y**
Number of assisted communities with safety nets to address the needs of their most vulnerable members	0	50	+	**NA**

Given that the baseline for the majority of these indicators was zero (assuming no previous support or achievement prior to the program), all indicator values under SO3 increased over the baseline. The majority of the indicator values are just under the cumulative program targets.

Almost 600 community leaders were trained and HCA was completed in each of the communities, but *community leadership capacity* seems to be mixed. FGD conducted with two CDCs showed substantial variation in understanding of their basic functions. This variation of capacities is likely to reflect the reality of all program areas. Since no systematic process or tool has been used to measure CDC capacity, it might be advisable to develop and administer such a tool prior to the completion of the program to establish a more accurate understanding of CDC skills, deficits and ongoing capacity needs. The indicators included for this component represent a flaw in the design of the program as, on their own, they tell very little about CDC capacity to identify, prioritize, coordinate and manage ongoing development efforts.

The project has clearly resulted in significant gains in *community infrastructure and assets*. The most important of these are the contributions to water and sanitation infrastructure. Given the limited time of the final evaluation exercise it was not possible to visit all (or even a representative sample) of the various types of infrastructure developed. However, based on conversations with the CDC members and observations of school latrines, wells and HH latrines, it may be advisable to work with community leaders and local government to develop clear sustainability plans for this infrastructure moving forward. Given the hopes of communities- as well as the time and monetary investments- that this infrastructure represents, the last months of the program should be spent trying to ensure that communities can use and maintain their new assets as long as possible.

It is frankly difficult to see the practical value added of the component regarding *prediction and mitigation of shocks* as nothing concrete seems to have happened under this IR since early in the program. It isn't clear what need these activities address or what their practical impacts have been.

The theory underpinning SO3 makes a great deal of sense: empowering communities to take ownership over their development processes should be the fundamental task of al development actors. The initial efforts to identify and strengthen community leaders provide a solid foundation for continued work in the zone. Hopefully the opportunity for such work presents itself so that these efforts are not lost.

From a project design perspective it is not clear why a separate SO was created for community strengthening, since community engagement and capacity strengthening underpin success in both the health and agricultural objectives. A disproportionate amount of the CCB team's energy may have been spent on infrastructure development, perhaps to the detriment of capacity building. The focus on infrastructure created a "pull" away from most of the other capacity development activities included under the SO, including training and mentoring to ensure effective use and maintenance of the infrastructure itself. It is worth pondering whether is preferable to have 30 good infrastructure projects with communities capable of managing them sustainably or to have many more projects that may not provide lasting contributions.

VI. Conclusions and Recommendations

A. Program Strengths

Farmers in FGD clearly confirm that ***productivity has increased*** since they began participating in the MYAP. The consistent productivity growth demonstrated through the Annual Agriculture surveys supports these assertions. For the final Annual Agricultural Survey in 2013, FH should devote resources to a strong final methodological and analytical exercise to validate the results presented in this report. ***Increased farmer engagement in collective markets*** has provided ***additional income*** for communities. Although the degree of sustainability of those activities is unclear, they provide a strong foundation of learning upon which farmers can continue to build. It would be advisable for FH to ensure that clear data regarding incomes and distribution of benefits are gathered, collated and stored to gain a fuller understanding of the magnitude of benefits across MYAP intervention areas and to facilitate learning at an agency level. ***Engagement with VSLAs*** has also provided an opportunity for at least 3,550 men and women to ***engage with financial services***, albeit informal and likely for the first time. They have ***saved over $200,000 collectively***, ***earned $44,500 on those savings through interest income*** and ***provided capital to local entrepreneurs and individuals***. Together the increased productivity and incomes derived from the program are likely contributors to the gains we have seen in both Household Food Provisioning and overall Dietary Diversity Scores.

There have been ***significant improvements in many of the essential nutrition actions*** including early breastfeeding, exclusive breastfeeding and adequacy of complementary feeding. Although the knowledge indicators for the recognition of signs of illness and methods to prevent HIV are surprisingly low, some key prevention indicators show improvements, including significant ***decreases***

in cases of diarrhea and ***increases in the use of treated bednets*** to combat malaria. There have also been ***increases in hospital visits within the first day of fever***. ***Access to improved water sources*** has almost doubled thanks to the construction of water infrastructure. Likewise, ***knowledge of hand washing behaviors***, ***proper excreta disposal*** and ***food and water hygiene*** have all improved significantly over the baseline. Together these factors are likely to have improved food utilization by improving overall nutrient intake and use. The anthropometric survey in October-November 2013 will confirm the impact of improved knowledge and practices on the nutritional status of children, although some gains- even if modest- should be expected.

