Final Performance Evaluation of Njira Development Food Assistance Project in Malawi

July 2020 | Volume I

IMPEL | Implementer-Led Evaluation & Learning Associate Award

USAID FROM THE AMERICAN PEOPLE

TANGO INTERNATIONAL TECHNICAL ASSISTANCE to NGOs

Save the Children

ABOUT IMPEL

The Implementer-Led Evaluation & Learning Associate Award works to improve the design and implementation of Food for Peace (FFP) funded development food security activities (DFSAs) through implementer-led evaluations and knowledge sharing. Funded by the USAID Office of Food for Peace (FFP), the Implementer-Led Evaluation & Learning Associate Award will gather information and knowledge in order to measure performance of DFSAs, strengthen accountability, and improve guidance and policy. This information will help the food security community of practice and USAID to design projects and modify existing projects in ways that bolster performance, efficiency and effectiveness. The Implementer-Led Evaluation & Learning Associate Award is a two-year activity (2019-2021) implemented by Save the Children (lead), TANGO International, and Tulane University, in Haiti, the Democratic Republic of Congo, Madagascar, Malawi, Nepal, and Zimbabwe.

RECOMMENDED CITATION

IMPEL. (2020). *Final Performance Evaluation of Njira Development Food Assistance Project in Malawi* (Vol. 1). Washington, DC: The Implementer-Led Evaluation & Learning Associate Award

PHOTO CREDITS

Njira irrigation farmers in Balaka District. Timothy Finan.

DISCLAIMER

This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of the Implementer-Led Evaluation & Learning (IMPEL) award and do not necessarily reflect the views of USAID or the United States Government.

CONTACT INFORMATION

IDEAL Activity
c/o Save the Children
899 North Capitol Street NE, Suite #900
Washington, DC 20002
www.fsnnetwork.org
info@fsnnetwork.org

PREPARED BY:

ACKNOWLEDGMENTS

The evaluation of a large-scale development project is a complicated endeavor that requires essential input from various levels. The qualitative study team would like to express its gratitude for the direction and support it received from the TANGO main staff during this extended process, including those who designed, supervised, and analyzed the quantitative survey. We are thankful for the support of the Centre for Agricultural Research and Development, which implemented the quantitative survey and provided logistics support, enumerators and translators for the qualitative study.

The qualitative study compiled a team of consultants, previously unknown to each other, who succeeded in creating a true partnership based on a common and genuine interest in the lives of rural families in southern Malawi. This team was assisted by Rose Narrit, Winnie Shalla, Semu Kamowa, Austin Matla, Wilson Mkandawire, and Moshe Kumwenda, who more than interpreters and notetakers manifest themselves as true researchers. Our team was warmly welcomed by the PCI and Emmanuel International country staff who provided the necessary orientation and support to complete the fieldwork. In the field, we were accompanied by former staff of these two implementing partners, and the task would have been much more difficult without their assistance and knowledge of the area. We want to acknowledge the support provided by the Government of Malawi counterparts at district and local levels. We also appreciate the guidance and interest from USAID Food for Peace Washington in this project as well as the support from the staff from USAID/ Malawi.

Finally, the team recognizes its debt of gratitude to the brave communities of Balaka and Machinga who received us so generously and shared so many insights about their daily lives and livelihoods.

TABLE OF CONTENTS

VOLUME II ANNEXES

LIST OF FIGURES

LIST OF TABLES

ACRONYMS

ADC	Area Development Committee
CAHW	Community Animal Health Worker
CLTS	Community-led Total Sanitation
COP	Chief of Party
DFAP	Development Food Assistance Project
DRR	disaster risk reduction
DWDO	District Water Development Officer
EA	enumeration area
EQ	evaluation question
FAO	Food and Agriculture Organization
FGD	focus group discussion
FFA	Food for Assets
FFP	Food for Peace
FY	fiscal year
GAM	global acute malnutrition
GMO	genetically modified organism
GoM	Government of Malawi
GVH	Group Village Head
Ha	hectare
HH	household
HRU	Health Rehabilitation Unit
HSA	Health Surveillance Assistant
INVC	Integrating Nutrition into Value Chains
IP	implementing partner
IPC	Integrated Phase Classification
JMTR	joint mid-term review

KII	key informant interview
MCHN	Maternal and Child Health and Nutrition
MT	metric ton
MVAC	Malawi Vulnerability Assessment Committee
MUAC	mid-upper arm circumference
MWK	Malawian *Kwacha*
NGO	non-governmental organization
NRM	natural resource management
ODF	open-defecation-free
ORT	oral rehydration therapy
PBS	population-based survey
PCI	Project Concern International
PICS	Purdue Improved Crop Storage
PLW	pregnant and lactating women
RMNCH	Reproductive, Maternal, Newborn, and Child Health
SO	strategic objective
TA	Traditional Authority
TANGO	Technical Assistance to Non-Governmental Organizations
TOR	terms of reference
TOC	theory of change
USAID	United States Agency for International Development
VDC	Village Development Committee
VCPC	Village Civil Protection Committee
VSL	Village Savings and Loans
WASH	water, sanitation and hygiene
WE/VSL	Women's Empowerment/Village Savings and Loans
WPC	Water Point Committee

EXECUTIVE SUMMARY

Evaluation Purpose

This is the endline evaluation of the Njira project, implemented in the southern Malawi districts of Balaka and Machinga from October 2014 until September 2019. Njira was a USAID Food for Peace (FFP) Development Food Assistance Project (DFAP) awarded to Project Concern International (PCI) with an overall objective to reduce food insecurity and build resilience among the highly vulnerable rural population of this region. The purpose of this evaluation is to measure, using both quantitative and qualitative data sources, the success of the Njira project in terms of achieving its intended outcomes. The four major evaluation questions were:

1) To what extent have the projects met their defined goals, purposes and outcomes?
2) Based on the evidence, which project outcomes are likely to be sustained?
3) In each technical sector, what are the strengths of and challenges to the efficiency and effectiveness of the interventions' implementation and their acceptance in the target communities?
4) What key lessons learned, and best practices should inform future projects in the country?

Project Background

The southern districts of Malawi are noted for their high levels of vulnerability as manifest in poverty, food insecurity, and poor health and nutrition. This project targeted within the districts of Balaka and Machinga, 11 Traditional Authorities (4 in Balaka and 5 in Machinga), 80 Group Village Headmen, and approximately 250,000 beneficiaries. These districts are characterized by erratic rainfall, frequent droughts, and damaging storms and disastrous floods in the lowlands. The population practices rain-fed agriculture (principally, maize), and food insecurity is influenced not only by natural events, but by the small farm size, declining soil fertility, and periodic pest infestation. Most estimates are that a farm household can guarantee adequate food for an average of 6-8 months, hence a lean season of food insecurity occurs annually. As a consequence, diets tend to be insufficient in both quantity and quality of foods, and indicators of malnutrition among under 5 children are unacceptably high.

To address this food insecurity context, Njira was designed around three broad "purposes" that focus on the major determinants of food insecurity and vulnerability, as follows:

Purpose 1: Increased income from agricultural and non-agricultural activities: Since food security is fundamentally determined by availability and access to food, Purpose 1 sought to introduce innovative technologies appropriate to regional conditions. These included using improved seed and farming practices, expanding the irrigated area, introducing cash crops to increase market participation (and income), and distributing small livestock as a source of food and income.

Purpose 2: Improved health and nutrition of pregnant and lactating women and children under five: To reduce levels of malnutrition and improve diets, Njira created a cascading model of disseminating knowledge on nutrition and child care through local groups and lead mothers to reach a maximum number of households. In addition, diet supplements were provided to pregnant and

lactating mothers, and a surveillance and growth monitoring system was established to identify children at risk. Purpose 2 also addressed the challenges of WASH by expanding safe water access and working with communities to become open-defecation free.

Purpose 3: Improved capacity to prepare for, manage, and respond to shocks: Under this purpose, the project supported the chain of disaster management institutions, particularly at the village level, providing capacity-building activities and supplies to develop disaster management plans. In addition, Njira worked with local communities to manage their watersheds so as to harvest run-off, reduce soil erosion and flooding, and increase soil moisture. Major initiatives were directed at reforesting hillsides and managing existing woodlands.

In addition to these project components, Njira designed cross-cutting interventions around the themes of gender, environment, and governance.

The theory of change for Njira defines its development approach on expanding access (to knowledge, information, and services) and enabling community empowerment and ownership of the change process. Most project interventions in each purpose are organized around community groups with specific responsibilities (irrigation, improved technology, water point management, dissemination of nutrition and health messages, disaster management, and watershed management). The logical sequence is to identify the project sub-goal (e.g., increase irrigation), mobilize community groups, provide the necessary training and access to information, and provide close accompaniment of the activity in collaboration with government counterpart institutions and, on occasion, external support partners.

The theory of change logic centers around three driving principles. First, “tailored pathways” are layered intervention sets designed to match the unique needs and potentialities of different beneficiaries. Second, genuine partnerships with government counterparts, based on collaboration at all levels from planning to targeting to field implementation, strengthen the institutional capacity to support key cause-effect outcomes. This level of cooperation was the principal strategy for assuring sustainability once the project ended. The third principle prioritized transferring community ownership and nurturing community confidence in the ability to solve problems collectively. The theory of change was revised in 2017 after two years’ experience and the recommendations of the joint midterm evaluation. Some activities were dropped, others added, and others moved to another purpose.

Evaluation Methodology

This was a mixed-methods performance evaluation with quantitative and qualitative components. It consisted of a quantitative survey (conducted July-August 2019) that gathered endline estimates of FFP indicators, and a qualitative study (conducted October 2019). Per required FFP protocol for quantitative performance evaluations, the quantitative methodology was a population-based survey drawn from the general population in the two districts comprising the DFAP area. The sample is designed to be statistically representative of the entire population within the project implementation area. A total of 630 households were interviewed using multiple interview modules to capture data on the FFP indicators. The objective of the quantitative component was to track statistically significant changes in these indicators from the baseline situation (2015) to the end of project. The questionnaires and

calculation of indicators were the same in the baseline and endline. Additional analysis of the PBS data is annexed in Volume II of this report.

The purpose of the qualitative study was to provide the empirical basis for an interpretation of the quantitative outcomes, to better understand why a set of indicators had changed over the course of project implementation. Moreover, it sought to understand participant and staff perceptions of the project and its incentives, the constraints to change, and the dynamic context of household decision-making with regard to project interventions. In effect, the qualitative study pursues a rich description of process that a quantitative approach was not equipped to achieve. The topical outlines that guided the interviews were structured along the evaluation questions. The final dataset was comprised of 45 key informant interviews and 64 focus group discussions (FGDs) in six TAs and thirteen Group Village Heads (GVHs) in the two districts.

The principal limitations to the methodology are summarized as follows:

Timing of the qualitative study: The qualitative study was conducted after PCI and its implementing partner had completed fieldwork activities; there were no remaining staff in the targeted communities to support the logistics of the evaluation fieldwork. To address this, the team worked with project staff to identify and contract two field facilitators/coordinators to accompany the study team during the fieldwork for support with wayfinding, meeting arrangements, and related logistics.

Access to project documentation: The qualitative team was limited during the inception, fieldwork, and analysis phases by a lack of access to relevant project documents that would have assisted in these key phases of the evaluation. Much of the needed project documentation was provided during the report revision phase.

Findings and Conclusions

The overall findings of the qualitative study team point to three major accomplishments of the Njira project. The intent of the Njira approach to construct “tailored pathways” of layered, cross-purpose interventions sensitive to the individual needs of households was achieved for a significant number of households. FGD participants frequently referred to the many activities that made up the “Njira project,” and many households participated in multiple intervention activities across the three purposes. The second major accomplishment was the productive partnership created and nurtured with Government of Malawi (GoM) counterparts. The Njira team collaborated closely with field extensionists, technical staff, Health Surveillance Assistants, and ministry staff in health and disaster management. This active partnership with GoM was a key component of the exit strategy. The third accomplishment was to provide the enabling environment for community empowerment and a sense of project ownership. This was clear to the qualitative study team in group activities related to irrigation, water point management, and watershed management. That these groups (and others) have continued to be active without the project’s presence is a testament to the project’s success.

Another general finding involves targeting. Njira intended to reach the poor and very poor in the project communities. The participant identification and registration process took place in large public meetings organized by the local traditional leadership in each community, which was followed by an extensive wealth-ranking exercise throughout the project villages. It appears, however, that many of the poorest

households for various reasons did not join the beneficiary pool. The qualitative team observed that in many of the project groups the leadership was often non-poor, and that the representation of the poorest in many project activities was limited.

Purpose 1 findings: Purpose 1 is comprised of *1.1 Increased sustainable and nutrition-friendly agricultural production* and *1.2 Increased agricultural and non-agricultural sales*. The quantitative survey findings for Purpose 1 portray negative trends from baseline to endline, particularly for such indicators as adoption of sustainable technologies, use of financial services, participation in value chain activities, and household expenditures. For example, the PBS showed that the use of at least three sustainable agriculture practices and/or technologies in the past 12 months decreased at the population level from 77.9 percent at baseline to 51 percent at endline. The use of financial services at the population level declined from 40.4 percent of farmers at baseline to 28.4 percent at endline. The qualitative results, however, suggest that significant outcomes were achieved among Njira participants with regard to both sustained production and increased income. In the producer groups (28,600 beneficiaries), FGD participants noted the widespread adoption of low-cost, climate-smart agricultural innovations, including expanded use of improved seed, changes in plant spacing in maize, the use of mulch, the expansion of access to irrigated land (more than 220 ha, 2,770 beneficiaries), and the introduction of orange-fleshed sweet potato. There was widespread recognition of the value of the demonstration plots and the multiple trainings that participants received.

With regard to increased income, there was clear participant satisfaction with the livestock distribution component, particularly in the case of chickens and goats. PCI reported significant increases in overall livestock numbers in the communities, and the pass-through mechanism of disseminating the benefits seems to have functioned well in most places. The second income intervention widely discussed was the formation and training of Women's Empowerment/Village Savings and Loan groups (WE/VSL). Over 33,000 people, mostly women, participated in these groups. The members distributed earnings on an annual basis, which provided critical income for investments in home improvement, school fees, asset acquisition, and improved diet. A cash-crop value chain initiative did not achieve much success due to national market factors, but participants increased the sales of irrigated crops.

In sum, the major finding of Purpose 1 is that Njira introduced important changes in small-scale, rain-fed agriculture that have been adopted as standard farming practice. Some increase in household incomes occurred due to participation in the VSL, revenue from irrigated products, and some sales of livestock and livestock products. The PBS data show that per capita expenditures (as a proxy for income) increased from US$ 1.63 at baseline to US$ 1.99 at endline. While these income gains were moderate (due to the scale of the activity), they were recognized as significant by the project participants.

Purpose 2 findings: Purpose 2 included 2.1 Improved nutrition and health practices, 2.2 Increased utilization of Reproductive, Maternal, Newborn, and Child Health (RMNCH) prevention and treatment services, and 2.3 Increased utilization of hygiene, sanitation and water facilities. The quantitative surveys did not identify significant changes in key FFP nutrition and health indicators except for a significant decrease in underweight children under 5 and stunting among children under 5. The prevalence of underweight children decreased from 11.8 percent at baseline to 7.8 percent at endline; the prevalence of stunted children decreased from 37.9 percent at baseline to 25.7 percent at endline. Under the WASH component (2.3) there was a positive change in access to safe water; the percent of

households that can obtain drinking water in less than 30 minutes (round trip) increased from 51.7 percent at baseline to 65.6 percent at endline.

The findings from the qualitative study are more decidedly positive based on FGD sessions. Across both districts, Purpose 2 participants demonstrated a clear understanding of the health and nutrition messages and their incorporation into standard household practices. The delivery of these messages followed a cascading strategy where lead mothers from care groups passed the learning outcomes from their training sessions to "cluster mothers" who then disseminated the content to neighborhood mothers in local meetings. This system was particularly effective with the importance of a diverse diet (FGD participants were quite aware of the six major food groups) and nutritious food preparation. Also, childcare messages regarding breastfeeding, weaning foods, and child hygiene offered evidence of widespread understanding and adoption. This enhanced access to information in the context of care group mobilization was complemented by targeted food distribution to maintain the health and nutrition of pregnant and lactating women and their children. Similarly, neonates were monitored for adequate growth; over 67,000 parents attended the growth monitoring sessions. Babies with growth deficiencies (700) were referred to a supplemental feeding program to recover normal growth rates. Most of the FGD sessions with care groups offered testimony of improved nutrition among the children and a significant reduction of referral to Nutrition Rehabilitation Units.

The WASH component sought to assure access to safe water through the restoration or construction of community water points. This intervention provided positive outcomes both in supplying safe water and in terms of community management of the water points. Water point committees, primarily women, organized the water supply and maintained the infrastructure, including the borehole, protective fences, and safe run-off of water. The sanitation component promoted the community-wide acceptance of improved latrines and washing structures. The care groups FGDs discussed the fact that cholera, once an annual plague in the region, had not appeared for several years. While there was progress in moving to open-defecation-free villages, the problem of sustainability was not solved, and many houses experienced the collapse of their latrines and washing stations. The PBS data show that the percentage of households using improved sanitation facilities decreased from 56.6 percent at baseline to 38.8 percent at endline.

Purpose 3 findings: Purpose 3 was comprised of three components: 3.1 Improved community and household assets for disaster mitigation, 3.2 Improved institutional support of DRM structures and risk reduction practices at all levels (community, district, and national), and 3.3. Enhanced community empowerment in managing disasters. The first component was designed to enhance community capacity for the preparation for, response to, and recovery from natural disasters. During project life, there were destructive floods on an annual basis, three major drought years, and a fall armyworm[1] infestation. The Njira approach to disaster management was to facilitate mobilization of a Village Civil Protection Committee, which was trained in disaster planning and response. The committees cited examples of using early warning systems and rain and river-line gauges to alert residents of impending floods and to move them to safety.

[1] *spodoptera frugiperda*

The second component of Purpose 3 was the natural resource management initiative, referred to as the watershed committee. In each village, elected members of the watershed committee were responsible for community mobilization and the rehabilitation of local watersheds by managing large water and soil conservation structures. The committee was intensively trained in watershed management principles, and external technical support, as well as regular project staff supervision was provided. Throughout the project more than 7,600 ha of watershed received water and soil conservation works. The qualitative study found ample documentation of the positive impact of the watershed interventions. FGD participants stated damage from surface run-off was virtually eliminated and moisture was retained behind the hillside structures. The impact on agricultural yields was dramatic, according to beneficiaries, and many cited examples of maize production increasing by 50-75 percent on the protected fields. The watershed committee also mobilized the reforestation of denuded slopes and stressed woodlands. Every village created its own nursery to produce seedlings for replanting. Forest management committees were able to manage the newly planted trees and to protect the area from woodcutters.

One of the most important outcomes of Purpose 3 was the success in mobilizing collective action to solve a community problem. The ability to reduce the annual destruction from run-off and flooding created a strong sense of empowerment and community pride in its accomplishments. Even now that the project has ended, several watershed committees continue to expand their soil and management structures. It was common to hear: “Njira gave us the knowledge and the skills; the future is now in our hands.”

Cross-cutting findings – Gender: The Njira project had a heavy focus on gender participation, relevance, status, and equality. A far-reaching gender analysis was conducted in the first year of the project in order to define priorities. The targeting of beneficiaries and the dynamics of process within the project assured that men and women shared in the activities of Njira, that the interventions were relevant and appropriate to the specific experience of women, and that the status of women in public and within the household was highlighted. The PBS survey shows that the percentage of men who make joint decisions with a spouse or partner about child health and nutrition increased from 42.2 percent at baseline to 61.9 percent at endline. The ownership and management of project activities specifically involved women, fathers’ groups, and couples’ groups to promote gender equality within the household.

Recommendations

R1. The layering approach adopted by Njira should be an integral part of future FFP programming – with some adjustments. Njira layering was achieved at the level of planning, targeting, group formation, and the use of the “dynamic “team concept for field facilitation. There are two recommended adjustments to the Njira approach. One is to refine the design of the “tailored pathways” so that the layering reaches a maximum number of beneficiaries. This adjustment would reduce the total number of beneficiaries but intensify the project impact on each individual beneficiary household, as suggested by the theory of change. The second recommended adjustment is to reduce the number of interventions that make up the project portfolio. The large number of activities in Njira spread technical assistance too thin and confused the beneficiary population. Future FFP projects should focus on a smaller beneficiary pool with fewer activities that are mutually reinforcing in order to produce more consistent and achievable results.

R2. Expand strategies to enable greater "spill-over" effects of project interventions. Discussions with lead farmers from non-beneficiary villages suggested that the positive technological innovations, the health, nutrition, and sanitation messages, and the collective action activities did not extend widely beyond the project villages. It is recommended that future FFP programs design strategies of "opening up" the positive outcomes and messages from project interventions to the surrounding population that did not directly participate. Njira introduced the "learning villages" model, and this approach should become a central feature of FFP programming. The learning that occurs within a project should be disseminated in diverse and proactive ways to make the benefits available to non-participants.

R3. Village savings and loans associations should be promoted as participant-owned financial institutions. VSLs are an effective way for men and especially women in a cash-poor environment to increase community liquidity and accumulate lending capital for larger investments, to support collective action projects, and to cushion shocks. They are also important mechanisms of community empowerment and should be supported as such. As in Njira, these community institutions should be integrated into wider financial networks.

R4. Future projects should expand the innovation strategies on low-cost and low-technology techniques as the principal mechanisms for technology change. These practical and sustainable measures improve crop yields and are appropriate to communities with binding cash constraints. These measures, including improved seeds, cultivation and intercropping, are nearly cost-free and consistently sustainable.

R5. The design of FFP agri-business programs should emphasize the appropriateness of the project to farm-level realities and capacities. Such programs are complicated, and their success depends upon multiple external circumstances. Providing guidance and a roadmap to the market alone does not turn a semi-literate smallholder farmer into an effective participant in the market. Value chain interventions require information and regular orientation not usually available to the cash-poor, vulnerable farm family. Any set of agri-business activities must address local circumstances and capacities as well as regional and national market characteristics.

R6. For future FFP projects, add a transition year to the project to assure and document sustainability. This extension is recommended to develop the GoM relationships necessary to support the beneficiary population and to work with beneficiaries as they define the continuation of activities, capacity-building, and problem-solving introduced and nurtured over the life of the project. The closure of FFP project activities where newly formed local institutions are in the process of maturation can create a void that threatens the sustainability of positive project outcomes. A transition year would not involve direct project intervention assistance (or assets), but rather a period of collaboration with and support of the local institutions promulgated by the project.

R7. Devise within FFP a new strategy for the evaluation of project results. A discrepancy between the population-based quantitative data and the qualitative responses from project participants are noted in several instances in this report. This is partly due to the different sampling strategies for these two evaluation components: the PBS draws from the entire project area and contains participants and non-participants, while qualitative sampling tends to be purposive with a focus primarily on participants. The evaluation recommends that the requirement of the PBS be reviewed within USAID with the objective of improving the measurement of project outcomes within the targeted population. The use of a

population-based sampling methodology limits the conclusions that can be drawn in this respect. While it is important to have measurement systems in place that can capture the indirect project benefits that obtain in the wider population in the project area, additional quantitative methodologies should be explored to enable statements about attribution of changes observed to project activities.

1. INTRODUCTION

Southern Malawi is a semi-arid region characterized by highly variable rainfall and the regular occurrence of extreme events such as drought and floods. The population of the region depends upon rain-fed agriculture for the majority of food security needs; however, average farm size is low, and 55 percent of farms are less than an acre (FAO, 2015). In addition, soil productivity has declined as a result of overuse, widespread deforestation, and high levels of soil erosion. At the same time, income-earning opportunities are scarce, and most of the region is cash-poor. As a result, the southern districts have high rates of food insecurity, especially during the 4-5 months of the lean season, and there is a widespread prevalence of malnutrition in children. Wasting in children ranges from 3-4 percent throughout the districts, while stunting affects 65-70 percent of children. Diets are traditionally based on maize (*nsima*) but lack access to more nutritious sources of food. Diet diversity is low; around 56-67 percent of young children consume only cereals, which results in high rates of anemia (62 percent). Sanitation and access to clean water are precarious in rural Malawi, and open defecation is common. More than 90 percent of households use open-pit latrines, which often collapse in the rainy season, and most households have no handwashing facilities. Women play a major role in farming and bear the principal responsibility for the health and nutrition of the household. Nonetheless, women tend to occupy an inferior status in rural Malawi and have limited voice in household decision-making.

1.1 Project Background

To address the challenges described above, the United States Agency for International Development's (USAID) Office of Food for Peace (FFP) awarded Project Concern International (PCI) a five-year Development Food Assistance Project (DFAP) in southern Malawi called *Njira Project: Sustainable Pathways to Development*. The scope of Njira covers eleven Traditional Authorities (TAs) in the highly vulnerable districts of Balaka (five TAs) and Machinga (six TAs). The project was designed to reach 244,248 beneficiaries at a funding level of US$30 million over the five-year period. Njira was launched in the fall of 2014 and project activities ceased in September 2019. PCI and Emmanuel International implemented the project activities and a number of other development groups collaborated by providing technical expertise on specific components of the project.

The main goals of Njira were to increase food security through improved agricultural production and expanded income-earning opportunities, promote the nutrition and health of pregnant and lactating women (PLW) and children under 5 (CU5), and enhance community resilience to shocks and stresses. The strategic approach of Njira was to focus on the central unit of interest—the beneficiary household in its multiple dimensions, to assess the needs of different types of households, and then to design a "pathway" of change consistent with the characteristics and potential of that type of household. Under this approach, a single beneficiary household might participate in project activities related to farming, to improved nutrition and childcare, and to resilience to shocks. This layering of activities was key to the Njira approach.