The program has achieved a ***high level of community engagement and ownership*** through: the use of ***local promoters for health and agriculture***, training and support to create ***Mother Leaders for Care Groups***, development and training of ***Farmer Field Life Groups*** and ***Community Development Committees***. The leadership and technical skills that these individuals and groups have gained will provide a strong foundation for continued health and wellbeing in their families and for community development across all MYAP intervention areas. According to staff at the Ministry of Health, the involvement of community leaders- especially the use of community-based promoters- has been the cornerstone of the program's success.

B. Program Challenges

Specific challenges within each technical sector have already been addressed in each respective section. This section will briefly highlight identified challenges that affect the whole program.

The ***geographic spread*** of the program may have been an impediment to timely and effective follow-up. This issue was raised anecdotally during three FGD, but given the terrain and distance between locations, program technical staff are unable to devote intensive time in each location, which means they rely heavily on local promoters. While the FH model of using community-based promoters is one of the project's greatest strengths, reliance on local promoters may translate into gaps in technical expertise and follow-up.

Data management is a challenge across the program. Health has the fewest challenges, likely because the sector has clear data standards and protocols. In the case of agriculture and CCB there are gaps. Some of these are owed to design flaws: (1) the CCB indicators tell very little about the impact of CCB activities; (2) the agricultural component did not include any marketing indicators. But there are also data management challenges: data that should exist readily is difficult to access. On multiple occasions during the final evaluation basic information- such as the number of participants in marketing forums- was requested but was never received. Some of the challenge is owed to where data is managed and who "owns" it. Logically, technical and management staff delegate tasks to other members of their teams, but some managers do not seem to be requesting (or reviewing) the data that is available, which does raise questions regarding how program management decisions are made. Likewise, according to the M&E Manager, the guidance for calculating indicator values was developed only a year ago and some of the indicators within the current PMP still do not have clear definitions.

Sustainability will be a challenge across all components of the program. The agriculture program has begun to plan for the post-program phase by meeting with the MoA and supporting the official "recognition" of the program's community-based promoters as official MoA volunteers. No such action planning has occurred yet for the health or CCB teams. The MOH, for example, currently has only 25 trained health promoters across the 50 project districts. Across all sectors the resource challenges of district governments and Ministries will create serious challenges for effective follow-up. Even in the case of the MoA the recognition of community volunteers means very little in practical terms because they do not have the budget to provide incentives or transportation.

There are nine communities with no ***overlap between health and agriculture activities***, including Mocimboa town, which represents more than 40% of the total number of program health and nutrition participants. Those beneficiaries have not benefited from the agriculture activities, which- based on the program's logic model- means they are not benefitting from increased food access. In large part this was based on the need to meet the target number of program participants included in thr approved program proposal; the health program expanded to the city center in order to reach the numbers. Nonetheless, this presents challenges to the underlying theory- and presumably to the results- of the program.

C. Recommendations

Agriculture

- Given the challenges with neem, there is a need to identify other viable organic crop, seed and storage protection mechanisms that do not require such a long period for maturation.

- Likewise, there is a need to mentor staff to ensure that when confronted with difficult questions from program participants, field staff can respond in constructive ways to help solve problems.

- It might be worth conducting post-facto data cleaning and analysis for the previous Annual Agricultural surveys and ensure that the final survey follows sampling, data collection and data analysis protocols precisely in order to provide additional clarity regarding productivity.

- Data regarding collective individual and collective marketing benefits should be collected, compiled and analyzed to gain a greater understanding of the magnitude of income generation.

- Select farmers from collective marketing should be linked to ongoing training opportunities regarding key marketing skills such as market assessment, value addition and processing in order to build on the skills they have gained and help support future sustainability. Future program should include an intensive training component for market-based production working with specialized experts in the subject matter.

- It might be worth exploring the possibility of a long(er)-term contract between the current buyer and the marketing forums prior to the close of the program. This may be one way to help ensure ongoing benefits from those activities.

- Before the program ends it might be useful to analyze mean differences in available savings for groups operating based on flexible standards versus those that have implemented the model based on fixed contribution amounts and timelines. Focus group or other qualitative work might also help determine whether the current flexible arrangement provides the best opportunity for consumption smoothing and reducing risk among participants. This could provide useful lessons for future VSLA work moving forward.