The project was structured into three "Purposes," representing the general components of the approach:

Purpose 1: Increased income from agricultural and non-agricultural activities. Since food security is fundamentally determined by availability and access to food, Purpose 1 sought to introduce innovative technologies appropriate for the conditions of the region. These included the use of improved seed and farming practices, the expansion of irrigated area, the introduction of cash crops to increase market participation (and income), and the distribution of small livestock as source of food and income.

Purpose 2: Improved health and nutrition of pregnant and lactating women and children under five. To reduce levels of malnutrition and improve diets, Njira created a cascading model of disseminating knowledge on nutrition and childcare through local groups and lead mothers to reach a maximum number of households. In addition, diet supplements were provided to pregnant and lactating mothers, and a surveillance and growth monitoring system was established to identify children at risk. Purpose 2 also addressed the challenges of WASH by expanding safe water access and working with communities to become open-defecation-free.

Purpose 3: Improved capacity to prepare for, manage, and respond to shocks. Under this purpose, the project supported the chain of disaster management institutions, particularly at the village level, providing capacity-building activities and supplies to develop disaster management plans. In addition, Njira worked with local communities to manage their watersheds to harvest run-off, reduce soil erosion and flooding, and increase soil moisture. Major initiatives were directed at reforesting hillsides and managing existing woodlands.

This evaluation incorporated a quantitative survey of the region, carried out in July and August 2019, and a qualitative study conducted by a team of four consultants in October 2019.

1.2 Theory of Change

The Njira theory of change (ToC) targets the most vulnerable populations of Balaka and Machinga districts in southern Malawi. The targeting approach is evidence-based and relies upon previous vulnerability assessments. Based on existing information, Njira acknowledges that poverty and food insecurity in these two districts is highly complex and the determining factors vary among the population, including livelihood zone, agro-ecological characteristics, climate, sex, age, and household assets. The ToC outlines the three factors that constitute the nature of local vulnerability: low production/scarce income, poor levels of health and nutrition, and susceptibility to natural disasters and resource degradation. The three activity areas of the project address each of these factors, but in an interactive and mutually reinforcing manner. Cross cutting these three components are gender, environment, and governance.

The central element of the ToC is that consistent across the three purposes, the Njira approach must reflect household and community realities. In operation, this element is the foundation of the “tailored pathways,” i.e., the adapting of project interventions to the needs of groups of households and the overlaying of project activities in such a way that reflects the complexity of food insecurity. The delivery strategy underlying the ToC logical flow of outputs, outcomes, and impacts proposes that the process of positive change is conditioned by increased access (to information, knowledge, government services) and local community empowerment through the ownership of project activities. This strategy informs

the formation and capacity building of community groups that come to assume management responsibilities, and the effective integration of the government services structure at the district level.

Based on the first two years of project implementation and the recommendations of the Joint Midterm Review (2017), the ToC was revised during a workshop in June 2017. The purpose of the revision was to provide a moment of reflection on the efficiency and effectiveness of the current intervention set. In each purpose, some indicators were dropped and activities suspended, while other indicators were added. The revised ToC refined the cause-effect process between outputs and outcomes, shifted some activities from one purpose to another, and adjusted the roles of external actors in the project.

This ToC does present a logical pathway of change for the targeted communities. It does not, however, anticipate the occurrence of major external shocks with the potential to disrupt the progress made during the implementation of project interventions. In fact, the sequence of droughts, floods, and pests in some cases derailed the designed trajectory of change and attenuated the food production outcomes envisioned for the project. A ToC with a flexible focus on these contextual factors would have proved a more useful tool.

2. EVALUATION OVERVIEW

2.1 Evaluation Purpose

The purpose of the Njira endline evaluation is to measure project achievements toward objectives and assess its development outcomes. It is designed as the second step in a two-part evaluation process, following the baseline at the beginning of the project.

The specific objectives of the endline evaluation were the following:

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

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

2.2 Evaluation Questions

Annex C provides the nine criteria that guided the evaluation, questions and sub-questions, and data collection methods. These criteria were key to the design of the evaluation – both the quantitative survey in terms of research instruments and analyses, and the qualitative tools that guided the fieldwork. From each qualitative interview, the data were analyzed in terms of the nine criteria and entered in the data matrix document under these same criteria.

3. EVALUATION METHODS

3.1 Quantitative Data Collection

3.1.1 Overview

The objectives of the quantitative component of this mixed-methods performance evaluation are to provide endline estimates of FFP project indicators, to measure changes in indicators over the five-year project cycle, and to provide evidence to prioritize and refine interventions. The evaluation uses a pre-post design in which the same survey was conducted in 2015, at the start of project implementation, and in 2019, following its completion. Pre-post designs provide for measurement and statistical tests of changes in indicators between the baseline and endline, but do not allow for attribution or causation.

The data were gathered via an in-person population-based survey (PBS) of 630 households in the two Njira districts. Survey fieldwork took place from July 24 to August 4, 2019, as close as possible to the baseline data collection timeframe (end of July through mid-September). Data collection was scheduled close to the end of the project given weather constraints, namely, that the lean season coincides with the rainy season. The timing of data collection was thus designed to allow for probable access to all project areas.

TANGO International and the Center for Agricultural Research and Development collaborated for survey training, household listing, and survey fieldwork. Surveys were translated into the most common local language, Chichewa. Annex E describes the training and fieldwork in detail.

3.1.2 Population-Based Survey Design

The statistically representative sample was selected using a multi-stage clustered sampling approach. The sampling frame for the endline study was constructed from the 2018 Population and Housing Census enumeration areas (EAs). The Malawi National Statistics Office provided TANGO with a list of TAs and EAs located in the Njira project implementation area; TANGO used these TAs and EAs as the endline sampling frame. In the first stage of sampling, EAs were drawn with a probability-proportional-to-size (PPS) methodology. In the second sampling stage, households were selected randomly from all households existing in the respective EAs sampled.

Stunting, one of several key measures of food insecurity, was used to compute sample size in the baseline and endline surveys. Sample size is the minimum number of households necessary to detect whether stunting decreased to the project target rate of 31.4 percent (baseline value: 37.9 percent), a reduction of 6.5 percentage points. As shown in **Table 1**, the total target sample size is 630.

Table 1: Information used to compute sample size

Percentage of stunting at baseline (actual)	37.9
Expected percentage of stunting at endline	31.4
Design effect at baseline (actual)	1.0
Percentage of CU5 of the total population at baseline (actual)	17.9
Household size at baseline (actual)	5.0
Minimum required sample size (# CU5; computed)	377
Minimum required sample size adjusted for the number of CU5 per household (# HH; computed)	566
Non-response rate (estimated)	10%
Final target sample size (# HH) (computed)	630

The minimum required sample sizes for the baseline and endline surveys were computed to provide estimates of key project indicators (stunting in particular) with similar levels of statistical precision over the two surveys. However, the minimum required sample size for the endline sample was computed to be significantly smaller than what was estimated for the baseline, because at the time of the baseline, there was less available information about characteristics of project populations, so conservative estimates of key parameters were adopted, following FFP guidance.[2] At the time of the endline, more accurate estimates of key parameters were available from the baseline results. In particular, the formula used for the baseline to estimate the number of households to achieve a sufficient number of CU5 resulted in a much larger number of children being surveyed than was required for statistical purposes. One reason that the required sample of households to be interviewed in the endline was adjusted downward was therefore to reduce the unnecessary oversampling of CU5. A second reason was that the actual stunting rate in the endline was lower than what was assumed in the baseline sample size calculation. Finally, in Njira, the actual design effect computed from the baseline sample was 1.0: one-half of the assumed value of 2.0 used in the baseline calculations. In sum, adjustments to the minimum required sample of endline households were made for three reasons: a much larger proportion of CU5 per household in the population than expected, a lower rate of stunting than initially estimated, and a lower design effect than initially assumed. These adjustments led to a significantly smaller required sample of households to attain stunting rate estimates with the desired level of statistical precision.

Note: FFP quantitative performance evaluations use a PBS sampling design in which the sample is drawn from the general population in a DFAP implementation area. Accordingly, beneficiaries who directly participate in DFAP activities are not specifically targeted in the quantitative survey; rather, the sample is designed to be statistically representative of the entire population within the project implementation area, which includes DFAP participants and non-participants.

It is important to note that the baseline and endline surveys are independent population-based samples, and there may be systematic, non-random differences between participants and non-participants. As a result, observed differences between participant and non-participant groups, whether positive or negative, cannot be directly attributed to DFAP activities: the PBS is not designed to allow comparisons between participants and non-participants. In the case of the Njira survey,

[2] As described in Appendix A of the Feed the Future Population-Based Survey (PBS) Sampling Guide

approximately 20 percent of sampled households self-identified as directly participating in any project activity. However, experience from past FFP surveys suggests that self-reporting of participation may not be accurate, which weakens the validity of any comparison of outcomes. The analysis has sought to present more accurate information about project participants by consulting project performance monitoring data.

3.1.3 Data Analysis

The endline indicator calculation methods are the same as those for the baseline. The data to compute the indicators were collected using a questionnaire with separate modules for each indicator topic (see survey questionnaire in Volume II, Annex I). Annex D shows the endline indicators, disaggregates and corresponding questionnaire modules.

Child stunting and underweight indicators were derived using WHO child growth standards and associated software (WHO, 2011). Household, women's and farmer's indicators were computed following FFP guidelines (FANTA III, 2015a). Expenditures and poverty indicators follow World Bank guidelines (World Bank, n.d.).

Bivariate analyses were applied to the survey data to compare changes in indicators from baseline to endline. Differences in means or proportions, as appropriate, test whether the change over time is statistically significant (at levels ranging from $p<0.1$ to $p<0.001$). Note that comparisons over time of monetary indicators are difficult because of the extremely high and variable rate of price inflation, and large fluctuations in currency exchange rates over the life of the project.

Additional analysis of the PBS data is annexed in Volume II of this report.

3.1.4 Sample Weights

Sample weights were computed for each indicator, corresponding to a unique sampling scheme. The sample weight is the inverse of the product of the probabilities of selection from each stage of sampling (EA selection and household selection). Separate weights were derived and adjusted to compensate for household and individual non-response, as shown in **Table 2**. For modules that asked questions at household level (modules C, F, and H), weights were the inverse of the probability of EA selection, multiplied by the inverse of the probability of household selection, multiplied by the household inverse of the household response rate. For modules D, E, G, J and K that asked questions at the individual level, sampling weights were calculated for all eligible individuals and include the inverse of the individual response rate.

Table 2: Survey response rates

	Number Sampled	Number Interviewed	Response Rate (%)
Households (Modules C, F and H)	630	588	93.3
Children 0-59 months of age (Module D)	481	432	89.8
Women 15-49 years of age (Module E)	576	515	89.4
Non-pregnant women 15-49 years of age (Module E Women's Anthropometry)	447	464	103.8
Farmers (Module G)	811	744	91.7

	Number Sampled	Number Interviewed	Response Rate (%)
Primary male decision-maker (Module J)	301	265	88.0
Primary female decision-maker (Module J)	118	104	88.1
Primary male with child under 2 (Module K)	134	95	70.9
Primary female with child under 2 (Module K)	202	194	96.0

3.2 Qualitative Data Collection

The qualitative component of this evaluation had dual objectives. On one hand, it was meant to provide the empirical basis for an interpretation of the quantitative outcomes, to better understand why a set of indicators had changed over the course of project implementation. On the other hand, the qualitative study sought to understand beneficiary and staff perceptions of the project and its incentives, the constraints to change, and the dynamic context of household decision-making regarding project interventions. In effect, the qualitative study pursues a rich description of process that a quantitative approach is not equipped to achieve.

The design of the qualitative study was built around the evaluation questions (see Annex C). To answer these questions, it was necessary to consult the range of stakeholders who participated in project activities, including senior management, Government of Malawi (GoM) counterparts at different levels, implementing technical staff, field coordinators and facilitators, and a wide swath of the beneficiary population. Thus, the sample had both a vertical and horizontal design. On the vertical axis, the sample included those involved in project design and management and those engaged in field implementation of interventions. On the horizontal axis, it included the multiple groups of beneficiaries representing the multiple and diverse interventions in all three purposes. A small number of residents in villages not targeted by Njira interventions were also interviewed.

Qualitative fieldwork commenced on October 13th and was completed on October 31st. It began in Lilongwe with the qualitative study team's organizational meeting and a training of the support team and proceeded with data collection in the two Njira target districts—Balaka and Machinga. Since these areas are contiguous, the team was installed in Liwonde (Machinga) and traveled daily throughout both districts.

3.2.1 Sample Design

The recognized politico-administrative structure of Malawi is district, TA, Group Village Head (GVH), and village. The sample included three TAs in each district and two GVHs in each TA, selected purposively using a combination of criteria including remoteness, agro-ecological characteristics, and project performance assessments (compiled by PCI).

3.2.2 Qualitative Study Team

The team was comprised of four consultants, two international and two from Malawi. The Purpose 1 (Livelihoods) and Purpose 3 (Disaster Management) consultants were both international males. One Purpose 2 consultant (Health/Nutrition) was a Malawian male, and the other (WASH) a Malawian

female. The interviews were predominantly conducted in Chichewa, the national language, thus the support team included two translators (one female) and four notetakers (one female).

3.2.3 Methods

Desk Review

Prior to launching the fieldwork, the team reviewed project documents including the project proposal, midterm evaluation, quarterly and annual reports, ad hoc studies commissioned by PCI, the indicator tracking system, and background documents. Special attention was focused on the theory of change, both original and revised versions.

FGDs, KIIs, and Observation

Qualitative data collection is an organic, multi-stranded process in which interviews are triangulated across stakeholders and compared with direct observation. The principal interview methods were focus group discussions (FGDs) and key informant interviews (KIIs). The data collection instruments (see Volume II, Annex I) were based on the baseline tools and updated and tailored by the qualitative study team in consultation with project staff. Four teams worked independently at each site, usually in different villages. Over the data collection period, the team conducted 42 FGDs with beneficiary groups (113 males, 352 females) and 42 KIIs (36 males, 6 females) with project stakeholders (details in Annex F).

While most FGDs were conducted near institutional locations (e.g., local schools), the teams were able to visit relevant project sites, such as irrigation schemes, *Ubwino* centers,[3] watershed management and reforestation projects, homes, latrines, water points, demonstration gardens, and other key locations.

3.2.4 Analysis, Coding, and Interpretation Methods

At each interview session, notes were taken by the facilitators, interpreters, and notetakers. With participants' verbal consent, recordings were made of the FGDs and some of the KIIs sessions, to be used as a check during the organization of the data. At the end of the day, the individual teams met, compared notes, and entered the information collected into a data matrix organized according to the categories explicit in the evaluation questions (e.g., impact, beneficiary satisfaction, effectiveness). Each session became a text file that was reviewed and revised if necessary.

The analytical strategy was to insert all the text files into a spreadsheet file organized by purpose, with the data categories rows and each session a column. This data matrix is the core set of information used for the analysis. Content analysis of the matrix identifies key messages around each evaluation theme as well as the variability in the message from one district or one stakeholder group to another.

[3] *Ubwino* centers are village structures located to maximize community access, for the purpose of integrating the delivery of Njira services. The *Ubwino* center functions as a meeting place, a space for community mobilization, a centralized information archive, and a venue for diverse community events. Some centers use existing buildings and others have been built for the purpose.

3.3 Integration of Quantitative and Qualitative Findings

This report seeks the effective integration of the quantitative and qualitative findings. The quantitative component focused on the set of key indicators used to track the progress and impact of project interventions on the entire population within the project area, including households that participated directly in project interventions and those that did not. The qualitative findings help provide a framework for assessing impact from the perspective of the project participants themselves. The FGDs are a rich source of information on the process of how the project was implemented, how participants were chosen, how the interventions unfolded, and how the interventions changed decision-making options among the targeted households. Several of the evaluation questions and themes are better addressed with the informed use of qualitative methods, such as participant satisfaction, coordination among implementers, relevance, and sustainability of the project design and activities. The report is thus a hybrid of the quantitative and qualitative findings. Indicator tables are presented in terms of movement between baseline and endline, while the qualitative findings provide rich insights into the actual changes experienced by the project participants in the context of their daily realities.

It will be clear to the reader that interpreted independently, the quantitative and qualitative components of this evaluation present different conclusions about project success. Where the endline survey results often show no change in significant food security and health indicators, the qualitative interviews provide evidence of positive change associated with project activities. In part, these differences reflect the disparate sampling strategies. The endline survey employed a PBS technique, as described above, and only a small percentage of beneficiary households (20 percent[4]) appear in the sample; in one district (Balaka), only about 7 percent of the sample is made up of project participants.[5] The qualitative study used purposive sampling, which only included, for the most part, participants who were able to expound about changes in their lives and livelihoods over the last five years. The lack of significant improvement in the targeted population as suggested in the several of the endline survey findings thus requires some contextual clarification, which the integrated analysis has aspired to provide. This is especially true since Njira was not the only development actor in this region over the project period, which makes it difficult to make definitive statements of attribution.

An important set of contextual factors affecting project impact centers on external forces outside the scope of the project. The overwhelming population resident in the districts of Balaka and Machinga faces exceedingly difficult food security challenges in most years. The long-term impacts of deforestation and land scarcity have reduced soil fertility and even in a “good” year, the lean season months bring great stress. The qualitative team, during the October field visits, documented a generalized lack of food stocks and a reliance on non-conventional foods (e.g., green mangoes) to stave off hunger. In this context of chronic seasonal stress, external shocks can take a devastating toll. Over the life of the Njira project (2015-19), only one agricultural season could be described as normal. In the other years, drought, severe storms and flooding (including Cyclone Idai), and a fall armyworm infestation greatly reduced food production and income-earning opportunities (PCI Malawi, 2015b,

[4] The percentage of project participants in the sample across all indicators is, on average, approximately 20 percent. However, for any given indicator, this can vary. The range of participation is 19-26 percent depending on the indicator.
[5] The range of participation in Balaka is 3-12 percent.

2016b, and 2018; FEWSNET, 2017a-b; GoM, 2019). Given such structural vulnerability, the population is highly sensitive to any level of shock, and it is possible that even with overall annual growth in national income (around 5 percent) and a constant influx of development resources, the two project districts have experienced limited sustained increases in food security and overall resilience over the five-year period.

In this report, discrepancies between quantitative and qualitative results will be examined in light of the contextual factors that affect the food security of the local population. Where possible, additional information from annual surveys and other sources will be introduced to assess changes in the beneficiaries who participated in the various components of the project.

3.4 Limitations

Survey response rate. Survey enumerators encountered challenges that resulted in a slightly greater non-response rate than expected. TANGO's response during survey implementation was to ask supervisors to ensure that enumerators were following appropriate protocol for locating households and conducting interviews. This included explaining the purpose of the survey through a proper introduction and ensuring households that were absent were visited at least three times. The study protocol required that enumerators not replace unlocatable, ineligible, or non-consenting households. Based on enumerators' comments regarding conversations with neighboring households, there are three main reasons for non-response:

- Migration: Some households were vacant due to internal and external migration.
- Short-term absences: Enumerators often described short-term absences resulting from occupational, social or family commitments (e.g., traveling to distant markets, funerals, caring for a sick relative, birth of a child) that required eligible household members to be absent during the survey.
- In rare cases, the enumerator was unable to locate the household at all. In these cases, enumerators exhausted multiple avenues to locate the household.

Interpretation of poverty indicators. In years prior to the FFP baseline survey, the Malawi National Statistics Office (NSO) worked directly with the World Bank to implement national Living Standards Measurement Studies that included poverty measurements. The NSO computed the poverty indicators for the Njira baseline. It is likely that the baseline indicators calculated by the Malawi NSO for the Malawi FFP performance evaluation reflect the World Bank poverty indicator measurement methodology. At the time of the endline data analysis, the exact calculations used by the Malawi NSO at baseline were unavailable. Therefore, endline poverty indicators were calculated using USAID/FFP poverty indicator measurement guidelines, which are based on the World Bank methodology but may not be exactly the same as those utilized by the World Bank or those used to calculate the baseline indicators.

Timing of evaluation. Since the project had ended by the time of the qualitative fieldwork and most of the project staff had been dismissed, it was difficult to find some stakeholder representatives, particularly the technical partners Agricane and Total Land Care, which do not have a presence in the project districts or in Zomba, where the principal project management unit was located. In response to this limitation, the qualitative team contracted two former staff members from PCI (Balaka) and

two from Emmanuel International (Machinga) to accompany the teams in their respective districts for the purpose of wayfinding, arranging meetings, and communicating with traditional village leadership.[6] In addition, since a number of former staff still resided in the districts, FGDs were carried out with field coordinators, field facilitators, and GoM counterpart field staff.

Access to some project documentation. The evaluation team was limited during the inception, fieldwork, and analysis phases by a lack of access to relevant project documents including field reports, community profiles, training manuals, and other materials that would have assisted in these key phases of the evaluation. Either the documents were not available or were difficult to acquire during the project shutdown phase, which was in process just as the qualitative study team was preparing and in the field. Much of the needed project documentation was provided during the report revision phase.

Shocks ongoing during evaluation fieldwork. The team encountered the population of the two districts in the midst of crisis due to deep drought and fall armyworm infestation. These post-project difficulties faced by the former project participants to some extent colored the results of the qualitative field interviewing. Some FGD participants were hard-pressed to identify concrete project impacts (experienced previously) due to the current stress of the situation. Furthermore, there was some frustration that the project had ended abruptly and that no further assistance was forthcoming from the implementing NGOs. The qualitative study team was only able to record the pending food security worries of the communities and to search for evidence that participant groups were better prepared to respond to the stressors.

[6] These two former staff members were not present for the FGDs or KIIs, although each pair of these field assistants was interviewed in separate sessions.

4. EVALUATION FINDINGS

The overall findings of the qualitative study team point to three major accomplishments of the Njira project. First: it was the intent of the theory of change design to construct "tailored pathways" sensitive to the individual needs of households. Such pathways would provide individual households with sets of layered interventions across the three purpose areas. While designing such individualized pathways was not broadly achieved, significant layering did occur between Purpose 1 and Purpose 2 interventions and between Purpose 1 and Purpose 3 interventions. FGD participants frequently acknowledged this layering and referred to the range of interventions as the "Njira project." The second major accomplishment was the productive partnership created and nurtured with GoM counterparts. At levels of planning, management, and field implementation, the Njira team collaborated closely with field extensionists, technical staff, Health Surveillance Assistants (HSAs), and ministry staff in health and disaster management. This active partnership with GoM was a key component of the exit strategy. The third accomplishment was having created an enabling environment for community empowerment and a sense of project ownership. This was clear to the qualitative study team in group activities related to irrigation, water point management, and watershed management. That these groups (and others) have continued to be active without the project presence is a testament to project achievement.

In the sections below, the specific findings of each purpose are discussed in detail.

4.1 Targeting

The targeting strategy employed by Njira was uniform across the different purposes in the sense that it sought to meet the needs of the more-vulnerable population and relied upon the participation of the traditional leadership structure. Informed by an existing vulnerability assessment by the Malawi Vulnerability Assessment Committee (MVAC), the project collaborated with GoM district officials to identify the TAs and GVHs considered the more vulnerable areas in each district, ultimately targeting 11 TAs and 80 GVHs.

The project then worked through the local authorities to identify the villages that would participate in the project. GVH leaders were consulted on village selection, and local Village Development Committees (VDCs) participated in the process. As an initial step, project staff visited the selected GVHs to conduct public meetings open to all residents from the surrounding villages. On this occasion, the Njira project was formally introduced with a presentation of the project structure, approach, and activities. At this same meeting, the project team conducted a widespread registration of potential beneficiaries, or those who were "interested in participating."[7] It appears that the registered participants self-selected for the producer groups and for the Women's Empowerment/Village Savings and Loans (WE/VSL) groups. At this point, a registration list was available but without any information on the wealth status of the registered households. A large team of field coordinators and facilitators was then trained in wealth-ranking principles and facilitation skills. The registration list was validated

[7] This description is based on internal PCI documents describing the process. The comprehensiveness of the mobilization and the level of participation were not fully clear to the qualitative study team.

against the current list of residents in each village in the individual GVHs, and another mobilization of the population was conducted by the GVH traditional leader. At this meeting, the criteria defining each of three wealth ranks (*very poor*, *poor*, and *well-off*) were explained to the populace, and each household present joined the group that represented the appropriate rank. Project staff then referred to the registration or GVH lists to assign a wealth status to all participants. Wealth ranking results provided by PCI and ordered by GVH and village include over 109,000 households in the two districts. Each household was attributed a wealth rank and for those who had already been registered in the project, the list identified the project activity group to which that household was assigned. A large percentage of households on the list, while ranked, were not indicated as active in any of the project groups, and there is no evidence that they participated as beneficiaries.

This ranking exercise was to provide critical input to construct the "tailored pathways" highlighted in the theory of change; however, the method by which the ranking information supported the development of such pathways is not clear. As mentioned in the Joint Mid-Term Review (JMTR) (USAID, 2017) and corroborated by FGDs, there is little evidence to demonstrate that such tailored pathways were operationalized.

Other criteria were used to target specific beneficiaries. For example, the traditional leaders helped to select, based on project criteria, those who would play key roles in the project, such as lead farmers, group leaders, and gender champions.[8] While Purpose 1 interventions were organized around producer groups and WE/VSL groups, a more purposive selection process assigned people to irrigation groups, marketing groups, and other project groupings. FGD sessions revealed that villagers were encouraged to join more than one group, which accounts for the overlapping group membership.

In Purpose 2, participant criteria varied by intervention set. For the care groups, water point committees, sanitation committees, etc., villagers were able to self-assign their membership. Other intervention sets specifically targeted pregnant and lactating women (PLW) and children under five (CU5). In general, the nature of Purpose 2 interventions, outside of food rations for PLW and supplementary feeding for CU5, mostly featured the dissemination of nutrition, health, and hygiene messages using a cascade training approach, and for this reason the participant numbers are much higher than for other purposes.

In Purpose 3, the core groups—the Village Civil Protection Committee and the Natural Resources Management (NRM) Committee (referred to in the FGDs as the "Watershed Committee")—were selected following criteria to maximize the representation of all social groups, men, women, business owners, lead farmers, the disabled, schoolteachers, and so forth. Other selection criteria included experience in community participation, skills relevant to the committee tasks, and a willingness to mobilize. From the FGDs, it is clear that the composition of the committees did not always correspond with these criteria.

[8] As the GVH traditional leader is a "gatekeeper" for all activities that take place in the villages under his jurisdiction, it is entirely possible that those individuals close to the chief had preferential access to project participation. In KIIs with GVH leaders, it was apparent to the qualitative study team that the sense of social responsibility to all GVH households varied from one leader to another. Targeting outcomes would have been affected by the commitment of these leaders to the most-vulnerable households.

In the opinion of the qualitative study team, the targeting strategy was well-intended, but irregular in its application at the village level. For example, it is unlikely that the poorest segments of any of the villages benefited significantly from the major project interventions, particularly Purpose 1. In practice, the selection criteria were not always clear to participants, and some were unsure how they or a neighbor ended up in a specific group activity, such as livestock. FGD participants said that with a better understanding of the relative benefits of one activity compared to another, they would have chosen an activity with more concrete advantages. For example, livestock groups were more attractive than producer groups because the former involved the distribution of livestock, a tangible asset.

The study team recognizes that the poorest cohorts are especially difficult to reach because immediate consumption needs are more urgent than the more deferred or indirect benefits of group participation. For households facing high levels of livelihood risk, there is a high opportunity cost to participation in project activities such as trainings and group meetings when the benefits are deferred to some point in the future. On the other hand, asset distribution and Food for Assets activities confer an immediate advantage and are thus more desirable. FGD participants said some marginally poorer neighbors did not volunteer for groups, or stay interested in the project, because these poorest households did not recognize an immediate benefit. They were often characterized by FGD participants as being conditioned to relief distributions and unable to grasp the benefits of a long-term development project such as Njira. The trade-off between "soft" interventions and "hard" interventions is a challenge for development programming in all food insecurity contexts.

Despite the tailored approach, the project intervention set did not adequately identify a unique pathway for many of the very poor. For example, the JMTR observed that Njira lacked a wage-paying component that could have been used to target the poorest households and bring them into other project components, such as livestock distribution or improved farming techniques. NRM/watershed activities could have facilitated the participation of the poorest households if an extended cash-for-assets component prioritized this wealth group.

As another example, the targeting and entry requirements for WE/VSLs effectively excluded the poorest households from participation. In these highly cash-poor communities, some households could not afford the minimum share price required to participate in the WE/VSLs, most commonly, MWK 100 (15 US cents) a week. It is unclear whether a lower weekly quota would have yielded the intended benefits from the WE/VSLs, but this cash requirement did erect barriers to the poorest households.

Many non-poor farmers enjoyed advantages in the project. These better-off farmers became lead farmers[9] and group leaders and, as such, were more likely to participate in the first round of the livestock pass-along program and to receive the material benefits of the demonstration plots, such as improved seeds, fertilizer and sweet-potato vines. At the same time, however, this group of non-poor

[9] The role of lead farmers is key to the technology transfer of Njira Purpose 1 activities. The status of "lead farmer" predates Njira and was a key element in the technology transfer strategy of the district agricultural extension office. Many lead farmers thus shifted to the same role in Njira Purpose 1. Others were selected by Njira, often from households with land, resources, and a relatively better education. They were trained in various technical interventions in the project and managed most of the demonstration plots on their lands. By 2019, Njira—with the Ministry of Agriculture—provided a training to over 2,800 lead farmers—men and women. The technical content of these trainings was then cascaded down to the producer groups.

leaders in fact played a fundamental role in the delivery of project services, the mobilization of community groups, and the organization of large group activities. The FGDs revealed that most of these leaders, both female and male, were driven to participate by community welfare motives and not personal ones. In sum, the qualitative study reveals the complexities of targeting within highly vulnerable communities. The less poor were better able to participate and fulfill leadership roles. The vast majority of the participants are accurately described as poor and very poor in the wealth rankings, but many households, the very poorest, faced constraints to active participation.

4.2 Purpose I: Increased income from agricultural and non-agricultural activities

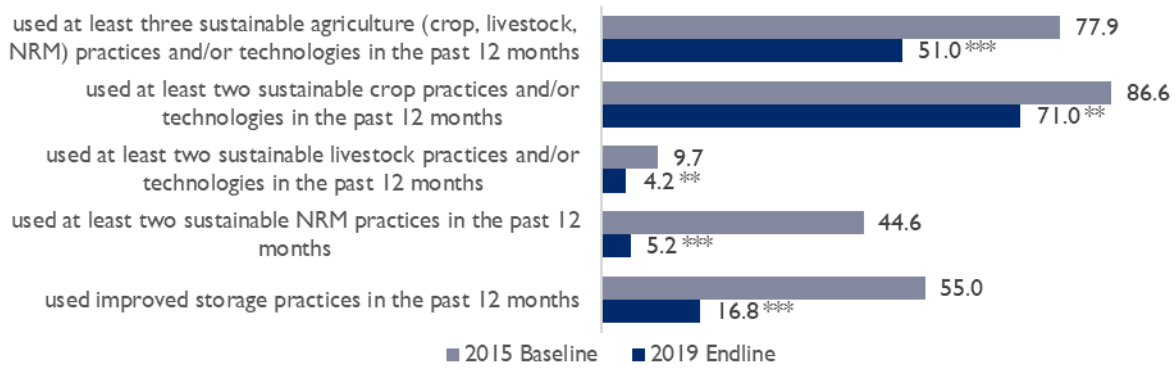
4.2.1 Results

Sub-purpose 1.1 Increased sustainable and nutrition-friendly agricultural production

According to the theory of change for the Njira project, agricultural financial services, the use of sustainable agricultural practices, and improved storage are expected to directly benefit households and lead to increased food security. The logic of this goal assumes that the current constraints to improved production can be overcome through a combination of available technology (through knowledge transfer), greater access to capital to acquire the technology, and improved markets to buy inputs and sell outputs. Thus, project activities included a large range of technology-based innovations (including irrigation, livestock distribution, cropping practices, soil and water conservation, and tree planting), collective marketing strategies, and access to credit through community savings and loans groups. As seen in the following figures, the quantitative results suggest that over the two districts as a whole, there was a deterioration in the adoption and use of project-promoted farm practices over the last five years as measured in terms of sustainable crop and livestock technologies, NRM practices, and financial services (farm capital loans). The qualitative study, on the other hand, suggests significant and positive impact on those families that employed these practices.

Figure 1 presents findings regarding rates of adoption of improved agricultural practices. All indicator values decreased. The largest decreases are in the percentage of farmers using improved storage practices and those using at least two sustainable NRM practices, both of which decreased almost 40 percentage points from baseline to endline.

Figure 1: Percentage of farmers using sustainable agriculture practices or improved storage practices in the past 12 months



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Analysis of the annual survey data monitored by PCI suggests that the adoption of the range of technical innovations introduced by the project achieved or exceeded intended goals for the most part (PCI, 2019c). The annual surveys monitored indicators related to the baseline/endline FFP indicators but expressed differently. As an example, the PBS surveys focused on the number of project-related technologies adopted by the respondents (with significant decreases over the five years); however, the annual surveys document that the project worked with over 28,000 farm households of which around 80 percent applied genetic improvements (e.g., hybrid seeds), cultural practices (e.g., plant spacing), and soil fertility and management (e.g., mulching). The annual surveys also report that over 3,000 farm households practice improved post-harvest and storage technologies.[10] The livestock pass-through activities exceeded expectations: the baseline indicator for goat and chicken ownership had average values (counts of each animal) of 0.7 and 2.5, respectively, per household, and annual monitoring showed that beneficiary households participating in the livestock groups had 14 goats and 25 chickens on average.

During the FGDs, farmers identified a series of low-cost and low-tech activities that helped them increase their crop yields and crop diversity. Orange-fleshed sweet potatoes—a complementary input to Njira from the Food and Agriculture Organization (FAO)—were nearly universally stated in FGDs as easy to grow and good to eat as well as a source of vitamin A. Female FGD members credited their vegetable gardens with increasing their dietary diversity to include the "six groups," which indicates an effective layering of nutrition messaging in care groups and agriculture extension.

These farmers credited their yields to project-promoted simple techniques such as planting seeds closer together; planting one seed per hole; reducing the size of their furrows to accommodate more rows on a field; intercropping with legumes and millet; and using mulch to enrich the soil. Mulch was especially valued in gardens, where the farmers reported creating compost pits and growing a diverse menu of

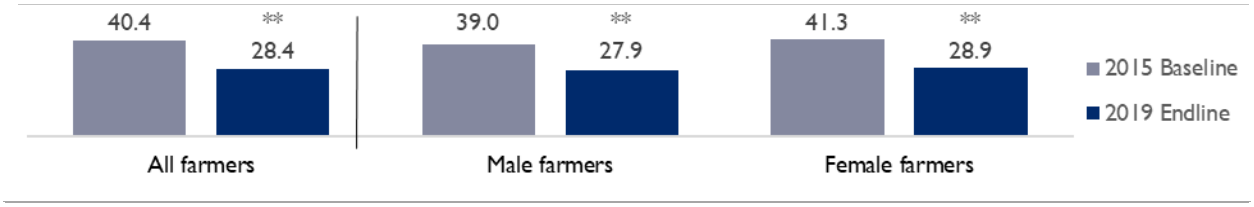
[10] One of the improved storage technologies was the use of Purdue Improved Crop Storage (PICS) bags. It is not known if all 3,000 households used this technology, but the District Agricultural Development Officer stated that they were available in local shops and were sold by some of the WE/VSLs (PCI, 2019c).

vegetables. Producer groups also saw the yield benefit from raised water tables and increased soil moisture that resulted from the NRM activities carried out in nearby watersheds under Purpose 3.

Irrigation schemes covered 225 ha, or 102 percent of target (PCI Malawi, 2019b [IPTT]). The schemes worked well for the farmers who participated. One focus group stated that they had added nearly two months of additional food security due to the produce and cash earned from their 0.20-acre irrigated plots. The limitations to the size of an irrigation scheme were often due to the proximity of the water source and capacity of the treadle pumps. The pumps move about one to three liters per stroke, so it is not possible to move large volumes of water fast or far. Nonetheless, there is a good case for the short- to medium-term sustainability of the irrigation schemes. Irrigation groups were collecting user fees and making repairs and improvements to the schemes. In one case, the improvements to the scheme were observed to be ongoing after the project. In another, the group had replaced the pump cylinder rubbers.

As shown in **Figure 2**, just under three in ten farmers used financial services at endline, a moderate and statistically significant decrease from baseline.

Figure 2: Percentage of farmers who used financial services in the past 12 months



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

The major source of financial services available to project beneficiaries was the WE/VSL groups, of which over 1,500 were supported by Njira, and the loan fund utilization rate was almost 70 percent, which exceeded project targets (PCI, 2019c). Thus, while at the population level there was a decline in the percentage of farmers reporting the use of financial services, the annual survey data suggest that many project beneficiaries actively sought the WE/VSL groups as the most available source of loans.

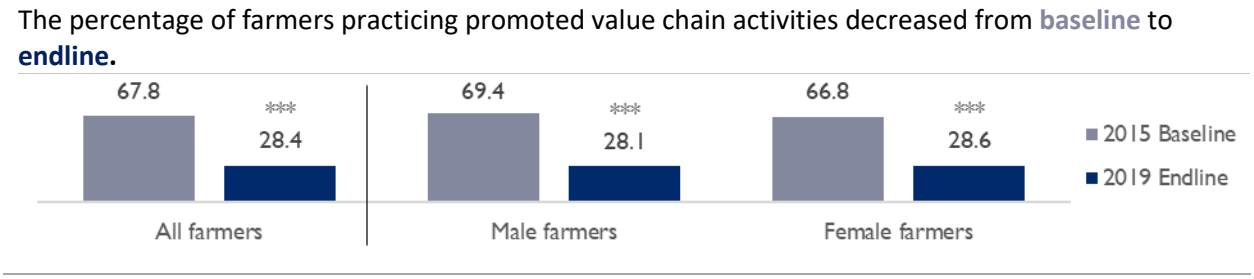
Sub-purpose 1.2 Increased agricultural and non-agricultural sales

Njira sought to promote producer integration in local and national markets as a means of expanding a diversified, income-generating agriculture. Under the value chain model, project activities were designed to identify and even negotiate market opportunities for promising crops such as pigeon peas, diversify farm production with an eye to market opportunities, organize farmers around small marketing associations, make contacts with potential buyers, and assure the timely availability of necessary inputs, including transportation. On the livestock side, the project introduced mostly goats and chickens to improve food security but also to stimulate a higher level of market activity. The value chain activities in Njira included purchasing inputs through agro-dealers and/or community associations; financial services; training and extension services; contract farming; trading/marketing produce through marketing groups, agro-dealers or community associations; marketing systems for livestock; warehousing; market information services (NGOs, government, PSP, mobile); business development services; and planning and profit calculations.

The quantitative endline survey shows a percentage decrease among the population of farmers who in the year prior to the survey practiced value chain activities promoted by Njira (see **Figure 3**). However,

according to annual survey data, the number of beneficiaries who practiced value chain activities was nearly 7,500, well above the project target (PCI, 2019c). More than half of this value chain activity was related to product marketing.

Figure 3: Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

The qualitative interviews support the conclusion that some of the income-oriented interventions were quite successful in meeting the overall goal of food security. Njira's main financial intervention, the WE/VSL, had the greatest impact on income, albeit not through sales *per se*. The project supported over 1,500 groups over the two districts (PCI Malawi, 2019b [IPTT]). The WE/VSL membership and leadership in these were largely female, although the qualitative team documented some male members and leaders. Income was earned by taking loans in support of small enterprises such as petty trading, and by dissolving the VSL fund once a year and sharing the accumulated balance among the members. The annual share-out of the fund, consisting of deposits and interest earned over the course of the year, netted members a return of 30-50 percent or more on their deposits.

The livestock pass-along activity was one of the most valued Njira interventions among participants. The activity substantially increased the livestock population in the project area: chickens from 44,846 to 116,859; goats from 3,367 to 7,907; and pigeons from 4,583 to 6,864 (PCI n.d.). Nonetheless the FGDs revealed cases where group members did not fully understand the activity or how the pass-along worked. The distribution of pigeons did not meet project expectations because the birds consume the same grains as humans, causing competition for scarce food during the lean season. But when the pass-along worked, as observed in several GVHs, participants multiplied their herds/flocks and improved their diets with meat and eggs while selling eggs and/or using the animals as a source of cash in lean times. PCI estimates that its agribusiness activities generated $535,828, as measured by the value of added livestock, meat, eggs, and VSLs (PCI n.d.). In contrast to the PBS data in **Figure 1**, the annual survey data (PCI, 2019c) indicate that over 13,000 households applied improved livestock techniques over the course of the project, and vaccinations increased significantly among those participants with livestock. By the end of the project, 51 Community Animal Health Workers (CAHWs) were active in the project villages. The FGDs, however, revealed that animal health services were not always available in a timely manner, because the CAHWs had not received their veterinary kits after training.

As designed, Njira promoted the cultivation of pigeon pea as a cash crop and worked with farmers to market the harvest. Production did not prove to be a problem beyond the constraints of ill-timed and failed rains. Although farmers readily accepted the cultivation of pigeon pea, as it was an already familiar crop, particularly in Machinga, the marketing outcomes were disappointing. The export market

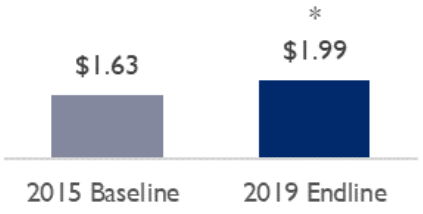
for pigeon pea collapsed in 2015-16 when the Indian government severely limited legume imports. There proved to be little interest for pigeon pea by large-scale buyers in Malawi, and prices stagnated. In addition, producer groups did not feel adequately supported by Njira in the local market. They were unable to negotiate favorable prices with local vendors. In at least two cases, famers complained that the vendors used rigged scales to short-change them. Despite their difficulties marketing pigeon pea, producer groups said they would continue to grow and sell the crop.

4.2.2 Conclusions

Njira's low-cost and low-tech interventions have likely changed the way small-scale farming is done among the beneficiary population in Balaka and Machinga districts. Participating households readily saw benefits and took up the range of practices promoted by extension workers and on demonstration plots. The outcomes from this localized technical change will likely be incorporated into "standard" farm practice and will persist over time with little need for outside resources. Similarly, from the household perspective of improving availability and access to nutritious food, Njira's crop, livestock, and gardening activities increased and diversified household diets through homestead production rather than foods purchased in markets.

Figure 4: Per capita expenditures (as a proxy for income) of USG targeted beneficiaries at baseline and endline

Per capita expenditures increased from baseline to endline.



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Survey data show a statistically significant increase in per capita expenditures (as a proxy for income) of $0.40 from baseline to endline (**Figure 4**).[11] The percentage of people living below the international poverty line of $1.90/day did not change, holding steady at 70 percent at endline (see Annex G for more detail). The mean depth of poverty, which was 30.7 percent at endline, also did not change; this figure indicates that households would need to increase their incomes by about one-third of the poverty line (USD $0.57) to move out of poverty.

The qualitative data similarly suggest that there was not a significant increase in household incomes for Njira participants, but in a cash-poor economy, marginal increases can be important. During the interviews, FGD participants were asked: "What did you buy with money generated from Njira that you would not have bought without Njira?" FGD participants, especially those in WE/VSLs, listed numerous household purchases and investments made over the life of the project with the income made possible

[11] Difference expressed in constant 2010 USD

through the activities and practices Njira promoted. According to the participants, these purchases and investments, summarized in **Table 3**, would not have been made otherwise.

Table 3: Declared uses of additional income from Njira activities, at endline

Immediate consumption	Investment & longer-term consumption	Purchased assets
	Petty trading	Iron roofing sheets
Meat	School fees/uniforms	Cell phones
Maize	House construction	Bicycles
Vegetables	Clothes	Radio
Milk	Seed/fertilizer	Livestock (goats, chickens, ducks)
	Paid casual labor on farmland	Kitchen utensils (pots, plates)

The use of additional income, albeit small, to enhance household well-being validates the importance of the Njira focus on income-earning activities. It is accurate to say that not all beneficiary households experienced a spike in annual income through Njira participation, but these interventions do seem to have contributed to the project's food security goals.

4.3 Purpose 2: Improved health and nutrition of pregnant and lactating women and children under five

4.3.1 Results

Sub-purpose 2.1 Improved nutrition and health practices

Several initiatives and activities were implemented to achieve the objectives of Purpose 2. These included the distribution of food rations to PLW and CU5; training PLW on recommended dietary practices, child feeding and care practices; promoting the use of the Malawi food guide to prepare diversified diets from the six food groups; and training mothers on how to measure and interpret anthropometric data using MUAC (mid-upper arm circumference) tape. According to outcomes reported by PCI, over 78,000 beneficiaries received the key childcare messages and over 39,000 PLW received supplementary rations, while 94,000 PLW and CU5 received multivitamins—project achievements that met or surpassed targets (PCI n.d. Njira Nutrition).

As with the other Njira components, the nutrition messages on antenatal care and diet were delivered through a cascading structure in which the key element was the care group, a small group of self-selected women that participated in all Purpose 2 nutrition and health activities. In total, Njira organized 453 care groups (PCI Malawi, 2019b [IPTT]). Project facilitators trained in nutrition, health, and childcare collaborated with GoM HSAs, also trained by Njira, who worked with the care groups. Each group had "lead mothers" who, after receiving the nutritional and childcare messages, disseminated the information among "cluster mothers" who transmitted the messages to neighbors. This delivery structure sought to maximize the reach of the essential messages and practices promoted by the project.

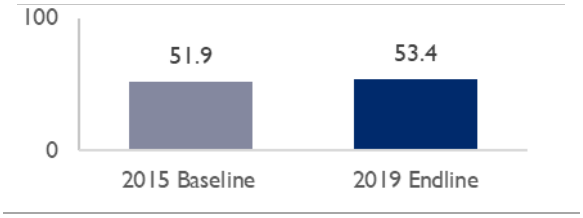
As part of the family-focused approach of Njira, fathers were also trained about household nutrition and childcare. The project promoted the critical importance of joint household responsibility—not just that of the mother—for family nutrition and health. The project organized 80 fathers' groups and trained some 800 fathers in nutrition and child health care (PCI Malawi, 2019b [IPTT]).

Other activities overlapped with Purpose 1, such as establishing or supporting more than 35,500 household gardens for producing vegetables and orange-fleshed sweet potatoes to supply communities with micronutrients, especially vitamin A (PCI Malawi, 2019b [IPTT]). The project conducted around 10,000 cooking demonstrations using different recipes to equip mothers and caregivers with knowledge and skills to prepare diversified and nutritious meals. While participation in these activities was open to all care group members, the supplementary ration distribution followed eligibility requirements. For example, the distribution of food rations targeted vulnerable groups such as PLW and CU5.

With regard to Purpose 2, the baseline and endline quantitative surveys included indicators designed to measure key aspects of hunger and nutrition, such as local perceptions of hunger, diet diversity, mothers' body mass index, patterns of the consumption of targeted nutritious foods, and child malnutrition. This section summarizes these results.

Household hunger:[12] The quantitative surveys sought to measure household perceptions of hunger using the Household Hunger Scale (HHS), a perception-based food deprivation scale in which 0 indicates little to no hunger level and 6 is severe hunger. The results in **Figure 5** show that the impact of significant efforts of Njira to reduce severe hunger is not clearly demonstrated at the level of the population: the levels of moderate to severe hunger are unchanged (no statistically significant change) from baseline to endline.

Figure 5: Prevalence of households with moderate or severe hunger (as measured by HHS)



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

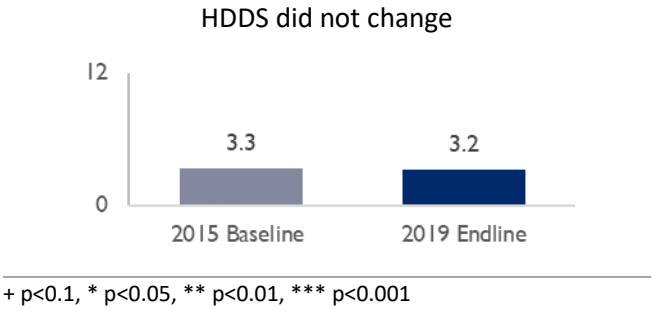
Household Dietary Diversity Score: Generally speaking, dietary diversity, including the range of necessary food groups and nutrients, indicates the status of dietary quality and nutrition. The Household Dietary Diversity Score (HDDS) is a commonly accepted proxy measure of household food access, defined as the ability to acquire sufficient quality and quantity of food to meet all household nutritional requirements for productive lives (Swindale and Bilinsky, 2006).[13] It is based on the reported number of

[12] The HHS is comprised of three components to measure inadequate household food access, with each component split into an occurrence question—whether the episode of food deprivation occurred at all in the past four weeks—and a frequency-of-occurrence question—how many times the episode occurred in the past four weeks. Responses are coded and summed for a numerical score, with a minimum possible score of 0 and a maximum possible score of 6, representing three levels of hunger: (1) little to no hunger (score = 0 to 1), (2) moderate hunger (score = 2 to 3) and (3) severe hunger (score = 4 to 6).

[13] It is important to keep several things in mind when interpreting measures like the various dietary diversity scores (HDDS, MAD, MDD-W, WDDS) and measures of stress and coping (HHS, CSI). First, they are very responsive indicators and therefore

food groups consumed by all household members in the day prior to the interview. The 12 food groups are based on FAO guidance. The HDDS ranges in value from 0 to 12, with a higher HDDS representing a more diverse diet, which is often positively correlated with income level and access to food. The endline survey found a low level of dietary diversity and no change in HDDS over the life of the project (**Figure 6**). Dietary diversity depends on household behavior change, and the effects of nutrition education may take a longer period of time to produce the desired impact than expected, which helps to interpret these quantitative results.

Figure 6: Average household dietary diversity score



Although the quantitative data show little impact regarding HDDS, a survey conducted by PCI among 1,600 beneficiary families calculated scores of 3.3 at baseline and 4.5 in 2019 (PCI 2019c). These results are consistent with the FGDs among mothers' groups, in which participants spoke of the importance of the different food groups and shared their reliance on, for example, the production of the home gardens.

Women's nutritional status: Improved nutritional status among women is expected to enhance women's health and energy. Body Mass Index (BMI)[14] is a widely used measure to evaluate women's nutritional status. This indicator frames the extent to which women's diets meet their caloric requirements. A BMI of 18-5–24.9 is considered normal, above 24.9 is considered overweight, and below 18.5 indicates underweight or acute malnutrition and is associated with increased mortality, food insecurity, and adverse birth outcomes in future pregnancies. Anthropometry measurements were taken at endline for 413 non-pregnant women 15-49 years of age. Based on BMI scores, 6 percent of women underweight, with no statistically significant change from baseline (Annex G).