- Future programs of this nature might consider the inclusion of a small quasi-experimental design comparing cash crop participant wellbeing with that of participants who do not participate in cash crops. This would provide evidence of impact of cash crop production on food access, dietary diversity and household food provisioning

- Agricultural indicators and measurement tools in future programs should be clearly linked to the expected outcomes of the program to ensure that measurement provides useful insights into program progress and impacts

Health

- Future programs requiring the implementation of a modified version of Care Groups focusing only on pregnant women and children 0-24 months should use training modules that allow all topics to be covered either during a two year period or during the length of a mother's enrollment. This may require shortening some of the modules based on the identification of the "minimum required package" of messages per topic for greatest impact. Then refresher training can be provided periodically to strengthen certain topics or provide greater detail on others. Clearly a "condensed" series of modules for a two-year time period should be tested for effectiveness prior to use.

- Future programs using the Care Group model should identify incentive plans for Mother Leaders that not create a disincentive for participants.

Community Capacity Building

- Prior to the end of the program, a simple, standard tool should be adapted / developed and used to measure the capacity of CDCs. This will provide a clear sense of the skills developed during the program and will facilitate follow-on skills building for those groups that show large skill deficits.

- Sustainability plans should be developed for all infrastructure built under the program. CDCs, district and local governments and relevant Ministries should be included in this activity.

- Refresher training should be provided for HH on the importance of covering latrine openings to limit disease. Local alternatives for covers should be developed and disseminated to ensure that this does not incur additional costs for families.

- Likewise, local roofing alternatives should be disseminated to families to protect latrines from the elements and maintain them intact for longer periods of time

All programs

- For future programs, key program data should be gathered/stored/housed in a central location to ensure appropriate decision-making, learning and institutional memory

- Sustainability planning needs to be incorporated into program design in future programs and might include staggered transitioning of program staff into relevant Ministries. This clearly will require strong working relationships with relevant government offices and long-term commitment (and resources) on the part of FH.

- Future programs should try to ensure overlap between program sectors to ensure that program participants can take advantage of all the complementary benefits from each sector.

VII. Resources Consulted

"Essential Nutrition Actions- Improving Maternal-Newborn-Infant and Young Child Health and Nutrition, Evidence for Essential Nutrition Actions," World Health Organization, 2011.

"Indicators for assessing infant and young child feeding practices: conclusions of a consensus meeting held 6–8 November 2007 in Washington D.C., USA. WHO

The Handwashing Handbook: A guide for developing a hygiene promotion program to increase handwashing with soap, World Bank

Food Security Information for Action, "Practical Guidelines: An Introduction to the Basic Concepts of Food Security," United Nations Food and Agriculture Organization

2003 Mozambique Demographic and Health Survey (DHS), Measure DHS/ICF International and USAID.

2011 Mozambique Demographic and Health Survey (DHS), Measure DHS/ICF International and USAID, March 2013

Swindale, Anne and Bilinsky, Paula, *Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide VERSION 2*, Food and Agriculture Technical Assistance (FANTA), September 2006.

Swindale, Anne and Bilinsky, Paula, *Months of Adequate Household Food Provisioning (MAHFP) for Measurement of Household Food Access: Indicator Guide VERSION 4*, Food and Agriculture Technical Assistance (FANTA),June 2010

Indicators For Assessing Infant And Young Child Feeding Practices, Part 2: Measurement, World Health Organization

Espeut, Donna, *Knowledge, Practices and Coverage Survey 2000+ Field Guide*, The Child Survival Technical Support Project (USAID), August 2001.

Diskin, Patrick, *Agricultural Productivity Indicators Measurement Guide*, Food and Agriculture Technical Assistance (FANTA), December 1997

Tracking Progress on Child and Maternal Nutrition, UNICEF, 2009.

JP Habicht, CG Victora and JP Vaughn, "Evaluation Designs for Adequacy, Plausibility and Probability of Public Health Programme Performance and Impact," International Journal of Epidemiology, 1999; 28: 10-18

Whitson, Donald T. *Food for the Hungry Multi Year Assistance Program Baseline Report*, February 2009.

Food for the Hungry MYAP Organizational Structure and Staff Chart, August 2012

Food for the Hungry Multi Year Assistance Program Proposal Revised Narrative, August 2008.

Food for the Hungry Annual Agricultural Surveys: August 2010, September 2012

Food for the Hungry Mozambique Annual Results Reports: FY09, FY10, FY11, FY12

VIII. Annexes