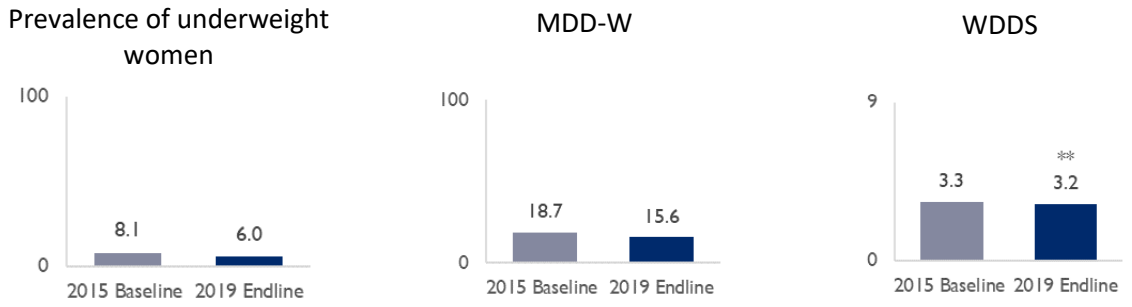
Women's dietary diversity: Along with a healthy weight, improvements in women's dietary diversity contribute to improved pregnancy and child health and nutrition outcomes. Women of reproductive age are at risk of multiple micronutrient deficiencies, which can jeopardize their health and their ability to care for their children and participate in income-generating activities.

impacted by changes in the current context. Because they are based on current food consumption and other behaviors during the preceding day or month (depending on the indicator), they are best interpreted as a group rather than individually (Maxwell et al., 2013). This contrasts with the anthropometric indicators, which are not as responsive to immediate circumstances and so give a better idea of the general trend over time.

[14] BMI is the ratio of weight in kilograms to the square of height in meters (kg/m^2).

Njira uses two indicators to measure women's dietary diversity. Minimum Dietary Diversity–Women (MDD-W) is the proportion of women of reproductive age who consume a minimum dietary diversity.[15] The women's dietary diversity score (WDDS) is a validated proxy measure of the micronutrient adequacy of a woman's diet computed based on nine critical food groups. Two characteristics differentiate the two indicators. First, MDD-W is a proportion, whereas WDDS is a quasi-continuous score. Second, slightly different food groups are used to calculate each indicator. At endline, almost 16 percent of women were eating 5 or more out of 10 food groups (see MDD-W in **Figure 7**). This represents no statistically significant change from the baseline. WDDS reports the mean number of foods—from nine food groups—consumed in the previous day by women of reproductive age.[16] Endline results indicate that women of reproductive age consume an average of 3.2 of 9 basic food groups; this represents slightly diminished dietary diversity since baseline.

Figure 7: Women's health and nutrition indicators



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Targeted nutrient-rich value chain commodities: Survey results show that about one in five women of reproductive age consume targeted nutrient-rich value chain commodities; there was no change from baseline to endline (Annex G).

The PBS results indicate that women's health and nutrition, for both non-pregnant women and PLW, did not change during the life of the project. Considering, however, the low representation of project participants in the endline sample, these results must be carefully interpreted within the context of findings from the qualitative study. Interviews with women's groups, including mothers' groups, strongly suggest changes in dietary practices that positively affected the health and nutrition of beneficiaries. Care group participants were quick to mention the wide awareness of the significance of diet diversity, pointing to the orange-fleshed sweet potato, the establishment of home gardens, and the food diversity from the irrigated plots. Mothers from Juma GVH (Sawali) stated that malnutrition in children had diminished since Njira's inception and cases of diarrhea were significantly reduced. Nearly every

[15] Minimum dietary diversity is defined as having consumed at least 5 of 10 specific food groups in the previous 24 hours. MDD-W food groups are: (1) grains, roots, and tubers, (2) legumes and beans; (3) flesh foods, including organ meat and miscellaneous small animal protein, (4) nuts and seeds, (5) dairy products, (6) eggs, (7) other vitamin A-rich vegetables and fruits, (8) other fruits, (9) other vegetables, and (10) vitamin A-rich dark green leafy vegetables.

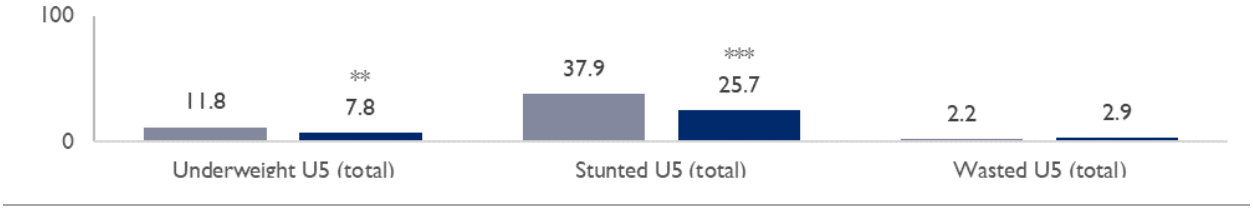
[16] WDDS food groups include (1) grains, roots, and tubers; (2) legumes and nuts; (3) dairy products; (4) organ meat; (5) eggs; (6) flesh food and small animal protein; (7)vitamin A-rich dark green leafy vegetables; (8) other vitamin A-rich vegetables and fruits; and (9) other fruits and vegetables.

Purpose 2 FGD mentioned that prior to Njira, many children were annually admitted to the Nutrition Rehabilitation Unit, and now this number is insignificant.

Children's health and nutrition indicators: One of the major goals of Njira was to improve children's health and nutrition. In the quantitative surveys, nutritional status was evaluated using height, length, and weight measurements of CU5 following standardized procedures and compared with 2006 WHO child growth standards (WHO, 2006). Underweight, defined by weight-for-age z-score of <-2SD, reflects acute and/or chronic undernutrition. Stunting (height-for-age) reflects chronic undernutrition and illness over several years. Wasting (weight-for-height) is often a consequence of acute food shortage or disease. Children who are more than two standard deviations below the median of the WHO population standards for weight-for-height are considered wasted. The results show that the prevalence of both underweight and stunted CU5 declined from baseline to endline (**Figure 8**). There was no significant change in the prevalence of wasting.

The baseline-endline changes in these child malnutrition indicators are generally consistent with the positive trend since 1992 reported in the last national survey of child nutrition (NSO and ICF, 2017), which shows, in 2015-16, national indicators of 12 percent underweight, 37 percent stunted, and 3 percent wasted. The PBS values are thus better (underweight, stunting) or about the same (wasting) as the national values.

Figure 8: Prevalence of underweight, stunted or wasted CU5 at baseline and endline



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

While these results are positive, they cannot capture the impacts of Njira interventions because of the number of participant children in the endline sample.[17] The care group FGDs did document a consensus among the beneficiaries that the intense messaging and monitoring activities of the project improved child health and nutrition for those reached by the project.

Minimum acceptable diet: Six percent of all children 6-23 months of age were receiving a minimum acceptable diet (MAD) at endline; however, the only statistically significant finding for this indicator lies in the gender-disaggregated findings, which indicate that girls were worse-off at endline: the percentage of girls receiving MAD decreased from 11.8 percent to 5 percent (Annex G). These low figures are consistent with the most recent DHS data: for the same age group, 7.2 percent of boys and 9.0 percent of girls achieved minimal standards for MAD, and the figures are even lower for rural areas: 6.8 percent overall (NSO and ICF, 2017). The DHS MAD statistics are even lower for the southern region of Malawi,

[17] The endline had 113 participant children under 5 who were weighed and measured. The sample is too small to be statistically representative and therefore cannot be compared with national figures.

for children whose mothers have no education, and for the two bottom wealth quintiles. Hence the PBS findings are not surprising.[18] Generally speaking, consumption of MAD depends on the diversity of foods included in the diet and the frequency of consuming these foods. Low levels of MAD may reflect poor feeding practices by caregivers as well as a lack of dietary diversity, which limits nutrient intake.

The PBS found that almost 12 percent of children 6-23 months consumed targeted nutrient-rich value chain commodities; there was no change from baseline to endline. The PCI survey (PCI Malawi, 2019a) of beneficiaries found that 37.5 percent of children 6-23 months had consumed four or more of the seven food groups, and the result for the Balaka district sample was higher (48 percent) than Machinga (24 percent). In both districts, boys fared better than girls. While the PBS found no significant change in the percentage of children 6-23 months consuming foods made from orange-fleshed sweet potato (it hovered around 10 percent), a more positive finding emerged from the qualitative endline study, which suggested improved understanding and acceptance of the orange-fleshed sweet potato.

FGD participants consistently asserted that the nutritional component of Purpose 2 contributed to improvement in nutritional status of CU5 and PLW and resulted in a reduction in acute malnutrition and illnesses in the beneficiary population. Reduction in illnesses among beneficiary children could also be attributed to improvement in household sanitation and hygiene practices. Improved hygiene practices were understood to further reduce outbreaks of cholera and diarrhea infections in participating communities.

The FGDs further suggest increased knowledge and skills in preparing nutritious and diversified meals among mothers, fathers, and caregivers through training sessions by lead mothers and cluster mothers in care groups. It was apparent from the FGD responses that mothers and caregivers appreciated the new knowledge gained during training. Some households also reported adopting technologies such as energy-saving and fuel-efficient stoves, although the qualitative study team's observations in homes indicated that many households were in fact not using the stoves. Further investigation is needed to identify factors that affect the utilization of the stoves.

Through father's groups (80) and couples' workshops (92), participants were encouraged to discuss gender relations regarding the distribution of domestic childcare tasks and household decision-making (PCI Malawi, 2019b [IPTT]). The FGDs pointed to increased male participation in childcare, declining cases of domestic violence, and increased adoption of family planning among married couples as outcomes of these activities.

The participants in Purpose 2 talked of improved nutrition among beneficiaries due to an enhanced understanding of diet and food preparation. Nonetheless, the areas targeted by the project are exceedingly vulnerable, and annual food security crises are commonplace. The qualitative study also found that despite increased diversification of crops and better knowledge of improved diet, households did not have a guaranteed year-long food supply and food insecurity remained high, especially in the lean period between October and April. Indeed, the qualitative study occurred during a period of severe food insecurity, and households were hard-pressed to provide an adequate diet.

[18] Nevertheless, we should also interpret this finding in the context of the small sample size for this indicator at endline: 76 boys and 65 girls. Smaller sample sizes carry larger margins of error. Moreover, as a PBS statistic, this finding applies to the entire project area.

Sub-purpose 2.2 Increased utilization of RMNCH prevention and treatment services

In Njira, several Purpose 2 interventions were designed to increase the health and nutrition of pregnant mothers and their children. The project messages encouraged pregnant mothers to make an antenatal care program of visits, to exclusively breastfeed neonate children, and to introduce nutrient-rich foods to their children at the time of weaning. In addition, Njira promoted a nutritional surveillance program for CU5 and referred children at risk of undernutrition to supplementary feeding centers. The indicator measures considered here include recommended antenatal care, prevalence of contraceptive practices, child feeding practices including diversity of diet, and prevalence of diarrhea and oral rehydration therapy treatments. Each is analyzed in turn.

Antenatal care and growth monitoring: The PBS found that approximately half of women of reproductive age who had a live birth in the last five years received antenatal care with a skilled health professional[19] four or more times during their most recent pregnancy, as recommended by WHO guidelines (WHO 2016).[20] There was no change from baseline to endline in this indicator (Annex G).

Project activities also included promotion of growth monitoring. There was high coverage of growth monitoring among CU5 by project employees supported by government frontline health workers (HSAs): in 2018, according to PCI, around 67,500 mothers and fathers participated in growth monitoring sessions, over 40 percent above the targeted goal (PCI Malawi n.d., Njira RMNCH). Due to a heavy workload in growth monitoring, the outreach growth monitoring services were delinked from the project and left to Ministry of Health frontline staff. The Njira project provided weighing scales, length boards, and MUAC tapes to government health facilities. The project staff and government health workers worked together to provide counseling services to PLW during antenatal and growth monitoring clinics. The counseling services are considered to have contributed to increasing the number of pregnant women accessing antenatal care at the right time.

Contraceptive prevalence rate: The contraceptive prevalence rate is the percentage of women 15-49 years of age who are married or in a union where either they or their sexual partner are currently using at least one contraceptive method. This indicator is a proxy measure of access to reproductive health services and provides evidence of progress toward improving the quality of family planning services. It is the most widely reported measure for population-level family planning programs, and it indicates the extent of people's conscious efforts and capabilities to control their fertility. From baseline to endline, there was a small but statistically significant increase in contraceptive prevalence, from 74.6 percent to 80.5 percent (Annex G).

Supplementary feeding. The project included active case identification of acutely malnourished children for referral to health facilities for treatment. Over 700 underweight children were directed to supplementary feeding and care in 2018 (PCI Malawi n.d. Nutrition). Early identification and timely treatment of acutely malnourished children has led to declining numbers of CU5 being admitted to nutrition rehabilitation units. Despite the low numbers of CU5 admitted to these units, food scarcity among households presents the risk of chronic food insecurity, a cause of stunting among CU5. There is

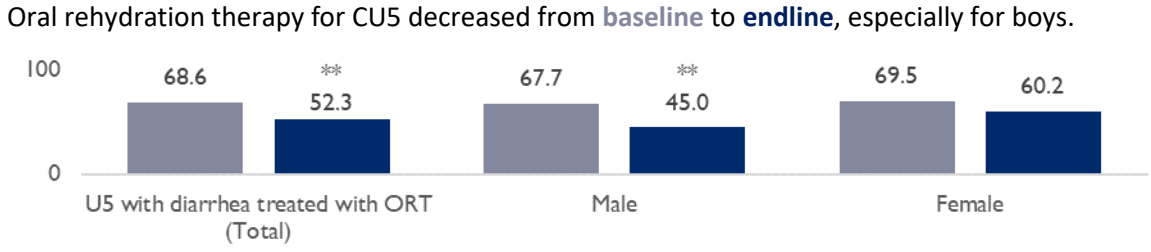
[19] Doctor, nurse, midwife, skilled birth attendant or clinical officer
[20] This indicator does not measure the quality of the antenatal care visit.

concern that these nutritional gains can be easily reversed during a crisis period, such as the lean season.[21]

Exclusive breastfeeding: Breastfeeding was one of the major messages transmitted through the care groups, and the value of it was readily recognized by FGD participants. Overall, more than three-quarters of children under six months in the PBS are exclusively breast-fed; the survey results show no change from baseline to endline (Annex G). However, the gender-disaggregated results indicate a large and significant change for male infants: the percentage of male infants exclusively breastfed jumped from 59.8 percent at baseline to 79.1 percent at endline, nearly 20 percentage points. Meanwhile, this indicator for girl infants stagnated at around 70 percent. The PCI 2019 survey of health and nutrition among beneficiaries also showed a higher rate of exclusive breastfeeding among male children in 2017 and 2018, although the percentages are closer to the baseline values. Exposure to messages on recommended child feeding practices might have contributed to the increased number of mothers exclusively breastfeeding their male children.

Diarrhea and oral rehydration therapy: Dehydration as a result of severe diarrhea is a major cause of illness and death among young children, but treatable with oral rehydration therapy. Caregivers in the PBS were asked if any CU5 had diarrhea in the two weeks prior to the survey. If a child had diarrhea, the caregiver was asked whether oral rehydration therapy — oral rehydration solution or a homemade sugar-salt-water solution—was given to the child. Prevalence of diarrhea in CU5 was generally the same at baseline and endline, around 27 percent (Annex G). The use of oral rehydration therapy to treat CU5 with diarrhea decreased at endline, driven by a more than 20 percentage point decrease in the use of oral rehydration therapy for boys (see **Figure 9**). However, the qualitative FGDs with care group mothers suggested that in fact a significant reduction in diarrhea had occurred among participant households during the project, as evidenced by the lower frequency of children being admitted to Nutritional Rehabilitation Units. According to the 2015-16 DHS, around 78 percent of children with diarrhea were treated with some form of oral rehydration therapy (ORT) (at the national level). The trend for treating diarrhea with ORT packets had increased through 2010, then decreased to 65 percent in 2015-16 (NSO 2017). The study team suspects that the use of ORT is related to the overall economic situation of households rather than to a lack of messaging.

Figure 9: Percentage of CU5 with diarrhea treated with oral rehydration therapy



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

[21] As noted earlier in this report, lean seasons occur regularly in Malawi. The majority of households in Malawi depend on their own food production, which tends to be low and not enough to take them to the next harvest season. There is always a decline in dietary intake during the lean season. Though the communities receive lean-season support, it is normally targeted and thinly spread. Such support is normally in the form of safety nets and may not meet and maintain the required nutrient intake.

Sub-purpose 2.3 Increased utilization of hygiene, sanitation and water facilities

Improved maternal and child nutrition is closely linked to improved water, sanitation and hygiene (WASH) practices. Njira used four approaches to increase usage of hygiene and water facilities: capacity building of water point committees (WPC) for continuous availability of safe and clean water; sanitation and hygiene education through care groups; Community-Led Total Sanitation (CLTS); and sanitation marketing and dissemination of hygiene messages through WASH campaigns.

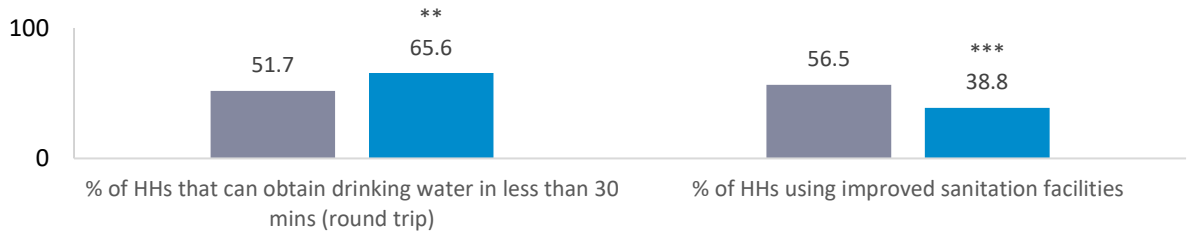
Output 2.3.1: Improved access to clean water sources

The percentage of households that can obtain drinking water in less than 30 minutes round-trip increased by almost 14 percentage points to 65.6 percent at endline (**Figure 10**). The increase can be credited to the capacity building of Water Point Committees (WPCs), which was done in collaboration with the District Water Development Officers (DWDOs). The project trained 619 WPCs, which included male and female members from the same community, in community-based management of water points, routine maintenance of broken boreholes, regular monitoring of water availability, conflict resolution, how to raise and manage funds to procure spare parts, how to improve the spare parts supply chain, and different ways of water purification. One of the WPC members was also trained as an area mechanic to resolve more significant problems on a fee-for-service basis. The ability to repair broken boreholes by the WPC members and the trained mechanic reduced the waiting period for borehole maintenance to less than 24 hours, thus ensuring the continuous availability of water and improved management of water points. The gender inclusiveness of the WPCs also improved hygiene practices at the water points and gave the women recognition and higher status in the community.

At the end of the project, all the WPCs were operational, which speaks to the sustainability of this intervention. The key factors, according to the FGDs, include the availability of spare parts in the marketplace, the fund for purchasing such parts generated from the fee structure, the fact that the WPC members were also the water users and thus motivated to keep the system functional, and the respect afforded the female members who learned non-traditional maintenance skills.

Figure 10: WASH indicators at baseline and endline

Access to drinking water increased from **baseline** to **endline**. Household use of improved sanitation facilities decreased substantially.



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

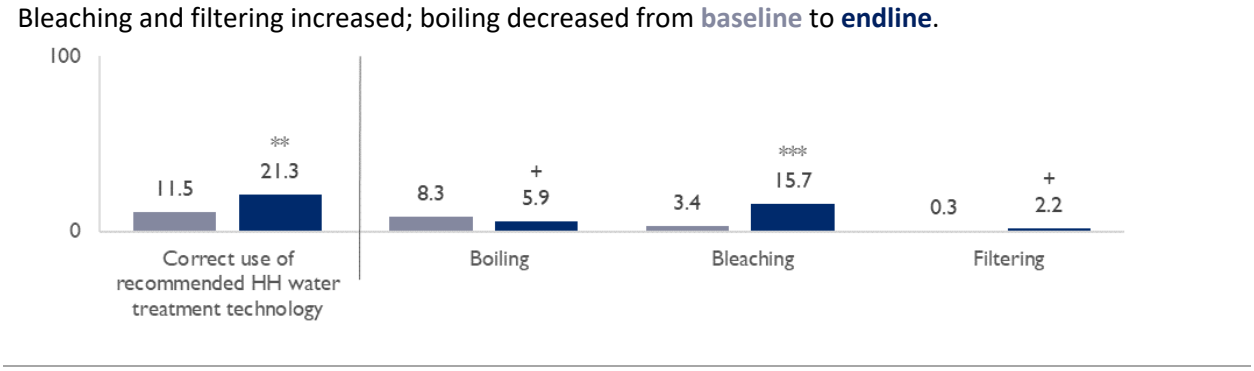
Although FGD members expressed happiness with the continuous and convenient availability of clean water sources as a result of the timely and effective maintenance of broken boreholes, they were quick to point out that some people still lacked access to clean and safe water. This perception is supported by the PBS data, which show no meaningful change in the number of households using an improved

drinking water source (Annex G). This may be because the project did not add new boreholes to the area; it only repaired some broken boreholes that were already serving a high population of more than 250 people per borehole.[22] Because the population for the area kept growing during the five-year project implementation period, thereby increasing the number of people requiring clean and safe water at the borehole catchment area, the problem of congestion at some boreholes was not resolved. Therefore, it is highly likely that part of the population continued to utilize the unsafe water sources they were using before the boreholes were repaired.

The quantitative results show that the use of recommended household water treatment technologies increased from baseline to endline (**Figure 11**). Two out of four basic WASH practices promoted by Njira improved between baseline and endline, with the largest gains in bleaching.[23] Endline results also show a small though statistically significant increase in filtering, and a decrease in boiling. The decrease in boiling water, according to FGDs, is directly related to the cost in time and firewood to do so.

For the households that were not using clean and safe water sources, FGD members credited using chlorine-based treatments to make water safe for consumption. HSAs supplied the chlorine mostly during the rainy season and for the dry season, and the community bought the well-known *WaterGuard* chlorine treatment from nearby grocery shops. The use of bleaching seems to have been the most effective and utilized way to purify water, as evidenced by the 12.3 percentage point increase observed at endline (**Figure 11**). FGD members confirmed that boiling and filtering were other ways that the community used for water purification, but they preferred bleaching because it was easy and convenient. It should be noted, however, that many of the poorest households cannot afford to purchase the bleaching treatments on a regular basis.

Figure 11: Percentage of households in target areas practicing correct use of recommended household water treatment technologies



+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001

Output 2.3.2 Improved access to household hygiene and sanitation facilities

The Njira strategy to achieve Community-Led Total Sanitation was strongly based in promoting collective awareness at the village level. FGD participants stated that village mapping of households with toilets

[22] While this complies with the Sphere standard of 500 persons per hand pump and 250 persons per water tap, it is outside the local standard. According to a district water official interviewed, the Department of Water prescribes a maximum of 250 users per borehole, and 150 users per water tap, within a radius of 500 meters.

[23] The fourth practice, solar disinfection, is not shown in the figure. Both baseline and endline values were zero (see Annex G).

and transect walks through the bush to identify defecation sites were used to stimulate awareness. Care group discussions, door-to-door visits, and neighbor women's teaching on sanitation and hygiene, strengthened the trigger messages and increased the construction and utilization of toilets. FGD members indicated that WASH interventions improved their access to sanitation facilities. This sentiment was reflected in this statement by a FGD member in Balaka: "Since NJIRA was implemented some five years ago, the area has registered a remarkable decrease in cholera cases. This impact has been attributed to the WASH activities in the Njira project. Other impacts include improved access to water, improved sanitation, and household and personal hygiene practices."

On the other hand, the FGD revealed that most toilets collapsed during the rainy season and had to be replaced each year. The qualitative study team also observed that the constructed toilets were of poor quality and most of them had collapsed during the rainy season. This may explain the endline quantitative data, which show a decrease of almost 18 percentage points in the percentage of households using improved sanitation facilities (see **Figure 10**). The PCI survey (PCI Malawi, 2019a) carried out in 2018 supports this finding; it shows a drop from 55 to 49 percent of the households using improved toilets. The messaging on toilets emphasized having a hole with shelter, but not much on durability and care. Replacing these toilets every year was a difficult job, and the qualitative team noted some of the toilets that had collapsed during the December 2018 to March 2019 rains were being replaced in October 2019. Some of the toilets still standing were very small, with poor ventilation and undesirable odor. The team also observed that many of the replaced toilets had no roofs, suggesting that the omission of a roof was a way of providing ventilation. The odor and small-sized toilets also made the use of toilets an unpleasant experience, unlike the bush, which would provide a convenient environment. The Njira project also attempted marketing sanitary platforms (*sanplat*) and dome slabs, but communities lacked models of the finished product. The slabs were displayed at TA offices, yet FGD participants claimed not to know about them. The study team did not directly observe people going "back to the bush" but deduced this from the number of non-functional latrines.

The qualitative team observed that it would be easy to resort to old ways of defecating in the bush if the community is not assisted to improve their toilet conditions. For example, Balaka District was declared open-defecation-free (ODF) in 2017, and TAs Ngokwe and Chikweo in Machinga District were declared ODF in 2018. During the time of the study, however, none of the ODF locations was living up to its ODF status because most people had no toilets. This observation aligns with the endline quantitative data: there was no statistically significant change in the percentage of households in target areas practicing open defecation, which hovered around 9 percent.

As an improved household hygiene measure, FGD members spoke highly of tippy taps—yet on the ground, few were seen, and their use had not become standard practice. The endline survey saw no significant change in the availability of soap and water at household handwashing stations; these were in place in only about 11 percent of households (Annex G). Where the tippy tap structures were available, the bottles were dry, with no indication of drops of water on the floor. Some FGD members reported that termites quickly attack the wood they use to build the taps, while others said the structures attracted children and were quickly destroyed.

In sum, the WASH interventions introduced through Njira were particularly successful in expanding access to clean water for project participants. The water point committees also demonstrated

community capacity to take ownership and manage this critical community service. The sanitation component produced mixed results, which reflect the complexity of achieving ODF in a sustainable manner. Njira reports that 70 communities in their districts were certified ODF (Njira Malawi n.d. WASH). Yet, these gains are easily reversed due to the challenges of maintaining sanitation facilities and most households' financial inability to invest in more stable and permanent sanitation structures (e.g., concrete lined pits, latrine shelters).

4.4 Purpose 3: Improved capacity to prepare for, manage, and respond to shocks

4.4.1 Results

Sub-purpose 3.1 Improved community and household assets for disaster mitigation

Southern Malawi is highly vulnerable to variable climate and extreme events. In the project districts it was difficult to isolate a "disaster" event as a discrete natural anomaly because, from the perspective of the local communities, localized disasters are phenomena that occur most years. It is in this context that Purpose 3 activities and outcomes are analyzed as local responses. On the other hand, at the Njira project level, large-scale natural disasters are discrete events that disrupt project activities and require immediate emergency response. Soon after project start-up in 2015, heavy rains with high winds covered southern Malawi and brought widespread flooding to project-area communities, and Njira participated in the emergency relief effort (PCI Malawi, 2015a). In 2016, El-Niño-influenced drought hit the region, and crops were decimated (USAID, 2017). The December 2018 heavy rains again brought severe flooding during the agricultural season, as many of the FGDs reported, and at the time of the qualitative study, a national fall armyworm emergency had been declared, requiring project response. While this sequence of extreme natural events may appear as ill fortune from a project perspective, at the local level such shocks are seen as standard fare—to the point that when FGD participants were asked to describe a memorable shock and the community response to it, the latest shock was always cited (rather than the great floods of 2015 or the drought of 2016).

The populations of Balaka and Machinga, for the most part, are asset-poor and food insecure, thus exceedingly vulnerable to extreme events. Even in a "normal" year, most rural households experience a shortage of food, precisely at the beginning of the rainy season and agricultural cycle. Focus group participants stated that during the lean season, they typically reduce household consumption, incorporate wild foods (e.g. native tubers, green mangoes) into their diet, sell animal assets, and engage in day labor (*ganyu*) in order to survive. Thus, the reality of the rural poor is chronic crisis and food uncertainty, which in shock years reaches critical levels. Without remittances or a non-agricultural income source (e.g., small business), most households are cash-poor with limited opportunities to earn income.

As perceived by project beneficiaries, shocks manifest themselves in several ways. Drought occurs when the December rains are late or poorly distributed (known locally as "dry spells"), and the moisture stress

effect on plants reduces productivity.[24] Flooding is also an annual shock, and the intensity of flooding depends upon the level of rainfall and the declivity (slope) of the landscape. Most communities visited by the qualitative team were located within watersheds, with hills on the high side of the village with a small, sometimes seasonal, watercourse at the low end. Annual runoff from the rains moves downhill and spills into the riverbed. Heavy rains increase the runoff speed and cause damage to the fields and homes in the water's pathway. Of course, the water carries soil, which not only results in soil erosion on productive lands but also in silt build-up in the river. Accumulative siltation decreases the volume of water that the riverbed can accommodate and, in most years, water spills over the riverbanks, destroying homes and irrigated fields near the river. This damage is quite localized, affecting those households on the coursing pathway and in the river plain. The other shock FGD participants identified is fall armyworm infestation, which is relatively recent to southern Malawi but highly destructive to maize and irrigated crops. It is now endemic in large parts of the two districts.

One of the exacerbating factors contributing to these natural disasters is the widespread deforestation of the hillsides and the consequent soil erosion that has sapped the land of its topsoil and fertility. Once-forested watersheds have not withstood the pressures of tree-cutting for firewood, charcoal-making, and building materials. Rainfall on hillside slopes rushes downward, destroying crops, carrying off soil, and damaging roads and buildings. As one of the consequences, crop yields are extremely low and decreasing. A second contributing factor is the scarcity of land and the small average farm size (in part a consequence of high population density). The lack of land and the chronic food insecurity force households to overuse the land, again leading to declining fertility and yields.

Purpose 3 was designed to address regularly occurring shocks such as drought and flood. In Malawi, a disaster management capacity exists at national, district, TA, and GVH levels. Njira mostly directly reinforced the local-level (GVH) capacity, working with the 15-member Village Civil Protection Committee (VCPC), but also coordinated closely with the ACPC (Area Civil Protection Committee) and the DCPC (District Civil Protection Committee). The GVH-level institution (VCPC) is thus an existing part of the structure of disaster management developed under GoM policy. The Njira project provided supplementary support to some extant VCPCs and organized new ones in villages where these were absent. Under the Njira approach, local villages elected the committee membership, but followed project criteria designed to assure the participation of key segments of village society (schoolteachers, youth, women, business owners, local leaders, etc.). The VCPCs underwent a three-day training in the GVH on the standard disaster risk reduction (DRR) framework of preparedness, response, and recovery. With follow-up trainings, the committees were assisted in the preparation of a disaster management plan and a disaster contingency plan. They were trained in the principles of an early warning system (EWS) and provided with a mobile phone, rain gauges, and river-height measuring tools, as well as devices used for early warning alerts. The role of the committee was to mitigate the extent of impact of imminent disaster by alerting households in vulnerable locations, assessing the resulting damage, informing higher-level authorities (at TA and district levels), and finally mobilizing the community to assist the victims (e.g., in rebuilding a home). The committee in some villages also created emergency

[24] Although Machinga and Balaka are major producers of maize, yields in these districts are below the national average of 1.2 tons/hectare due to erratic rainfall and poor soil productivity.

food banks with contributions from local households. Njira supported 80 VCPCs throughout the life of the project.

Among the 12 VCPCs (watershed committees) interviewed by the qualitative study team, there was significant variability in quality and performance. In the less organized committees, the members displayed little knowledge of their roles or why they were on the committee; others, however, had a collective sense of mission and pride in the importance of the service provided by the committee. Although the committees were trained in the elements of DRR—preparedness, response, and recovery, their effectiveness was conditioned by the type of shock. In the case of flooding and extreme storm events, the role of the committee was well established. They had access to and used climate forecasts; they consulted the rain gauges to monitor water levels; they mapped the particularly vulnerable parts of the village where exposed homes and gardens were located; and they employed systems of warning households when danger levels increased. In Sawali TA, in Balaka, the committee told of two incidents in early 2019 in which floods destroyed the homes and fields of two households, but with early warning the families were able to move to higher ground. The committee is responsible for transmitting damage reports to the GVH and TA levels so that an official response can be launched. To respond to such flooding incidents, the committee accessed the food bank to provide food support to the destitute families. Such stories were documented in several FGDs and in some cases, the committees mobilized raw materials and labor to assist in rebuilding damaged homes.

In one GVH in Machinga district, the VCPC organized an effort to resolve a persistent problem of riverbed siltation. In a wide, shallow river that regularly spilled out onto its banks, the committee used Food for Assets (FFA) activities to excavate the soil from the riverbed and use it to build agricultural fields away from the riverbank. Overall, the committees had skills and experience directly applicable to the situation of flood, runoff, and severe storms. With drought and fall armyworm, the capacity to respond and recover was more limited, and the committees performed a damage assessment and information transfer role. In sum, the more localized and concrete the shock was, the more effective the response.

The members of the VCPC often overlapped with those of the village NRM (“watershed”) committee, and indeed the two committees seemed to work in tandem. The watershed committee was constituted and trained to organize and manage rural construction interventions designed to reduce runoff, capture water behind and within rural structures, and maximize the amount of moisture retained in the soil. In the course of the project, nearly 7,553 hectares of land in 20 watersheds were rehabilitated, and in 13 of these watersheds, the committees continue to function post-Njira. The NRM committees also organized afforestation activities. Local communities organized their own nurseries to produce seedlings, which were transplanted to deforested regions. More than 2,800 hectares of forests were established and managed by community forestry committees (PCI 2019c).

The technical assistance for the selection of the watershed and the actual design of the individual watershed structures was provided by PCI under contract to an outside environmental firm. Once these were designed, Njira provided multiple trainings to committee members on the technical components under their responsibility (such as forest management, rural structures, etc.), and Njira staff, together with GoM staff, frequently visited each community, monitored the progress, and helped solve the

problems that would arise. The FGDs consistently stated that project and government support was an important factor in the work of the committees.

The water and soil conservation designs included the construction of check dams, contour walls, "live fences" using varieties of grasses on the edges of continuous contour trenches, and planting depressions to capture rainwater. With the afforestation activities, participating villages created their own nurseries of various species, including fruit trees (mango, papaya, etc.) and native species. The forestry seedlings were transplanted into community forest lands, and a set of bylaws for forestry management was prepared and disseminated among village residents. A village forestry committee was tasked with enforcing the bylaws and with protecting the spontaneous seedlings that appeared in the forest. To encourage renewable uses of the forest, the project also introduced beekeeping as an income source for groups and individuals. Participants were trained in apiculture and a number of beneficiaries received starter beehives. In several cases, the beekeeping intervention was successful in generating income, but project resources for scaling up this activity seemed to be limited.

Both the rural construction and reforestation interventions utilized FFA rations as an incentive for mobilizing the necessary participation. Individuals were recruited from the local villages and worked for 12 or 21 days on these projects, receiving as compensation a food ration of beans (15 kg) and cooking oil (4 liters). Access to the food ration during this time of the year (prior to the rainy season) was highly valued by participants.

The watershed and reforestation interventions generated highly lauded results in some of the sites visited by the qualitative study team, particularly Simbota GVH in Balaka district.[25] Here as elsewhere, the watershed committee mobilized community members to protect around 300 ha of land, and there was uniform agreement that as a result of their efforts, damage related to runoff was eliminated, soil moisture levels increased, crop yields significantly improved, and community forests were reestablished. In addition, the capture of surface water in the upland structures reduced the volume of water reaching the streambeds and thus decreased the incidence of flooding. In all, PCI reports that over 7,500 ha of watershed received the water and soil conservation interventions, and over 2,100 ha of land were reforested (Njira Malawi n.d. Disaster Risk Management).

In each FGD, participants in the watershed committees were asked to describe the production impacts of the rural watershed structures. The most common response was to compare the number of 50-kg sacks of maize harvested from the farm prior to and after the project interventions. One farmer stated that on his half-acre, production went from 15 to 25 sacks of maize (Mawinda, Nyambi); a female member (Nyama, Chikweo) said that on her half-acre, production increased from 5 to 10 sacks; and another (Khungwa, Ngokwe) saw yields increase from 15 to 22 sacks. One farmer summed up the impacts: *"Before the project we did not know anything regarding water harvesting, nor did we know the gains that are attached to irrigation farming. The coming of the project has opened our eyes and with the new farming technologies we are able to maximize our production."*

[25] The team did not visit another oft-cited example of significant impact in Khole GVH, in Machinga District, where 229 ha had been recuperated with rural structures and are successfully managed by the community, according to website information (https://www.pciglobal.org/restoring-lands-and-livelihoods-in-malawi/).

Not all the villages recorded these successes. The qualitative study team visited several villages in which the watershed committees were inactive, where water and soil conservation activities had ceased once the FFA rations were discontinued. In one GVH in Machinga, only 30 ha of the intended 300 ha had been treated. The community attributed this to lack of project resources, but also to weak community leadership.

All in all, most focus groups reported significant progress in the protection of watershed resources and in the recovery of community forests. Similarly, the VCPC members attributed value to the learning and capacity they had acquired, displayed confidence in their early warning systems, and felt better prepared to deal with future shocks. It is this confidence in their own problem-solving capacity, displayed in many of the FGDs, that is a lasting impact of Purpose 3 activities.

Sub-purpose 3.2 Improved institutional support of disaster risk management structures and risk reduction practices at all levels (community, district, and national)

For Purpose 3, PCI and Emmanuel International staff worked closely with GoM staff, including the district disaster officer, land resource officer, and forestry officer, as well as counterpart facilitators at the GVH and VDC levels. Njira personnel developed manuals for disaster risk reduction that were distributed at district, area, and local levels. The project developed a system for identifying and mapping disaster hotspots and for disseminating disaster-related information centrally at the GVH *Ubwino* centers. According to a KII at the district level, the Njira project succeeded in generating a "new dialogue" between project and government staff regarding disaster risk management. From the participant perspective, there was a strong sense that the Njira communities have achieved a level of visibility not enjoyed in the past.[26] The *Ubwino* centers in the GVHs visited by the qualitative study team were functioning as points of community interaction and information sharing. This communal space played an important role in focusing community attention on project activities, documenting successes, and serving as a contact point for visitors and GoM staff. The regular presence of the "dynamic teams" working with the different groups, organizing training, and listening to the participants constituted a form of interaction that was unprecedented for most development projects. The project provided new access to external actors and institutions and their benefits: climate forecasts, early warning systems, systematic training of both the VCPC and the watershed committee members, external watershed expertise to design the rural infrastructure interventions, and collaborative problem-solving processes. Such multi-stranded and consistent institutional support seems likely to enhance the continuity of these community initiatives in the post-project phase.[27]

Sub-purpose 3.3 Enhanced community empowerment in managing disasters

One of the most visible accomplishments of the Njira project was its success in empowering local residents to manage disasters. In 2019, PCI reported that 13 of 20 committees continue to function without project inputs and assistance, but with GoM technical assistance. Around half the focus groups

[26] It was refreshing to hear the wry comments of the FGD participants regarding the constant presence of the project and GoM personnel in the village. Some said: "They come every day, it seems;" "They are always here;" "We never get a break." These were made in jest, of course, and the satisfaction in receiving this attention could not be hidden.

[27] According to PCI senior staff, the success of the Simbota and Khole watershed management initiatives has already attracted the attention of outside donors, including the World Bank.

interviewed in the two districts stated that they had continued and even expanded the watershed interventions in their watershed, including tree planting. Some stated that they had started a food bank or a seed bank to support local disaster victims. In Nyama GVH (Chikweo TA), where a major watershed effort had been completed, FGD participants talked about their accomplishments, pointing to the check dams, trenches, and newly emerging woodlands – laughing about the FFA mobilization and sharing anecdotes. The sense of pride in a collective problem-solving outcome was far greater than the value of the food, and it seemed highly likely that such collective action would continue as participants pointed to an area of the watershed that would be tackled next. This community, like the one in Simbota, displayed a conviction that the management of the watershed was of their ownership. As one FGD participant in Machenga GVH (TA Nsamala) stated: *"The problems that we face are ours. The Njira project only facilitated strategies in the alleviation of the suffering and empowering communities with skills. Therefore, we will continue with the activities because we have seen the benefits."*

4.4.2 Conclusions

The focus group sessions and visits to watershed project sites support a conclusion that Purpose 3 achieved lasting change and improvement in a number of the project villages. Such success was not uniform across the districts, and in some GVHs the beneficiaries did not fully understand or embrace the approach of the project. It is to be expected that in an area of chronic vulnerability and food insecurity not all beneficiaries will accept a suite of interventions that focus on training, capacity building, planning, community mobilization, and collective action. Some dismissed the ultimate value of these activities and once the assets disappeared, so too did their interest and participation. But in most of the 20 GVHs with watershed interventions, this component of the project had concrete positive impacts on the food security and resilience of many beneficiaries and succeeded in instilling a sense of self-confidence in collective problem-solving, even under trying circumstances.

4.5 Unintended Outcomes

A project like Njira sometimes yields outcomes that were neither anticipated nor intended. They lie "outside" the theory of change and can be seen as positive or negative in terms of overall project goals. The study team did not identify a large number of unintended outcomes. Several FGDs cited the fact that the watershed interventions, while improving availability of moisture upslope, had reduced the amount of water reaching the lowland rice fields. Others stated that they followed project recommendations regarding pigeon pea cultivation as a cash crop, only to discover that the market had deteriorated, causing a drop in income. Another Purpose 1 unintended outcome was the precarious status of the irrigated perimeters once the project ended due to agreements regulating land use. In a FGD in Mgwira (Sawali), the landowner who had provided access to irrigated plots free of charge was now exacting rent for use of the land. Interviews with a GVH traditional chief in Nsamala confirmed that this was a source of tension and conflict. He stated that the negotiated memorandum of understanding (MOU) with the landowner did not have a timeframe, as the landowner alleged.

With regard to Purpose 2 interventions, there emerged issues of workload distribution, which proved to be overly burdensome, especially among female participants. The layering of interventions from the three project purposes required the active participation of household members in several activities so that they could benefit from the integrated nature of the project. Women who worked as care group

leaders (lead mothers) were also expected to join other groups such as watershed conservation groups and WE/VSLs. At the same time, lead mothers were training neighbor women and other households on hygiene practices, childcare, food preparation, and recommended feeding practices. Due to time constraints and the multiplicity of activities, lead mothers could not complete their annual work plans. Sometimes project activities displaced households' time needed to attend to their own livelihoods as well: for example, watershed conservation activities took 20 continuous days to complete a cycle; therefore, household members could not participate in other productive activities to support their livelihoods.

4.6 Factors Contributing to Outcomes

4.6.1 External Contextual Factors

Inconsistencies between the quantitative and qualitative findings have been noted throughout the preceding analysis. Moreover, the comparison of key indicator values between the baseline and endline surveys suggests that households in the region did not experience a clear increase in food and nutritional well-being at the end of the project. It is important to recognize that the differences between the baseline and the endline cannot be interpreted as a trend. To the contrary, these two surveys represent independent events at two different points in time. While it is always intended that the activities of a project, such as Njira, will signal lasting improvements in well-being of the targeted population, such expected outcomes can be undermined by external factors, such as environmental shocks, that lie outside the reach of any project theory of change. Thus, differences between baseline and endline must be interpreted within the overall context within which the project was implemented. The contextual factors affecting Njira project outcomes are discussed in this section.

One such factor is the intrinsic nature of rural vulnerability in Malawi and particularly the rainfed agriculture livelihoods in the southern districts where Njira was implemented. During most years, the poor and very poor households in Balaka and Machinga are subject to harsh food security challenges. The semi-arid climate typical of southern Malawi is characterized by a distinct rainy season that is highly variable in terms of interannual, inter-spatial, and intra-seasonal distribution. Such factors as the onset of the rainy season (typically October-November), the frequency of rainfall episodes, and the total amount of rainfall are key to agricultural production and food security outcomes in any year (FEWS NET 2018a-b, 2017a-b, 2016, 2015).

The poor and very poor household livelihoods by definition are highly resource constrained (primarily land) and cash-poor. Even in a season of adequate and well-distributed rains, most households are not able to produce adequate food supplies that last the entire year and thus experience a lean season that lasts around 4-5 months (November-March), with a range of 2 – 8 months (World Food Programme, n.d.). Some of the more advantaged households can complement the rainfed harvest with production in lowland fields that retain residual moisture or have access to irrigation; most families, however, resort to *ganyu*, which is day labor either on the farms of wealthier households, the demand for which is also affected by rainfall patterns, or in off-farm unskilled activities. Many households also sell their small animals to cover food expenses, and distress sales in a bad year can erode scarce household resources. Thus, the length of the lean season is determined by household production levels, and when these are

exhausted, it is necessary to acquire basic foodstuffs in local markets. Few income-earning opportunities and general household cash scarcity limit participation in markets and access to food.

Table 4 shows the extent of the lean season and the magnitude of the food gap (in metric tons of maize) for the poorer households in Balaka and Machinga districts. In each year, the situation required a response from GoM and partners in the form of direct food aid (and cash transfers) and the injection of national food stocks into local markets to reduce food prices (MVAC Bulletins 2015-19).

Table 4: Impacts of interannual stress and shocks faced by households in Balaka and Machinga districts (2015-19)

District/ Year	2014-15		2015-16		2016-17		2017-18[b]		2018-19	
	Food gap (months)	Maize[a] (000 mt)	Food gap (months)	Maize (000 mt)	Food gap (months)	Maize (000 mt)	Food gap (months)	IPC=2, 3 (%)	Food gap (months)	Maize (000 mt)
Balaka	4	1.06	5	8.4	8	26.7	4	52	6	10.0
Machinga	3	.99	6	6.2	6	27.4	2	35	5	9.4
Cause	Early flooding		El Niño drought		Dry spells, fall armyworm		Normal rains		Dry spells, fall armyworm, Cyclone Idai	

Sources: MVAC Annual Bulletins 2014-2019; FEWS NET, 2018a-b, 2017a-b, 2016, 2015)

a/ The "maize" columns refer to the gap in maize availability relative to need, thus, the injection into the economy via markets or food aid.

b/ In this year, the assessment adopted the Integrated Phase Classification (IPC), rather than representing food insecurity in terms of amount of maize needed. IPC 2 indicates "severe" and IPC 3 is "crisis" level of food insecurity.

Heavy rainfall in late 2014, at the initial phase of the project, produced flooding and run-off damage resulting in the displacement of 175,000 families, mostly in the southern districts (FEWS NET, 2015). Over 50,000 families in Balaka and over 58,000 families in Machinga were affected. An unusually strong El Niño event resulted in severe dryness for the 2015-16 agricultural year and created a crisis situation throughout the southern region. Over 300,000 families in Balaka and 450,000 families in Machinga suffered production losses (MVAC 2016-17), resulting in a major international humanitarian effort. This crisis blended into the following year in which erratic rains and the fall armyworm were responsible for a large food gap throughout the southern districts. The only "normal" year in this five-year sequence was the rainy season in 2017, which produced favorable production outcomes for most farmers. In the last full year of the project (2018-19), the devastating Cyclone Idai hit Mozambique and continued on to southern Malawi bringing early heavy rains followed by dry spells and lower than average harvests.

Since most households must purchase their food during the lean season, market prices for staple foods play a critical role in maintaining food security. The GoM, through MVAC, monitors the food availability of key staples prior to the lean season, assesses food gaps and needs, and uses national stocks or food aid to reduce the pressure on food prices. Analysis of price series data provided by FEWS NET (FEWS NET 2018a-b, 2017a-b, 2016, 2015) shows that prices for maize in the Balaka market tend to increase 30-45 percent comparing the lean season months (September to March) with the months immediately following the harvest (April to June). The GoM seeks to reduce this price impact through food aid distributions to the most vulnerable households.

The interannual variation reveals a number of more severe price shocks for Balaka households. Price spikes for maize were registered in the FEWS NET price series in the harvests of 2015-16 and 2018-19,

with increases of almost 40 and 20 percent, respectively, above the five-year average. During these years, the price of maize remained high for most months of the year. On the other hand, the 2016-17 crisis presented in **Table 4** was not reflected in the price data, perhaps due to effective GoM intervention in the market. The price data (see **Table 5**) appear to suggest that the factors governing market forces and price variability are due to internal production failures associated with local shocks and not a result of external market or currency exchange factors. It is likely, however, that a major production collapse, as in 2015-16, stresses national stocks and the ability to import sufficient amounts of food, thus pushing prices to crisis level for households dependent upon the market for their consumption.

Table 5: Average monthly prices for maize, Balaka, 2015-19 (MKW/kilo)

	Jan	Feb	Mar	Apr	Mat	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average
	Lean season									Lean season			
				Harvest rainfed crops					Harvest irrigated crops				
2015	116	113	113	141	147	140	141	152	151	156	191	183	145
2016	243	298	279	171	192	248	260	261	240	240	255	243	244
2017	201	188	169	149	125	124	131	132	128	110	110	113	140
2018	133	151	147	120	112	113	121	145	150	150	160	180	140
2019	183	200	185	165	150	154	219	240	240	246	248	337	214
2015-2019 average	*175*	*190*	*178*	*149*	*145*	*156*	*174*	*186*	*182*	*180*	*193*	*211*	*177*

Source: FEWS NET price series 2015-2019

The World Food Programme, in an analysis of food security crises over the period 2011-19, compared 279 TAs focusing on crises caused by dry spells and flooding (WFP, n.d.). In this study, 39 TAs (one third of the southern region, including Balaka) experienced dry spells in 7-9 years; about one quarter of the southern TAs suffered floods in 3-4 years over this time span (WFP n.d.). These data reveal a persistence and magnitude of shocks and stress that test the impact limits of any development project. Besides a lack of basic foodstuffs, households commonly face increased market prices and resort to distress sales of animals (a form of depletion of savings), and the MVAC reports show that global acute malnutrition (GAM), a key child nutrition indicator, tended to worsen during extended crises.

In sum, most years are a struggle for poor and very poor households, and any further disruption related to climate, price spikes, or pests can seriously set back the progress made in one or another project intervention. Some Njira activities are more impervious to these kinds of stresses and shocks, particularly those that focus on new knowledge, such as many of the Purpose 2 health and hygiene messages. A similar argument is made for those interventions that seek to build sustainable resilience to certain shocks, such as constructing watershed management infrastructure. In the final accounting, however, the external shocks described above pose constraints to the achievement of food and nutritional security and can neutralize the benefits of project activities in any given year. Differences in quantitative indicators between baseline and endline do not represent a trend; they are simply the status of various measures at two points in time. In any given year over the LOA, performance on different indicators may have improved or worsened due to the influence of local conditions.

4.6.2 Internal Implementation Factors

Internal implementation factors affecting Njira project outcomes include the appropriateness of the project design, effective partnerships, quality of staff, and a number of contextual factors, often unanticipated. This evaluation has concluded that overall, based on internal project monitoring and qualitative interviews, the Njira project achieved most of its goals toward an improved food security for the participant population. This is not to deny, however, that the project encountered a range of difficulties that limited the scope and sustainability of its successes.

From the perspective of the qualitative study team, an important design factor that contributed to the successful outcomes of Njira was the ability to layer project interventions effectively, particularly P1 and P2 beneficiaries and P1 and P3 beneficiaries. According to PCI communications, 43,451 of the total number of Njira beneficiary households (115,000) reached by Njira participated in more than one purpose and even more in multiple interventions within specific purposes (PCI Malawi, n.d. PowerPoint presentation on beneficiary overlap). The "dynamic team" approach, in which field facilitators representing different purposes worked together in both activity planning and field visits, contributed significantly to project outcomes.

Complementary to the effort to layer interventions at the household beneficiary level, Njira's innovative strategy was to situate a more-intensive layering within individual villages, which would each serve as a type of model or demonstration village. At the beginning of the project, eleven "learning villages" were selected as project sites where the intervention activities represented all three purposes (PCI Malawi 2019d). In a sense, the intensity of a wide-ranging project presence in these villages was a demonstration of the theory of change in action. The intent of the learning village was to stimulate a dynamic diffusion of innovative technologies, important messages, and local institutions of collective action. The 2019 assessment (ibid. 2019d) stated that the change process promoted in these villages reached 150 other villages, but it is not clear if these were villages with an active project presence. While, on the one hand, the learning village effectively demonstrated the value of this intensive, multi-sectoral approach, the qualitative study team did not find strong evidence of widespread spill-over of Njira benefits to the non-participant villages.[28]

A second contributing factor was the close partnership with GoM counterparts at district, TA, sub-TA, and GVH levels. During the project lifetime, the frequency of visits by project and GoM staff gave high visibility to the project and promoted community empowerment and ownership. GoM agricultural extension officers and HSAs were integral elements in the implementation of the project interventions.

The inherent tensions between asset interventions (which most participants prefer) and capacity-building interventions (e.g., training, collective action) were present in Njira, but the insistence on knowledge and skills was a contributing factor to positive project outcomes. At the end of the day, when no further material project inputs were forthcoming, there was a body of technical knowledge in agricultural production, NRM, childcare, nutrition, and sanitation that will prove valuable into the distant future. The use of the cascade method of knowledge dissemination through lead farmers, lead mothers, cluster leaders, neighborhood leaders, and so forth, is sometimes limited in terms of the

[28] For example, in a Machinga FGD with representatives from non-participant villages, there was little evidence of spillover impact, even though people were familiar with project activities and had visited the demonstration sites.

quality of the message at the end of the chain, but it did maximize the reach of the important project messages.

On the other hand, the difficulties with Njira were multiple, and tied to factors both internal and external to the control of PCI. There was late recruitment of field staff and delays in procurement, such as procurement of motorcycles. A series of start-up workshops conducted at the mission level as well as the three-month delay in the arrival of approved Community Development Fund money contributed to the slow roll-out. As described above, a sequence of natural shocks required Njira to focus attention on emergency relief efforts. The major floods in 2014-15 resulted in the OFDA-funded Njira Emergency Response Project, which diverted project staff into emergency relief operations. Failed rains in the 2016 season prompted a national declaration of emergency, which again slowed the start-up activities of Njira.

In the second quarter of FY16, field staffing levels were nearly doubled, and the frequency of visits and trainings was increased to meet indicator targets. For approximately the next six quarters, Njira functioned at a very intense level. In many cases, this concentrated effort resulted in improvements to the lives of project participants such as in the cases of crop production and WE/VSLs.

In the final year, staffing levels were reduced along with the frequency of visits, due to budget constraints and achievement of indicator targets. These reductions caused Njira to phase out somewhat too abruptly at the village level without an adequate preparation of the community beneficiaries. Project staff stopped routine visits, which was not fully understood at local level. However, Njira made a strong effort to promote a sustainable transition at the district level, including passing equipment, such as motorcycles, to GoM field staff.

The main factor limiting the outcomes of Njira is the entrenched level of poverty in the Njira region itself. The targeting discussion above suggests that perhaps there was not a clear participation pathway for the poorest residents of the region. They were unable to participate in groups, spend time on project trainings, or join a VSL group because of the more urgent demands of survival. Perhaps the scope of Njira's impact was limited when faced with large numbers of households with less than an acre of land in a semi-arid, drought-stricken environment.

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

4.7.1 Results

In the area of Njira project influence, the population faces chronic food security stress due to a combination of erratic rainfall, depleted soil fertility, insufficient landholdings, and lack of income diversification opportunities. Annually, most families face the lean season, around 4-6 months beginning in October. Even in a normal year, a household faces declining food stocks during this period. The magnitude of food security stress is determined by the outcomes of the agricultural season. When unanticipated shocks disrupt the agricultural cycle, the lean season becomes a period of crisis. As described above, this occurred during the project lifetime with extensive flooding (2015), drought (2016, 2017), and fall armyworm (2019).

To prepare for and mitigate the impacts of such food security crises, Njira promoted a disaster preparedness plan and early warning system in 80 GVHs that reduced the risk of mortality from floods and storms. At the same time, the project increased local-level ability to mitigate the impacts of flooding and drought through its watershed interventions. According to FGD participants, afforestation of hillsides and slopes and the community management of local woodlands had a strong mitigating impact on flooding and concomitant soil loss. Similar mitigating outcomes were attributed to riverbank restoration and desiltation of local riverbeds. The management of rainwater and floodwaters also had an adaptation impact by increasing cultivated area near floodplains and enhancing moisture in the soils behind rural structures (e.g., via continuous contour trenches, stone bunds).

Adaptation outcomes were achieved directly with Purpose 1 interventions, expanding irrigation access and climate-smart agriculture techniques, and indirectly through VSLs and farm sales as sources of additional household income.

4.7.2 Conclusions

Perhaps the most lasting adaptation outcome of the project will be the empowerment of the local communities to solve their own problems. In many FGD sessions, the participants pointed out they had learned new skills that had become part of their adaptation "toolkit." Although the project has ceased activities, much of this new knowledge is still being applied.

4.8 Beneficiary Satisfaction

4.8.1 Results

Overall, the FGDs suggest that Njira, with its many stakeholders, facilitators, and activities, became a source of pride to the villages that participated. From this general perspective, beneficiary satisfaction was high, and the villages were disappointed when activities ceased.

Yet in such a multidimensional project as Njira, significant variability in participants' satisfaction levels is to be expected. This is especially true of Njira since not all participant groups clearly understood the activities when choosing to participate in one or another intervention. Information gathered in FGDs indicated differences in satisfaction regarding specific interventions for a plethora of reasons. With regard to Purpose 1 and its many interventions, the level of satisfaction can be classified into three categories, as summarized in **Table 6**.

Table 6: Beneficiary satisfaction with Purpose 1 interventions

Satisfiers	Dissatisfiers	Mixed
• VSLs • Demonstration plots • Conservation agriculture, ridge spacing, seed spacing, single-seed sowing, mulching • Food rations for mothers' groups often mentioned	• Agribusiness, especially inability to find buyers or get a good price in a timely manner • Amount of seeds provided was often too little, too late	• Treadle pumps • Cook stoves • Livestock • Irrigation • Demonstration plots • Extension • Training

Satisfiers	Dissatisfiers	Mixed
• Sweet potato vines • Pigeon peas, hybrid maize, cow peas • Watersheds (moister soil) • Kitchen gardens	• Generally late arrivals of inputs	

It is important to observe that satisfaction with a given intervention was not only based on the intrinsic value or effectiveness of that activity, but on other factors as well. From the FGDs, it seems that participants evaluated interventions on four crosscutting criteria:

1) **Interventions with clear, direct results:** Project participants found satisfaction in simple, sustainable, and clearly explained activities that increased their yields and access to money. Activities that fell into this category were WE/VSLs, conservation farming techniques, sweet potato vines, kitchen gardens and watershed management. These most-satisfying activities were perceived to be fairly administered, how they worked was clearly and consistently communicated, and there was little or no barrier to being included.

2) **Perceived fairness:** If the participant felt they had benefited from an aspect of the project, they were satisfied to some degree. But the degree of satisfaction was tempered by their perception of the distribution of benefits – did a neighbor get more? Should they have received more? If the beneficiary felt their neighbor had received a greater benefit, they were less satisfied with the benefit that they had received. So, a person may have been satisfied receiving chickens, except that his neighbor did better by receiving goats. Or, a treadle pump was better than no pump, but far less desirable than a motorized pump. This relative benefit phenomenon caused largely successful activities, such as irrigation and livestock, to receive mixed reviews from FGD participants.

3) **Adequate communication:** Communication by field staff with project participants was a major factor affecting beneficiary satisfaction. The uneven quality of interactions between extension workers and participants led to miscommunication that resulted in frustration and dissatisfaction among some FGD participants. When there was difficulty marketing pigeon peas, FGD participants said they felt Njira facilitators should have communicated more frequently and offered solutions. When the WE/VSLs were set up, some men dropped out of the activity because they felt the activity was for women only. There was continued confusion related to the delivery and use of inputs such as seeds and fertilizer for demonstration plots.

4) **Inclusiveness:** Layering allowed project participants to be included in several activities, but not all activities. Not all PLW received food rations. Some farmers' lands were not close enough to be included in irrigation schemes. The livestock distributions were limited and not all project participants could benefit from the pass-along. Those who were not included in an activity, for reasons ranging from budget constraints to appropriateness to communication, were less satisfied than those who were included.

For Purposes 2 and 3, beneficiary satisfaction was more consistently positive. Care groups, lead mothers, PLW, VCPC members, and watershed committee members expressed satisfaction both with the

outcomes (e.g., knowledge, protected watersheds, and moister soils) and with the access to training and capacity building.

For WASH, FGD members expressed satisfaction with availability of water in boreholes that had not provided water for a long time. Training of members from within the community as WPCs to do simple maintenance of boreholes was a big achievement for them and a major satisfier.

FGD participants were satisfied with the messages and encouragement of each household to own a pit latrine. Many families were happy that for the first time, they felt respect associated with using their own latrine. The only challenge is the quality of latrines that easily collapse during the rainy season. To show their commitment, many households replace the toilets after the rains.

4.8.2 Conclusions

It is true that not all participants received their preferred inputs, some had to pay rent for irrigated plots, and some did not like the cessation of the FFP rations, but in general, Njira was seen with positive eyes by the beneficiaries, particularly for the new knowledge that had been assimilated. For many participants, the disappointment lay more with what they experienced as an abrupt end to the project, as discussed below.

4.9 Coordination

Prior to implementation, Njira was approved at the district level in Balaka and Machinga, with sign-off from the respective District Commissioners, District Planning Directors, and District Agriculture Development Officers. Approval was preceded by review and approval by the District Council. These approval measures were designed to foster coordination and reduce duplication in targeting. In Balaka, Njira was part of the District Nutrition Coordinating Committee.

The Njira management team was adept in situating the project within the broader development activities occurring in the targeted region. Early on, an institutional mapping exercise was conducted to better situate Njira within the activities of many development actors. The complexity of the project required multiple partnerships with public and private organizations to achieve specific intervention goals. For example, Agricare was contracted to identify watershed sites for rehabilitation interventions; Total Land Care (TLC) was engaged for the efficient cooking stove component; World Food Programme (WFP) was engaged in coordinating various food distribution activities; and Njira worked with Feed the Future projects such as Integrating Nutrition into Value Chains (INVC), which supported the care group activities. Njira was highly proactive and successful in identifying multiple sources of technical expertise and creating effective partnerships that gave the beneficiary communities greater visibility and access to external resources.

KIIs with district-level staff, particularly in Balaka District, underscored the effectiveness of the partnership between Njira and the GoM. From district to field level there was a comprehensive training program, joint decision-making and field planning, and field team visits. One district officer in Balaka said that the partnership “created a new dialogue.” In an interview with Agricultural Extension Officers, they spoke of the effective exchange of skills. The study team visited several of the extension field

centers accompanied by former Njira staff, and the easy, familiar interaction of the field facilitators indicated a close working relationship over several years.

At implementation level, the project formed community committees based on the specific project purpose. These committees linked their activities so that the layering (integrating) of project interventions was achieved. Project staff worked hand-in-hand with frontline government extension workers during training sessions, review meetings, and supervision of activities to ensure the visibility and continuity of interventions. Local leaders such as Group Village Heads supported project facilitators, promoters, lead mothers, lead farmers, and male champions during activity implementation by negotiating conflict, disciplining troublemakers and meting out fines on offenders, for example for illegal extraction from the woodlands.

Coordination was effective between project staff and GoM counterparts at both the planning level and in field implementation. Vertical coordination from managers, technical officers, field coordinators, and field facilitators also functioned effectively for the most part. Finally, with the dynamic teams, there was effective horizontal coordination across the three purposes.

4.10 Gender Considerations

The Njira project had a heavy focus on gender participation, relevance, status, and equality. At the beginning of the project, PCI conducted a qualitative gender analysis to assess culturally-defined gender roles and barriers that might impede women's participation in the project, to identify unintended sources of harm related to gender-based violence, to document gender domains of household decision-making, and to understand the public roles of women in society (PCI Malawi, 2016a). This study contributed to the programming of interventions and the implementation of project activities. The targeting of beneficiaries and the dynamics of process within the project assured that men and women shared in the activities of Njira, that the interventions were relevant and appropriate to the specific experience of women, and that the status of women in public and within the household was highlighted. The ownership and management of project activities specifically involved women, and the unequal nature of male-female traditional relationships within the household was strategically challenged through training, messaging, and negotiation.

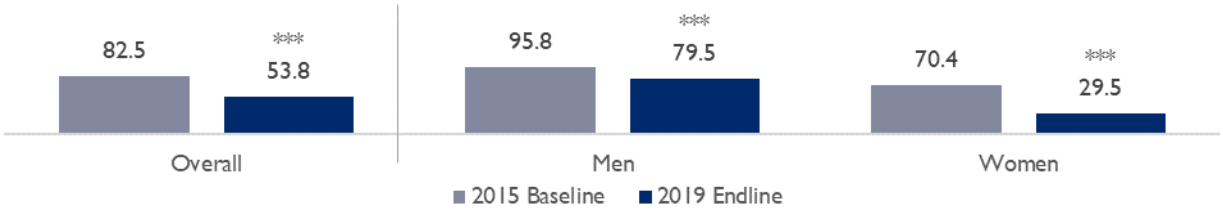
The quantitative survey evaluated gender status through two sets of cross-cutting gender indicators on self-earned cash and maternal and child health knowledge and practices. This section describes selected indicators and the survey results.

Self-earned cash: Measuring the extent to which men and women earn cash is important because women who earn more cash contribute more to household finances, potentially increasing their household decision-making authority. Cash is thus a pathway to women's empowerment and gender equality. Because women are more likely to perform unpaid work or work for in-kind payment, this indicator may understate the extent of women's work in the project areas.

The PBS results show that the percentage of men and women married or in union who earned cash in the past 12 months was substantially lower at endline (**Figure 12**). This drop was especially severe for women. These results conflict with the qualitative findings from FGDs, which suggest that interventions targeting women, such as the irrigation plots and the WE/VSL had in fact increased women's access to

income. In support of this conclusion, the 2018 annual beneficiary-based survey carried out by PCI documented that the percent of women beneficiaries having earned cash income in the last 12 months increased from 61 percent at baseline to 81 percent at endline (the endline figure for men was also 81 percent) (PCI, 2019c).

Figure 12: Percentage of men and women married or in union who earned cash in the past 12 months



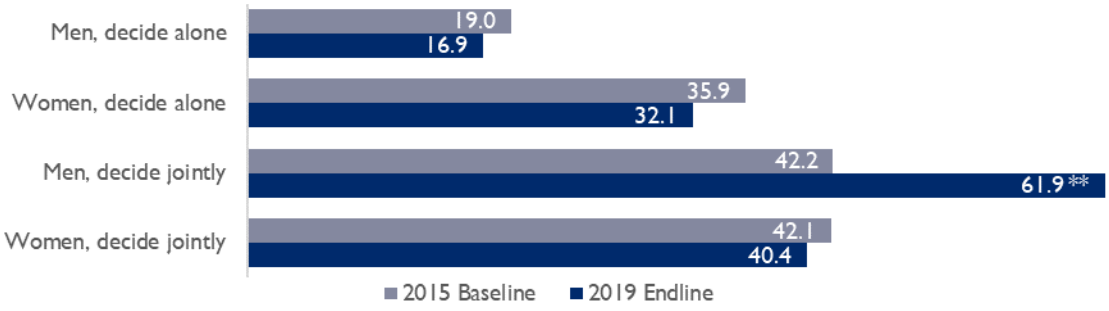
+ p<0.1,* p<0.05, ** p<0.01, *** p<0.001

MCHN decision-making: Njira provided several trainings and orientations to promote the participation of fathers in MCHN understanding and childcare. Over 800 fathers received this training (PCI Malawi n.d. Njira RMNCH, project document). The four MCHN practices of focus in Njira are: making at least four antenatal care visits; eating more during pregnancy; initiating breastfeeding early; and introducing complementary foods at six months of age. These practices are relevant to the 1,000-day window from pregnancy to a child's second birthday.

The expectation for MCHN decision-making indicators is that women should have more responsibility for making health decisions for themselves and their children. Thus, an increase in women and a decrease is men making decisions alone is considered a positive change. For joint decision-making, which is encouraged, higher rates among both men and women indicate improvement.

The survey results indicate a significant increase from baseline to endline in the percentage of fathers of CU2 who report making MCHN decisions jointly with a spouse or partner (see **Figure 13**), which was one of the main messages of the Njira father group orientation. No other significant differences were found.

Figure 13: Decision-making about child health and nutrition by men and women in union with CU2



+ p<0.1,* p<0.05, ** p<0.01, *** p<0.001

Both the quantitative and qualitative data contain evidence of strong gender integration and balance in project activities. There was significant female participation in leadership roles (including lead farmers) across all three purposes. As important was the participation of males in those realms that mostly affect women, such as gender-based violence, domestic conflict, and realignment of male and female roles within the household. The project encouraged the participation of persons of different sexes in leadership roles for different committees. This was reflected in the use of village heads to select male advocates to reduce domestic violence among married couples, which increased the enrollment of men in care group activities. The establishment of care groups also provided women opportunities to be lead

mothers and to participate in the leadership and running of the project. The project also promoted the concept of "male champions," who were chosen from among the communities to mediate and promote gender equality and equal participation among men and women in project activities. Similarly, for WASH, the WPCs included both men and women who were trained in borehole and water point management. Women's participation in borehole maintenance, initially perceived as men's work, gave real examples of equal participation among men and women, and gave recognition to the women in the community.

These arrangements mainstreamed gender issues into the Njira project. Men in FGDs stated that they were now more confident escorting their wives to antenatal clinics or taking their children to growth monitoring sessions—activities that men were not expected to do before the project was implemented.

4.11 Environmental Considerations

In the project districts, the livelihoods of the population are intricately linked to the vagaries of the environment, and environmental factors directly determine the well-being outcomes of households each year. A major design component of Njira was to enhance the adaptive capacity of communities living in a semi-arid environment by promoting sustainable uses of natural resources to counteract ongoing deforestation and soil degradation. Thus Purposes 1 and 3 sought to change the society-environment relationship by making natural resources more productive and mitigating the destructive potential of Nature. Purpose 1 sought to enhance soil fertility, improve the genetic potential of inputs, and compensate the erratic rainfall with small-scale irrigation. Purpose 3 interventions replenished the woodlands, directed rainwater into the soil, and repaired silted river systems. From the study team's perspective, the Njira project effectively incorporated environment characteristics into its design and developed a sustainable approach that enhanced the quality of the environment.

4.12 Sustainability

4.12.1 Findings

A major objective of the qualitative study was to determine the likelihood that Njira outcomes will survive the end of the project. A review of 12 FFP projects has identified a conceptual framework for predicting the sustainability of project outcomes (FANTA III, 2015b) that is relevant to the Njira evaluation. The key factors for sustainability include a sustained source of resources, sustained technical and managerial capacity of service providers (e.g., GoM), sustained motivation and incentives, and sustained linkages to other organizations or entities that can continue to promote institutions and practices introduced by project. These conceptual elements are present to one extent or another in the Njira exit strategy.

In general terms, the qualitative study team identified three major conditioning factors that contribute to outcome and impact sustainability. First, interventions that transmitted knowledge and skills, according to the FGDs, produced a pool of social and technical learning that will continue to yield benefits. In contrast, interventions that require further investment and asset acquisition will likely depend on future external support. Second, the improved agricultural technologies, such as improved seed, new conservation agriculture practices, and WE/VSL activities, being accessible to cash-poor

communities, will likely become permanent aspects of local livelihoods. Third, the confidence gained through community problem-solving (in all the purposes) will continue to motivate projects of collective action.

The exit strategy of PCI was intended to maximize community, GoM, and external support for the interventions that had yielded results. The strategy was, in fact, carried out unevenly and depended upon the nature of the intervention. The cessation of certain activities and interventions began to occur in the fourth year, and in the final year, information on the upcoming end of the project was communicated with the beneficiary groups, the GVH and TA leadership, and district-level GoM counterparts. PCI staff invested considerable effort during the last year of the project to create wide support networks that could respond to the needs of the beneficiaries and continue to provide community-level services. PCI staff worked with the VDCs and Area Development Committees (ADCs) to organize village close-out sessions (PCI 2019c) to transfer the management of project activities to the village-level governance institutions created by the project (VCPC, care groups, etc.). A close-out ceremony was conducted with district-level GoM counterparts to transfer oversight of interventions to appropriate government staff (e.g., field agricultural extension officers). Linkages were created between these village groups and regional and national organizations active in production, marketing, health, and disaster management. During the last year, the project continued to provide training to the district- and field-level partners (e.g., District Agricultural Extension office staff), and finally the fleet of motorcycles and office supplies and furniture were transferred to the GoM district offices in Balaka and Machinga. There is little information available to the qualitative study team on the success of this exit strategy. From the FGDs and even from some KIIs with GoM district officials, it was clear nonetheless that the end of the project was perceived as premature in terms of the change process.

In the case of Purpose 2, the established groups such as care groups, male champions and WE/VSL committees are vehicles that will carry on with the project-promoted practices and technologies. These community-level institutions are key to the Njira effort to effect social and behavioral change through community ownership of the change process.[29] Njira invested in training the committees to empower them with skills and knowledge that can easily be passed on to the next generation. During FGDs, participants acknowledged the value of information and learning accomplished through care groups, and indicated they were applying the knowledge and skills in their livelihoods activities. In this aspect, the care groups have laid down a foundation of leadership through lead mothers, who may continue promoting the interventions among community members. The knowledge and skills gained by mothers through training will be used by the households in the absence of the project.

For WASH, during the Njira project period, lead mothers taught sanitation and hygiene and visited homes to monitor the availability and use of pit latrines and handwashing facilities. The FGDs suggest that the local leadership groups are committed to clean and healthy villages. In addition, chiefs and Village Health Committees supported the work of the lead mothers in a way that those people that failed to construct toilets were reported to chiefs and given penalties. Some chiefs even conducted village inspections themselves.

[29] Njira, especially with the care group model, actively applied the best practices directed by the theory of social and behavioral changes (FANTA 2018), which emphasizes community consultation, barrier analysis, and peer-to-peer interaction.

The training of WPCs is another factor of sustainability. During the project period, the trained WPCs managed water users' fund contributions to buy spare parts and manage and maintain the water points. All this was built into the project and is expected to continue after the project.

At district level, the GoM has in place environmental health officers that oversee sanitation work and work at community level through HSAs from the Ministry of Health. This team is mandated to work with communities on disease prevention by strengthening hygiene practices. This government machinery worked with Njira staff and the community during the project and will continue working with communities after the project. FGD participants acknowledged the support of HSAs before and during the project and were confident of their continuing support.

At district level, the existence of the District Nutrition Coordinating Committee provided a link between project staff and government employees. This led to a smooth transition and handover of project activities to the government employees. This implies that with the help of government employees such as HSAs, some activities, e.g., growth monitoring sessions, will be continued.

With regard to the sustainability of Purpose 3 outcomes, the sense of community ownership and local empowerment provides solid motivational fuel for the continuation of the watershed management and afforestation activities. In fact, as cited above, such collective action has sustained in over half the watershed where Njira operated. The project also mobilized and supported local governance institutions key to the sustainability of outcomes. Predominant among these was the VCPC, which plays a critical GVH-level role in addressing the plethora of shocks and stresses in these communities. The project introduced membership criteria that differed from the GoM-elected model, and this strategy has improved the likelihood that the committee will include all elements of village society, including informal leadership and individuals with relevant skills sets. The membership has benefitted from a wide range of disaster management trainings, including on governance skills, and regular ties with the area-level committees have been cultivated. These project efforts promote the sense of local control, important skill building, and confidence in local-level problem solving. Since, however, these members have elected terms, the true test comes with the elections of new members.

4.12.2 Conclusions

In sum, the legacy of the Njira project is based on the effective acquisition of core messages and skills from the project, the introduction of technological options appropriate for local livelihoods, and the confidence in collective problem-solving instilled by the project. A second conclusion is that carefully cultivated partnerships with the GoM districts have increased the likelihood that technical support services will continue to be provided at the community level. Most importantly, the project helped instill a sense of empowerment and ownership, generated by the local institutions, of collective action and governance. These are, however, young governance institutions in a difficult environment of shocks and stresses, and the strength of their resilience in the absence of regular support is unsure. In fact, recommendations from the FANTA study assert that a sustainability strategy should include the possibility of post-project monitoring of such institutions (FANTA 2015b).

4.13 Lessons Learned

1) The Njira project demonstrated that effective layering of interventions can be achieved through structuring the composition of field staff and beneficiary participation in overlapping groups. Project management clearly communicated the intent to layer interventions within the same village and worked with staff to accomplish this. Although according to PCI data most of the beneficiaries did not participate in multiple components and interventions of the project, those that did derived advantage from the layered exposure. This is an approach that could be applied in other complex food security projects.

2) The proactive strategy to create a close working partnership with all levels of the GoM structure, from planning to field implementation, generated genuine collaboration and participation. The concerted project effort enhanced government capacity in both a technical and management sense. GoM staff at all levels received training in the technical aspects of the project interventions, especially in agricultural technical innovations and extension, improved nutritional practices, and disaster management planning. The KIIs with district and field staff showed an appreciation of the increase in technical training and capacity building, as well as in the joint extension efforts to promote community ownership. In all, the project partnership approach encouraged a strong sense of common mission and linked project beneficiaries closely with government staff.

3) The implementation approach in several of the interventions emphasized local ownership through the formation of representative committees with substantial decision-making authority such as watershed committees, irrigation committees, and water point committees. These remain in many GVHs as important local governance institutions. The qualitative study team was impressed by the extent to which collective action generated community-wide benefits and pride of accomplishment regarding intervention organization and implementation. Such community confidence in its own problem-solving capacity increases the likelihood of the sustainability of project outcomes.

4) Integration of gender issues in project design is an ingredient for project success as it ensures more equal participation of men and women in project activities. This was a concerted effort on the part of project management from the very start, and the central role of women on many of the committees appears to have enhanced their status throughout their villages. In addition, the male champion role in addressing important gender issues and the formation of fathers' groups were highly effective, and provided a public forum for reflection upon gender relationships and a platform for collective problem-solving.

5) The qualitative study team thought that targeting strategies under-represented the very poor in the beneficiary pool. Not only is the Njira population in these GVHs highly vulnerable, cash- and land-poor, but it is also significantly stratified. It is not clear that the TAs at the GVH and the VDC levels who participated in the selection of key beneficiaries always targeted the appropriate group leaders. It is equally unclear how the wealth ranking exercise influenced the selection of beneficiaries, especially those from the very poor ranks. The one-off open meeting to introduce the project and identify groups was perhaps too abrupt a moment to

recruit the poorest residents into the project. The lesson learned is that a more systematic and concerted effort at identifying the very poor households and tailoring a development trajectory sensitive to their unique constraints would increase project impact.

6) In the project, irrigated perimeters were established, many on private lands. Access for the landless poor to irrigated plots was granted after the intercession of the traditional leader with the landowner. This agreement was formalized through an MOU that provided rent-free plots. At the end of the project, some landowners assumed that the terms of the MOU no longer obtained and began to charge rent—a hardship for the very poor farmer. Even though the imposed rents were low, this issue was cited in several FGDs with VCPCs, watershed committees, and in two KIIs with GVH leaders. The lesson learned is that post-project tenure must be part of an agreement and clearly communicated to all stakeholders.

7) The evaluation has pointed out the over-sized impact of external contextual factors, such as environmental shocks, that can counteract and attenuate the expected benefits of project activities. The series of droughts, floods, and pests was not explicitly anticipated by the project, yet had major well-being impacts on the beneficiary pool as well as the population of the region. Indicators sensitive to the presence of such external factors (e.g., production, income, labor) were not captured in the project's internal performance monitoring and evaluation system as designed.

8) The exit strategy of the project was based on several critical assumptions: 1) the GoM district staff would be sufficiently motivated and trained to continue to support the beneficiary villages; 2) the local governance institutions promoted by the project would be sufficiently mature and integrated into a wider network of support (and resources) at the traditional authority, district, regional, and national levels; and 3) the knowledge, skills, and confidence acquired through training and practice would become a permanent feature of village life and adequate motivation for future collective action. Although the project worked hard to promote these outcomes, with significant success in many communities, there is no post-project evidence that this exit strategy was successful. As with most FFP projects, Njira ceased with a strong sense of finality. Many beneficiaries regretted the final closure of the project not so much due to the loss of asset transfers (this occurred earlier), but to the absence of local-level support of the governance institutions of collective action. Project staff were not present to assure that the anticipated government and private sector support actually materialized.

5. RECOMMENDATIONS

R1. The layering approach adopted by Njira should be an integral part of future FFP programming—with some adjustments. Njira layering was achieved at the level of planning, targeting, group formation, and the use of the "dynamic "team concept for field facilitation. There are two recommended adjustments to the Njira approach. One is to refine the design of the "tailored pathways" so that the layering reaches a maximum number of beneficiaries. This adjustment would reduce the total number of beneficiaries but intensify the project impact on each individual beneficiary household, as suggested by the theory of change. The second recommended adjustment is to reduce the number of interventions that make up the project portfolio. The large number of activities in Njira spread technical assistance too thin and confused the beneficiary population. Future FFP projects should focus on a smaller beneficiary pool with fewer activities that are mutually reinforcing in order to produce more consistent and achievable results.

R2. Expand strategies to enable greater "spill-over" effects of project interventions. Discussions with lead farmers from non-beneficiary villages suggested that the positive technological innovations, the health, nutrition, and sanitation messages, and the collective action activities did not extend widely beyond the project villages. It is recommended that future FFP programs design strategies of "opening up" the positive outcomes and messages from project interventions to the surrounding population that did not directly participate. Njira introduced the "learning villages" model, and this approach should become a central feature of FFP programming. The learning that occurs within a project should be disseminated in diverse and proactive ways to make the benefits available to non-participants.

R3. Village savings and loans associations should be promoted as participant-owned financial institutions. VSLs are an effective way for men and especially women in a cash-poor environment to increase community liquidity and accumulate lending capital for larger investments, to support collective action projects, and to cushion shocks. They are also important mechanisms of community empowerment and should be supported as such. As in Njira, these community institutions should be integrated into wider financial networks.

R4. Future projects should expand the innovation strategies on low-cost and low-technology techniques as the principal mechanisms for technology change. These practical and sustainable measures improve crop yields and are appropriate to communities with binding cash constraints. These measures, including improved seeds, cultivation and intercropping, are nearly cost-free and consistently sustainable.

R5. The design of FFP agri-business programs should emphasize the appropriateness of the project to farm-level realities and capacities. Such programs are complicated, and their success depends upon multiple external circumstances. Providing guidance and a roadmap to the market alone does not turn a semi-literate smallholder farmer into an effective participant in the market. Value chain interventions require information and regular orientation not usually available to the cash-poor, vulnerable farm family. Any set of agri-business activities must address local circumstances and capacities as well as regional and national market characteristics.

R6. For future FFP projects, add a transition year to the project to assure and document sustainability. This extension is recommended to develop the GoM relationships necessary to support the beneficiary population and to work with beneficiaries as they define the continuation of activities, capacity-building, and problem-solving introduced and nurtured over the life of the project. The closure of FFP project activities where newly formed local institutions are in the process of maturation can create a void that threatens the sustainability of positive project outcomes. A transition year would not involve direct project intervention assistance (or assets), but rather a period of collaboration with and support of the local institutions promulgated by the project.

R7. Devise within FFP a new strategy for the evaluation of project results. A discrepancy between the population-based quantitative data and the qualitative responses from project participants are noted in several instances in this report. This is partly due to the different sampling strategies for these two evaluation components: the PBS draws from the entire project area and contains participants and non-participants, while qualitative sampling tends to be purposive with a focus primarily on participants. The evaluation recommends that the requirement of the PBS be reviewed within USAID with the objective of improving the measurement of project outcomes within the targeted population. The use of a population-based sampling methodology limits the conclusions that can be drawn in this respect. While it is important to have measurement systems in place that can capture the indirect project benefits that obtain in the wider population in the project area, additional quantitative methodologies should be explored to enable statements about attribution of changes observed to project activities.

ANNEX A: REFERENCES

FANTA III. 2018. Report on a Review of Social and Behavior Change Methods and Approaches within Food for Peace Development Food Security Activities

FANTA III. 2015a. *FFP Indicators Handbook Part I: Indicators for Baseline and Final Evaluation Surveys*. April. Washington, DC: Food and Nutrition Technical Assistance III Project (FANTA III).

FANTA III. 2015b. Sustaining Development: A Synthesis of Results from a Four-Country Study of Sustainability and Exit Strategies among Development Food Assistance Projects, Beatrice Rogers and Jennifer Coates. Boston: Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy, Tufts University.

FAO. 2015. National Investment Profile: Malawi. Water for Agriculture and Energy. Lilongwe.

FEWS NET. 2018a. Malawi. Food Security Outlook, February – September 2018.

FEWS NET. 2018b. Malawi Food Security Outlook, October 2017 – May 2018.

FEWS NET. 2017a. Malawi Food Security Outlook, October 2016 – May 2017.

FEWS NET. 2017b. Malawi Food Security Outlook, June 2016 – January 2017.

FEWS NET. 2016. Malawi Food Security Outlook, October 2015 – March 2016.

FEWS NET. 2015. Malawi Food Security Outlook, January – June 2015.

Government of Malawi. 2019. Malawi 2019 Floods Post Disaster Needs Assessment (PDNA).

ICF International. 2017. Baseline Study of the Title II Development Food Assistance Projects in Malawi.

Malawi Vulnerability Assessment Committee. 2018. Food Security Forecast for the 2018/2019 Consumption Year. Bulletin No. 15/18. Volume 1.

Malawi Vulnerability Assessment Committee. 2017. The Integrated Food Security Phase Classification (IPC) in Malawi: Findings of 2017 Assessment and Analysis. Bulletin 14/17 Volume 1.

Malawi Vulnerability Assessment Committee. 2016. National Food Security Forecast Update 2016-2017. Bulletin No. 12/16. Volume 2.

Malawi Vulnerability Assessment Committee. 2015. National Food Security Forecast April 2015 to March 2016. Bulletin No. 11/15. Volume 1.

Malawi Vulnerability Assessment Committee. 2014. National Food Security Forecast April 2014 to March 2015. Bulletin No. 10/14. Volume 1.

Maxwell, D., J. Coates and B. Vaitla. 2013. How Do Different Indicators of Household Food Security Compare? Empirical Evidence from Tigray. Medford, USA: Feinstein International Center, Tufts University.

National Statistical Office (NSO) [Malawi] and ICF. 2017. Malawi Demographic and Health Survey 2015-16. Zomba, Malawi, and Rockville, Maryland, USA. NSO and ICF.

PCI Malawi. 2019a. Health & Nutrition Outcomes from the Annual Survey of 2017 & 2018 for the Food for Peace Development Food Assistance Projects in Malawi (March 2019).

PCI Malawi. 2019b. Njira IPTT, revised.

PCI Malawi. 2019c. Annual Survey Report, Project document. September 10.

PCI Malawi 2019d. Njira Project: Exploring the Diffusion Process of Interventions in Learning Villages of Balaka and Machinga Districts. Malawi.

PCI Malawi. 2018 Quarterly Report January – March.

PCI Malawi. 2016a. Njira Participatory Gender Analysis Report.

PCI Malawi. 2016b. Quarterly Report April – June.

PCI Malawi. 2015a. Njira Bulletin. Njira Project Newsletter, Second Issue, October 2015.

PCI Malawi. 2015b. Quarterly Report January – March.

PCI Malawi. n.d. PowerPoint presentation on beneficiary overlap.

PCI Malawi. n.d. Njira Agrobusiness. Project document.

PCI Malawi. n.d. Njira Disaster Risk Management. Project document.

PCI Malawi. n.d. Njira Livestock. Project document.

PCI Malawi. n.d. Njira Nutrition. Project document.

PCI Malawi. n.d. Njira Reproductive Maternal Newborn and Child Health (RMNCH). Project document.

PCI Malawi. n.d. Njira WASH. Project document

Swindale, Anne, and Paula Bilinsky. 2006. Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide (v.2). Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development.

USAID. 2017. Joint Mid-Term Review of the UBALE and Njira Projects. Summary Report. 5 June.

World Bank. N.d. *Living Standards Measurement Study of the World Bank*. Available at http://web.worldbank.org/archive/website00002/WEB/INDEX-5.HTM

World Food Programme, N.d. Predictable Food Crisis in Malawi? An analysis of food needs identified between 2011 and 2019. Malawi Country Office.

World Health Organization. 2016. WHO recommendations on antenatal care for a positive pregnancy experience.

World Health Organization. 2011. *WHO Anthro and Macros, version 3.2.2*. Available at http://www.who.int/childgrowth/software/en/

World Health Organization Multicentre Growth Reference Study Group. 2006. WHO Child Growth Standards: Length/height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age: Methods and development. Geneva: WHO.

ANNEX B: EVALUATION STATEMENT OF WORK

Statement of Work
Population-Based Final Evaluations of UBALE and Njira (Development Food Assistance Projects) in Malawi

INTRODUCTION

The final evaluation of the 2014 Malawi Title II Development Food Assistance Projects (DFAPs) is the second and final phase of a pre-post evaluation strategy. The baseline study conducted from July 27 to September 11, 2014, employed a mixed-method approach, and was designed to provide information on all four aspects of food security—availability, access, utilization and stability. The study investigated household food access, sanitation and hygiene, agriculture, household expenditures and assets, dietary diversity, and anthropometry among women and children. As with the baseline study, the Malawi final evaluations will use a mixed-method approach and integrate secondary data, and project performance monitoring data. Methods will be chosen to generate the highest quality and the most credible and robust evidence possible to answer evaluation questions.

BACKGROUND

In fiscal year (FY) 2014, the U.S. Agency for International Development (USAID) Office of Food for Peace (FFP) awarded cooperative agreements to two development food assistance projects in Malawi. The Njira project is being implemented in 11 select traditional authorities in the Balaka and Machinga districts by Project Concern International (PCI) and its core implementing partner Emmanuel International (EI). The UBALE project is being implemented by Catholic Relief Services (CRS), in consortium with CARE, Chikwawa Diocese, National Cooperative Business Association (NCBA) CLUSA, the National Smallholder Farmers' Association of Malawi (NASFAM), and Save the Children in the entire districts of rural Blantyre, Chikwawa, and Nsanje.

The goal of the Njira project, which means "way of achieving something" in Chichewa, is to empower beneficiaries to better access the wide variety of resources that are necessary for lasting food security by using tailored pathways to build on assets, based on sound evidence of what works. These pathways will be adjusted over time through continual learning. The Njira project strives to avoid compartmentalization by technical sector or intervention area and to ensure a more integrated project that delivers impact.

The goal of the UBALE project, which means "partnership" in Chichewa, is to work through government, community, and private-sector systems and structures to implement a comprehensive program to reduce chronic malnutrition and food insecurity and to build resilience among vulnerable populations in three of the most food-insecure, chronically malnourished, and disaster-prone districts in the Southern Region of Malawi. The UBALE project theory of change sees sustainable livelihoods and good health as mutually reinforcing preconditions for emerging from poverty and building resilience. The effort will be underpinned through the support of government and community systems and structures and the empowerment of women and girls. The project sequences, layers and integrates carefully selected interventions based on wealth group, health status and livelihoods zone.

EVALUATION PURPOSE & QUESTIONS

The overarching purpose of the final evaluation is to measure the development outcomes of the UBALE and Njira projects. The statement of work provides a list of illustrative evaluation questions bellow and the fundamental elements that should shape the Evaluation Team's (ET) ***research.***

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

The ET will evaluate the contribution of UBALE and Njira to USAID's efforts to *reduce food insecurity among chronically food insecure households*. The ET will support its determination using both quantitative and qualitative methods when discussing the following: (1) project performance on indicators against targets set by both the partners and the key FFP indicators[30] of Depth of Poverty, Stunting, and Undernutrition. The report will be designed based on the theory of change of the project and using empirical evidence to assess the progress or non-progress along the hypothesized pathways of change. The report will describe the key assumptions and how the project adapted or did not adapt to the contextual changes over the past five years; (2) factors that promoted or inhibited the achievement of the project objectives, including, but not limited to the effectiveness of food-for-asset and/or cash-for-asset interventions; (3) plausibility of pathways and the determinants of achieving the key outcomes; (4) targeting strategies and their contribution to achieving project goals (especially with regard to gender and reaching the most vulnerable); and (5) the appropriateness and effectiveness of interventions on the poorest individuals.

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

The ET will evaluate the functionality of the institutions and systems established or strengthened by the projects independently or in collaboration with the private sector, Government of Malawi, community organizations, NGOs, and research organizations to achieve project outcomes and sustainability. It will support its evaluation using both quantitative and qualitative methods that explore the following: (1) the functionality and effectiveness of the systems, and institutional arrangements developed and/or strengthened to sustain the necessary and critical services; (2) coverage of project promoted practices and secondary adoption, (3) communities' perceptions on the quality, frequency, effectiveness, and sustainability of the services provided by the project; (4) based on the empirical evidence the likelihood that service providers will continue providing services after the project ends; (5) the motivation of the community and beneficiaries to demand and pay (or invest time) for the services; (6) whether the necessary resources and capacity strengthening will exist to sustain service providers; (6) the extent to which the projects leveraged other USG and non USG investments to achieve sustained outcomes as identified in the theories of change; (7) evidence of enhanced linkages with other service providers.

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

The ET will evaluate the effectiveness and relevance of the technical interventions, including food-for-asset and/or cash-for-asset interventions, to achieve project outcomes, and discuss those findings in

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

relation to the projects' theories of change. It will support its determination using both quantitative and qualitative methods when discussing the following: (1) factors in the implementation and context associated with greater or lesser efficiency and effectiveness in producing Outputs of higher or lower quality; (2) the interventions and implementation processes deemed more/less acceptable to members of the target communities.

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

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

AUDIENCE & INTENDED USES

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

FINAL EVALUATION METHODOLOGY

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

a) Desk Review

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

- Project proposals
- Pipeline Resource Estimate Proposals (PREPs)
- Annual results reports (ARR), including Indicator Final Tracking Tables (IPTT) for final against targets
- Midterm evaluation reports and corresponding action plans developed by the two projects
- Baseline Study of the Title II Development Food Assistance Projects in Malawi, 2015
- Malawi Demographic Health Survey 2015 – 2016.
- Partner formative research and barrier analyses to better understand the context and if/how the studies influenced programming
- Monitoring data and reports
- MVAC reports

b) Consultations

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

c) Quantitative Endline Survey

The 2019 PBS will collect data on the same population-level impact and outcome indicators that were collected during the 2015 baseline survey. DFAP baseline data were collected between late July through May. The endline data collection timing must match with the baseline. The 2019 PBS should use the same data collection instruments for the endline indicators, level of statistical precision (95 percent confidence intervals), and statistical power (80 percent) as the baseline study (ICF International, 2017).[31] The 2019 PBS design does not need to be identical to the baseline; if the projects reduced their target areas, for example, the sampling frame of households used for the baseline may need to be adjusted.

Note: A few additional questions may be incorporated into the household questionnaire based on the interest from the implementing agencies.

All quantitative data must be made available to the public barring rare exceptions.

d) Qualitative Research

Qualitative methods will be used to collect information to answer evaluation questions and to support the interpretation of the quantitative data. The ET will design the overall qualitative study approach and should consider a variety of primary data collection methods, such as semi-structured in-depth interviews, group discussions, key informant interviews, direct observations, and case studies (the ET may choose to use the most significant change methodology to identify a selective set of case studies). These methods—to the maximum extent possible—will ensure that if a different, well-qualified

[31] For the list of indicators, see ICF International, 2017.

evaluator were to undertake the same evaluation, he or she would arrive at the same or similar findings and conclusions. The ET should decide on specific methods before traveling to Malawi and include them in the evaluation protocol with the number of interviews, FGDs, etc., per project, in the inception report. Following discussion and agreement, the ET will finalize the methods during the team meeting in-country. The evaluation team leader and members will be responsible for interviewing the direct, indirect and non-participants in their households and communities, as well as look for evidence of ongoing learning and activities (such as home gardens, etc.). The ET will also be responsible for interviewing relevant stakeholders for the evaluation and analyzing the qualitative data. Should the ET decide to hire additional researchers to complement the data collection effort, they cannot replace the evaluation team members' role of collecting primary data using qualitative methods.

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

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

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

e) Data Analysis and Interpretation

The ET will use inferential statistics to compare the endline data for each of the two strata with that of the baseline for that stratum, and also for the overall country level, in order to detect changes (if any) for all key indicators. The ET will conduct descriptive and inferential analyses to describe the results and whether there is a change between the two time periods, as well as various econometric analyses to predict determinants of key outcomes and the potential magnitude and direction of changes. In advance of fieldwork, the evaluation team needs to develop a data analysis plan. When analyzing the data, however, the ET should not limit itself to the data analysis plan; rather, the ET should keep an open and curious mind to look for correlations between variables.

In presenting the analysis, the ET needs to be cognizant about the readers' familiarity with the statistical presentation. FFP suggests avoiding jargons, but rather describe the statistical terms in a common language.

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

REPORT

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

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

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

Findings should be specific, concise, and supported by strong quantitative and/or qualitative evidence, and presented as analyzed facts/evidence/data, and not be based on anecdotes, hearsay or a compilation of people's opinions. It should include analytical methods to include appropriate tests of differences; econometric analysis to evaluate the theories of change and to explore the causal relation between the outcome and activities/variables based on the theoretical models; it is expected that the contractor will interpret the analytical findings.

The report should disclose limitations to the evaluation, with an attention to the limitations associated with the evaluation methodology, e.g. selection bias, recall bias, unobservable differences between

comparator groups, etc. Recommendations should be supported by a specific set of findings, and be action-oriented, practical, and specific.

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

EVALUATION TEAM

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

The subject matter specialists must also possess experience and knowledge about the specific *processes* used by the projects (e.g., care groups, farmer field schools, etc.)

FIELD LOGISTICS

The ET is responsible to arrange and pay for all logistics, and transportation. FFP has the anthropometric equipment and tablets (i.e. height board, and scales) that the ET will use. CRS, PCI and the USAID Malawi Mission may be consulted on identifying interpretation services and transportation services. The ET should request assistance from CRS, PCI and their sub partners on making introductions, as necessary, to local ministry representatives and community leaders.

DELIVERABLES

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

Work Plan

- includes a brief synthesis and timeline for the Malawi final evaluations, with the timeline including major activities throughout the study, including dates by which field guides and training materials will be completed.

Only one work plan detailing both baseline study and final evaluation activities is required

Monitoring Plan

- includes strategies and methods that the awardee will use to monitor the field work. It should provide the timeline, benchmarks, and strategies. It should also offer the feedback loop.

Only one monitoring plan detailing both baseline study and final evaluation activities is required

PBS Enumerator Guide, Supervisor Manual, and Anthropometry Guide*

- provide revised detailed instructions on supervisor, enumerator and anthropometry trainings. Note that the PBS should use the supervisor, enumerator and anthropometry training guides developed for the baseline. Minor adjustments will be needed to accommodate the new indicators.

Only one set of guides that serves both the baseline and endline surveys is required

PBS Data Treatment and Analysis Plan

- details how the data will be cleaned, weighted, and analyzed and must include: programming specifications and editing rules for cleaning data, data dictionary codebook, SPSS syntax or Stata do files and output for all analyses and variable transformations into indicators; and
- includes a descriptive, inferential, and econometric analyses plan.

Only one DTAP that serves both the baseline study and final evaluation is required, but it must clearly differentiate between the different analytical approaches used for each.

PE Inception Report and Protocol (~20 pages for each)

- briefly synthesizes the literature review;
- describes the qualitative evaluation methods (including evaluation questions *contextualized based on the literature review*, sample site selection strategy and number of sites to be selected, number of interviews/discussions per project, types of interviewees)
- introduces the evaluation team members and their roles; and
- details how the qualitative information will be analyzed and integrated with quantitative.
- present specific data collection methods by evaluation question;
- identifies indicators to be collected;
- discusses the quantitative and qualitative analysis methods and plan;
- presents PBS sample size, design and plan, survey design, questionnaire design, site selection plan for qualitative research; and
- presents the fieldwork plan (including trainings and field support/supervision, data management, quality control, recording, analysis and reporting).

Pertinent Permissions and approvals

- demonstrate official approval from all relevant institutional review boards and from host country institutions to collect data, conduct the evaluation, and release data and reports, as required, as well as a statement affirming adherence to all requirements specified in USAID's Scientific Research Policy.

PBS Quantitative Survey *and* Qualitative Instruments

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

In-country briefings to CRS and PCI and their partners, USAID/Malawi and other stakeholders

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

Final Evaluation Reports

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

Briefer (~ 5 page each)

- The ET will produce a 5 page briefer to be submitted at the time of the final report – one for UBALE and one for Njira that provides the highlights of the key findings, lessons learned and key recommendations.
- include a separate electronic file of all quantitative data in an easily readable format that is organized and fully documented so as to facilitate use by those not fully familiar with the project or the evaluation;
- provides cleaned data, sampling weights at each stage, final sampling weights, and all derived indicators;
- includes a second final data set in CSV format that has been anonymized to protect individual confidentiality for use as a public data file in the USAID Open Data; and
- include a separate file detailing GPS coordinates of households that participated in the PBS.

**FFP may request data sets earlier for internal use only*

ANNEX C: PRIMARY EVALUATION QUESTIONS AND METHODS

Criteria	Main evaluation questions	Sub-questions	Evaluation method
Impact	1. To what extent did the programs achieve the intended goal, objectives and results as defined by their Results Framework? 2. How did project activities improve the ability of beneficiary households and communities able to mitigate, adapt to, and recover from food security shocks and stresses?	1.1 Were there any important unintended outcomes, either positive or negative? 1.2 What were the main reasons that determined whether intended outcomes were or were not achieved, and whether there were positive or negative unintended outcomes? Which reasons were under control of the programs and which were not?	1. Quantitative bi-variate analysis 2. Quantitative and qualitative
Beneficiary satisfaction	3. How satisfied were beneficiaries with the programs?	3.1 What issues were most important to beneficiaries forming their perceptions of the programs? What were the key successes and challenges of the programs?	Qualitative
Relevance	4. How relevant was beneficiary targeting, considering the needs of the target population?	4.1 Were beneficiary targeting criteria and processes appropriate, transparent, and properly implemented? 4.2 Were the scale, type, and timing of the project activities appropriate to the needs of the target population?	Qualitative
Effectiveness	5. How well were project activities planned and implemented?	5.1. What were the main factors that contributed to whether activities resulted in intended outputs and outcomes? 5.2. What quality standards were defined? How did the programs develop those standards?	Quantitative and qualitative

Criteria	Main evaluation questions	Sub-questions	Evaluation method
Coordination	6. To what extent did the programs coordinate with other food security and humanitarian programming, the host country government, and the donor?		Qualitative
Sustainability and Replicability	7. How sustainable are the programs' outcomes?	7.1. What exit strategies were incorporated into project design? Were such strategies implemented, how were they perceived by the beneficiary population, and what were the strengths and weaknesses of the exit strategies adopted?	Qualitative
Cross-cutting issues	8. How well were gender and environmental considerations integrated into project design and implementation?	8.1. Were they successful in meeting their stated objectives? How?	Quantitative and qualitative
Lessons Learned	9. What lessons can be learned future FFP and USAID Title II in Malawi?		Quantitative and qualitative

ANNEX D: FFP ENDLINE INDICATORS

Food security indicators (Module H)
Average Household Dietary Diversity Score (HDDS)
Prevalence of households with moderate or severe hunger (HHS), overall and by gendered household type
Poverty indicators (Module H)
Per capita expenditures (expressed in constant 2010 dollars), by gendered household type
Prevalence of poverty: Percent of people living on less than $1.90/day, by gendered household type
Mean depth of poverty (using the TPCPDL) , by gendered household type
Sanitation and hygiene (WASH) indicators (Module F)
% of households using an improved source of drinking water
% of households practicing correct use of recommended household water treatment technologies, by technology
% of households using improved sanitation facilities
% of households with soap and water at a handwashing station
% of households that can obtain drinking water in less than 30 minutes (round trip)
% of households practicing safe storage of drinking water
% of households in target areas practicing open defecation
Agricultural indicators (Module G)
% of farmers who used financial services in past 12 months, overall and by sex
% of farmers who practiced project-promoted value chain activities in past 12 months, overall and by sex
% of farmers who used at least three sustainable agriculture (crop, livestock, NRM) practices and/or technologies in past 12 months, overall and by sex
% of farmers who used at least two sustainable crop practices and/or technologies in past 12 months
% of farmers who used at least two sustainable livestock practices and/or technologies in past 12 months
% of farmers who used at least two sustainable NRM practices in past 12 months
% of farmers who used improved storage practices in the past 12 months, overall and by sex
Women's health and nutrition indicators (Module E and Anthropometry)
Prevalence of underweight women
Minimum Dietary Diversity – Women (MDD-W)
Women's Dietary Diversity Score (WDDS)
Percent of births receiving at least 4 antenatal care (ANC) visits
Contraceptive Prevalence Rate
Prevalence of women of reproductive age who consume targeted nutrient-rich value chain commodities
Children's health and nutrition indicators (Module D and Anthropometry)
Prevalence of underweight children under 5 years of age, overall and by sex

Children's health and nutrition indicators (Module D and Anthropometry)
Prevalence of stunted children under 5 years of age, overall and by sex
Prevalence of wasted children under 5 years of age, overall and by sex
% of children under age 5 with diarrhea in last two weeks, overall and by sex
% of children under age 5 with diarrhea treated with oral rehydration therapy (ORT), overall and by sex
Prevalence of exclusive breastfeeding of children under six months of age, overall and by sex
Prevalence of children 6-23 months of age receiving a minimum acceptable diet, overall and by sex
Prevalence of children 6-23 months who consume targeted nutrient-rich value chain commodities, overall and by sex

ANNEX E: TRAINING, DATA COLLECTION, AND QUALITY ASSURANCE

Training

TANGO organized and led enumerator training in preparation for the Njira and UBALE endline quantitative survey. The training took place from July 8 to July 20, 2019. It was led by two TANGO consultants with assistance from CARD. The Njira team included a Survey Director, Survey Coordinator, and two PBS specialists. An independent Anthropometry Specialist led the anthropometry training and three anthropometry supervisors led a dedicated team of 15 anthropometry enumerators. **Table 7** shows the number of different personnel employed in the training and data collection phases, by personnel category.

Table 7: Personnel employed for Malawi quantitative survey training and data collection

Training	32	13	60	15	15
Data collection	32	13	60	15	15

Household survey enumerator training

A team of 60 household survey enumerators and 15 field team leaders participated in the 11-day training. The training covered: study objectives and sampling methodology, human subjects research, interview norms, and survey implementation guidance. It also included a thorough review of the household survey instrument, instruction how to conduct household listing, and the use of tablets and data collection through Open Data Kit (ODK). During the course of the training, enumerators and field team leaders practiced administering the household survey, using both paper and tablet versions in order to familiarize themselves with different scenarios they could encounter in the field. Throughout the course of the training, participants maintained a list of questions and issues to review with TANGO.

Listing enumerator training

The listers and lister supervisors attended the first two days of the household enumerator training (July 8-9, 2019) for overall orientation. The second day of training for the listers included a field test. On the third day, the listing group split away to travel to sites included as part of the listing exercise, that began on July 11. The listing team comprised 40 listers and 13 lister supervisors.

The listers received training on the listing survey and on developing sketch maps for use by the household survey enumerators. An exercise was developed to encourage listers and household enumerators to develop and interpret sketch maps, using the local venue as an example. This ensured that enumerators and listers had a good understanding of how the data collected by the two individual surveys (household and listing) were linked and how enumerators' work contributed to their peers' work.

The lister supervisors were trained on processing listing surveys, overseeing the listing data collection, and quality control checks. The training reviewed protocol to introduce the project to the local

leadership, as the listing teams were the first point of contact between survey teams, households and communities.

Anthropometry enumerator training

A team of 15 anthropometry enumerators also participated for 11 days (July 10-20, 2019) in parallel anthropometric training sessions beginning from the third day of training alongside the household enumerators. Training included sessions on i) measurement procedures for women and children on stunting and underweight indicators; ii) introduction to using tablets and data collection with ODK; and iii) anthropometry quality control measures to be covered with field team leaders.

CARD invited women and children to participate as volunteers for the anthropometry training. Household survey enumerators assisted the anthropometry enumerators by positioning children so that they could be measured correctly. The Anthropometry Specialist instructed enumerators on how to avoid recording errors when measuring women's height and weight and children's standing or recumbent height and weight.

Supervisor training

In addition to the 11-day training, field team leaders participated in a one-day supervisor training that covered roles and responsibilities of supervisors and the fieldwork work plan. The training was led by the TANGO team; participants were the CARD personnel (Survey Director, Study Coordinator, and PBS Quality Controllers), Independent Survey Monitor, and Anthropometry Specialist. The TANGO team discussed responsibilities for each type of supervisor to ensure role clarity and optimal quality control over the data collection process and data management. This was necessary given the layered approach to supervision that was established for data collection: CARD team members, independent consultants, and field team leaders each had specific roles to play. The team of 15 field team leaders, responsible for directly managing survey and anthropometry enumerators, were trained on the necessary procedures to follow when arriving at a cluster (EA), including communication with local leadership, the identification of households, and the assigning of households to enumerators.

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

Training location and pre-testing

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

A field pre-test was organized on July 18, near the end of the training. It was conducted in a rural community within the boundaries of the projects but outside the sample, so teams could have the opportunity to gather information in an environment that closely resembled the area where actual data

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

The last two days of training for household survey and anthropometry enumerators were reserved for reviewing obstacles faced during the pre-test, reviewing definitions and terms in the local language, and discussing issues that needed further clarity.

Translation and back-translation

Following the baseline survey procedure, the household survey questions were translated and entered into ODK in Chichewa. The translation and back-translation of the household survey questionnaire were done by enumerators hired by CARD. A translator back-translated the household survey from the local language to English to ensure accuracy. The anthropometry and listing surveys were in English. The translation process was monitored by the TANGO team and closely verified by the Independent Survey Monitor to ensure accuracy.

Household survey enumerators spent time during the training role-playing in English/Chichewa with other enumerators and with the invited volunteers. Anthropometry enumerators also practiced in local languages with women and child volunteers throughout their training.

Field procedure manuals for enumerators and supervisors

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

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

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

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

Survey programming

TANGO staff converted the baseline survey questionnaire to an Excel version that was readable by ODK software. This included typing out more than 1,250 rows in Excel and adding columns for two languages (English and Chichewa), with codes for skip patterns and constraints that would allow the survey logic to run appropriately. Prior to the team's departure for fieldwork, TANGO performed a final check and the Independent Survey Monitor also did a quality control check to verify the ODK logic in both languages before finalizing the household survey on July 20. The programming of the listing survey and the anthropometry survey were also done using the questions from the baseline surveys; a similar process was followed for ODK programming.

Listing

Listing began on July 11 while household and anthropometry survey trainings continued in Blantyre. CARD obtained detailed boundary maps for each sampled EA from the Malawi National Statistics Office, which included household counts from the 2018 census.

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

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

The listing data were uploaded to the TANGO server, where the TANGO team verified them for completeness and accuracy. The Survey Director at TANGO conducted the sampling of households (described in Section 3.1 of main report). The selected households were provided to the Independent Survey Monitor in Blantyre, who distributed lists of households by EA to field team leaders. The field team leaders used these lists to assign households to individual household survey and anthropometry enumerators.

Household survey and anthropometric data collection

The household survey enumerators collected data from their assigned households and worked in coordination with the anthropometry enumerators to ensure that the criteria for measuring children and women were applied. In the rare cases where household survey enumerators finished their interview and moved to another household before the anthropometry enumerators arrived (sometimes they were delayed at the previous household because they had to measure multiple individuals), the teams communicated with each other on which children and women needed to be measured. The field team leader, anthropometry enumerators, and household survey enumerators debriefed at the end of each data collection day to plan the logistics for the next day and allow the leader to perform quality control checks.

Quality assurance

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

ANNEX F: DATA SOURCES – INTERVIEWS, FOCUS GROUPS, AND ASSET OBSERVATIONS

Table 8: List of key informant interviews

Name*	M	F	Position	Location	Date
PCI	**(8)**	**(2)**			
Kurt Henne	1		Country Director	Blantyre	Oct 14
Michael Ghebrab	1		Chief of Party	Zomba	Oct 15
Jones Chimpukuso	1		Deputy Chief of Party	Zomba	Oct 15-16
Isaac Bobo Munthali	1		Livelihoods	Zomba	Oct 15
Irene Kamanga		1	Technical Advisor, Maternal Newborn and Child Health & WASH	Zomba	Oct 15-16
Burnett Khulumbo	1		Disaster Risk Management	Zomba	Oct 15
Angela Khonje		1	M&E Knowledge Management	Zomba	Oct 15-16
Daniel Tsegaye	1		M&E Management	Zomba	Oct 15
Wiscot Supplier and Kondwani Khaiya	1		Field Coordinator/Facilitator	Balaka	Oct 22
Jimmy Nyalapa	1		Health Surveillance Assistant	Machinga (Nyambi)	Oct 24
Emmanuel International	(4)	(1)			
Charles Mukiwa	1		Country Director	Zomba	Oct 16
Brighton Matombo	1		Administrative Manager	Zomba	Oct 16
Thomas Sambiri	1		M&E Manager	Zomba	Oct 16
Moyenda Kaliati and Dora Msiska	1	1	Emmanuel International Field Coordinator and Facilitator	Machinga	Oct 20
GoM	(17)	(3)			
--		1	District Commissioner	Machinga	Oct 17
--	1		Director of Planning and Development	Balaka	Oct 17
--	1		Program Manager, Agricultural Development Department	Machinga	Oct 18
--	1		Irrigation Economist	Machinga	Oct 18
--	1		Agribusiness Officer	Machinga	Oct 18
--	1		District Agriculture and Development Officer	Balaka	Oct 18

Name*	M	F	Position	Location	Date
--	1		District Forestry Officer	Balaka	Oct 18
--	1		District Community Development Officer	Balaka	Oct 18
--	1		District Disaster Risk Management Officer	Balaka	Oct 18
--	1		District Agriculture and Development Officer	Balaka	Oct 18
--	1		Agricultural Extension Methodology Officer	Balaka	Oct 18
--	1		Crops Officer	Balaka	Oct 18
--	1		Livestock Officer	Balaka	Oct 18
--	1		Land Resource Officer	Balaka	Oct 18
--	1		Land Resource Officer	Balaka	Oct 18
--	1		Assistant Environmental Health Officer	Balaka	Oct 18
--	1		Assistant District Water Officer	Balaka	Oct 18
--	1	1	Agricultural Extension Officers	Mchenga	Oct 21
--		1	Health Surveillance Assistant	Balaka	Oct 22
Other	(7)	(0)			
--	1		Water mechanic from community	Balaka	Oct 21
--	1		GVH traditional leader	Mmanga	Oct 23
--	1		Artesan	Balaka	Oct 23
--	1		GVH traditional leader	Nyambi	Oct 24
--	1		Senior Chief	Machinga (Nyambi)	Oct 24
--	2		Artesans	Machinga (Kapoloma)	Oct 26

**We have kept the names of PCI, Emmanuel International and USAID staff interviewed, but removed those of other respondents to protect confidentiality.*

Table 9: Summary of focus groups conducted

District	TA	Village	GVH	Type of FGD	M	F	Date
41 FGDs					**113**	**352**	
Balaka	Sawali	Mlandula	Toleza	Livelihoods	2	11	19 Oct 2019
Balaka	Sawali	Njereka	Toleza	Livelihoods	2	11	19 Oct 2019
Balaka	Sawali	Toleza	STA Toleza	MCHN & WASH	2	9	19 Oct 2019
Balaka	Sawali	Mulanga	Chimkwita	MCHN & WASH	6	2	19 Oct 2019
Balaka	Sawali	Toleza	several	VCPC/Watershed	5	11	19 Oct 2019
Balaka	Nsalama	Mchenga	several	VCPC/Watershed	5	1	19 Oct 2019
Balaka	Nsalama	Mchenga 2	several	VCPC/Watershed	3	4	21 Oct 2019
Balaka	Sawali	Mgwira	several	VCPC/Watershed	7	7	21 Oct 2019
Balaka	N'samala	Mchenga	Mchenga	Livelihoods	1	8	21 Oct 2019
Balaka	N'samala	Chiwaga	Mchenga	Livelihoods	5	10	21 Oct 2019
Balaka	Msamala	Chiwaya	Mchenga	MCHN & WASH	1	9	21 Oct 2019
Balaka	Msamala	Chiwala	Mchenga	MCHN & WASH	0	13	21 Oct 2019
Balaka	Nsalama	Mmanga	several	VCPC/Watershed	3	6	22 Oct 2019
Balaka	Kalembo	Nandumbo	several	VCPC/Watershed	6	4	22 Oct 2019
Balaka	N'samala	Kachisi	Mpulla	Livelihoods	0	12	22 Oct 2019
Balaka	Sawali	Mgira	Mgira	Livelihoods	0	10	22 Oct 2019
Balaka	Sawali	Juma	Mgwira	MCHN & WASH	0	13	22 Oct 2019
Balaka	Msamala	Chauluka	Mpulula	MCHN & WASH	0	13	22 Oct 2019
Balaka	Kalembo	Simbota	several	VCPC/Watershed	3	6	23 Oct 2019
Balaka	Nsalama	Mpulula	several	VCPC/Watershed	3	7	23 Oct 2019
Balaka	Kalembo	M'Gulula	Nanbumbo	Livelihoods	4	6	23 Oct 2019
Balaka	Kalembo	M'manga	Simbota	Livelihoods	10	3	23 Oct 2019
Balaka	Kalembo	M'manga	Simbota	MCHN & WASH	0	12	23 Oct 2019
Balaka	Kalembo	Mapiko	Nandumbo	MCHN & WASH	0	12	23 Oct 2019
Machinga	Nyambi	Mkwinda	Mkwinda	Livelihoods	0	14	24 Oct 2019
Machinga	Nyambi	Mlamba	Mchimbo	Livelihoods	0	25	24 Oct 2019
Machinga	Nyambi	Mlamba	Mchimbo	MCHN & WASH	4	8	24 Oct 2019

District	TA	Village	GVH	Type of FGD	M	F	Date
Machinga	Nyambi	Mkwinda	Mkwinda	MCHN & WASH	1	11	24 Oct 2019
Machinga	Nyambi	Mchinda	several	VCPC/Watershed	8	2	24 Oct 2019
Machinga	Nyambi	Mkwinda	several	VCPC/Watershed	3	3	24 Oct 2019
Machinga	Ngokwe	Pheria	Pheria	Livelihoods	0	7	25 Oct 2019
Machinga	Ngokwe	Ntungi	Khungwa	Livelihoods	3	7	25 Oct 2019
Machinga	Ngokwe	Sanudi	Peheriya	MCHN & WASH	2	10	25 Oct 2019
Machinga	Ngokwe	Mtungwi	Khungwa	MCHN & WASH	2	7	25 Oct 2019
Machinga	Chikweo	Nyama	Nyama	Livelihoods	2	10	25 Oct 2019
Machinga	Chikweo	Nyama	Nyama	MCHN & WASH	0	8	25 Oct 2019
Machinga	Ngokwe	Peheria	several	VCPC/Watershed	3	5	25 Oct 2019
Machinga	Ngokwe	Khungwa	several	VCPC/Watershed	6	10	25 Oct 2019
Machinga	Chikweo	Chipolonga	Chipolonga	Livelihoods	4	6	26 Oct 2019
Machinga	Chikweo	Nampeya	Nampeya	MCHN & WASH	0	10	26 Oct 2019
Machinga	Chikweo	Nyama	several	VCPC/Watershed	4	6	26 Oct 2019
Machinga	Chikweo	Chipolongo	several	VCPC/Watershed	3	3	26 Oct 2019

ANNEX G: COMPARISON OF BASELINE AND ENDLINE INDICATORS – NJIRA

Table 10: Comparison of baseline and endline indicators – Njira project

	2015 Baseline	2019 Endline	Raw Difference *Endline-Baseline*	Significance Level[1]	# Observations Baseline	# Observations Endline
FOOD SECURITY INDICATORS						
Prevalence of households with moderate or severe hunger (HHS)	51.9	53.4	1.5	ns	2,387	583
Male and female adults	48.2	51.0	2.8	ns	1,617	397
Adult female, no adult male	61.8	61.9	0.1	ns	704	160
Adult male, no adult female	36.5	30.3	-6.2	ns	63	23
Child, no adults	NA	NA	NA	NA	3	3
Average Household Dietary Diversity Score (HDDS)	3.3	3.2	-0.1	ns	2,330	566
POVERTY INDICATORS						
Per capita expenditures (as a proxy for income) of USG targeted beneficiaries[2]	$1.63	$1.99	0.4	*	11,941	2,724
Male and Female Adults	$1.67	$2.04	0.4	+	8,922	2,061
Adult Female no Adult Male	$1.46	$1.68	0.2	ns	2,784	593
Adult Male no Adult Female	$2.58	$3.45	0.9	ns	136	43
Child No Adults	NA	NA	NA	NA	9	7
Prevalence of poverty: Percent of people living on less than $1.90/day	70.2	70.0	-0.1	ns	11,941	2,724
Male and Female Adults	68.7	69.7	1.1	ns	8,922	2,061
Adult Female no Adult Male	76.5	73.8	-2.7	ns	2,784	593
Adult Male no Adult Female	38.9	41.3	2.5	ns	136	43
Child No Adults	NA	NA	NA	NA	9	7
Mean depth of poverty	29.8	30.7	0.9	ns	11,941	2,724
Male and Female Adults	28.9	29.7	0.7	ns	8,922	2,061
Adult Female no Adult Male	33.3	35.3	2.0	ns	2,784	593
Adult Male no Adult Female	12.8	19.1	6.3	ns	136	43
Child No Adults	NA	NA	NA	NA	9	7

	2015 Baseline	2019 Endline	Raw Difference *Endline-Baseline*	Significance Level[1]	# Observations Baseline	# Observations Endline
WASH INDICATORS						
Percent of households using an improved drinking water source	59.0	58.4	-0.6	ns	2,387	587
Percent of households in target areas practicing correct use of recommended household water treatment technologies	11.5	21.3	9.8	**	2,387	587
Percent of households in target areas practicing boiling	8.3	5.9	-2.4	+	2,387	587
Percent of households in target areas practicing bleaching	3.4	15.7	12.3	***	2,387	587
Percent of households in target areas practicing filtering	0.3	2.2	1.9	ns	2,387	587
Percent of households in target areas practicing solar disinfecting	0.0	0.0	0.0	ns	2,387	587
Percent of households that can obtain drinking water in less than 30 minutes (round trip)	51.7	65.6	13.9	**	2,387	587
Percent of households using improved sanitation facilities	56.5	38.8	-17.8	***	2,387	587
Percent of households in target areas practicing open defecation	8.1	10.4	2.3	ns	2,387	587
Percent of households with soap and water at a handwashing station commonly used by family members	11.7	9.9	-1.8	ns	2,387	587
AGRICULTURAL INDICATORS						
Percentage of farmers who used financial services in the past 12 months	40.4	28.4	-11.9	**	3,913	731
Male farmers	39.0	27.9	-11.1	**	1,581	317
Female farmers	41.3	28.9	-12.4	**	2,332	414
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	67.8	28.4	-39.5	***	3,913	737
Male farmers	69.4	28.1	-41.3	***	1,581	318
Female farmers	66.8	28.6	-38.2	***	2,332	419
Percentage of farmers who used at least three sustainable agriculture (crop, livestock, NRM) practices and/or technologies in the past 12 months	77.9	51.0	-26.9	***	3,913	743
Male farmers	79.1	52.2	-26.9	***	1,581	321

	2015 Baseline	2019 Endline	Raw Difference *Endline-Baseline*	Significance Level[1]	# Observations Baseline	# Observations Endline
Female farmers	77.1	50.1	-27.0	***	2,332	422
Percentage of farmers who used at least two sustainable crop practices and/or technologies in the past 12 months	86.6	71.0	-15.5	**	3,913	722
Male farmers	86.3	69.4	-16.8	**	1,581	312
Female farmers	86.8	72.3	-14.5	**	2,332	410
Percentage of farmers who used at least two sustainable livestock practices and/or technologies in the past 12 months	9.7	4.2	-5.5	**	3,913	743
Male farmers	10.8	4.3	-6.5	**	1,581	321
Female farmers	9.1	4.2	-4.9	**	2,332	422
Percentage of farmers who used at least two sustainable NRM practices in the past 12 months	44.6	5.2	-39.4	***	3,913	736
Male farmers	47.7	7.4	-40.4	***	1,581	319
Female farmers	42.5	3.5	-39.0	***	2,332	417
Percentage of farmers who used improved storage practices in the past 12 months	55.0	16.8	-38.2	***	3,903	737
Male farmers	58.2	14.8	-43.4	***	1,575	317
Female farmers	52.9	18.3	-34.6	***	2,328	420
WOMEN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of underweight women	8.1	6.0	-2.1	ns	1,987	413
Minimum Dietary Diversity - Women (MDD-W)	18.7	15.6	-3.1	ns	2,265	515
Women's Dietary Diversity Score (WDDS)	3.3	3.2	-0.1	**	2,265	515
Percent of births receiving at least 4 antenatal care (ANC) visits[3]	54.2	51.6	-2.6	ns	1,441	331
Contraceptive Prevalence Rate	74.6	80.5	6.0	+	1,115	197
Prevalence of women of reproductive age who consume targeted nutrient-rich value chain commodities**	21.2	22.9	1.7	ns	2,265	515
Prevalence of women of reproductive age who consume foods made from orange-fleshed sweet potatoes (OFSP)	20.4	21.9	1.5	ns	2,265	515
Prevalence of women of reproductive age who consume foods made from bio-fortified beans (NUA)	1.1	1.4	0.3	ns	2,265	515

	2015 Baseline	2019 Endline	Raw Difference *Endline-Baseline*	Significance Level[1]	# Observations Baseline	# Observations Endline
CHILDREN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of underweight children under 5 years of age (Total)	11.8	7.8	-4.0	**	2,120	433
Male	12.4	8.6	-3.9	+	975	215
Female	11.2	7.0	-4.3	*	1,145	218
Prevalence of stunted children under 5 years of age (Total)	37.9	25.7	-12.2	***	2,106	433
Male	40.8	27.0	-13.8	***	974	215
Female	35.3	24.3	-11.0	**	1,132	218
Prevalence of wasted children under 5 years of age (Total)	2.2	2.9	0.8	ns	2,105	433
Male	2.6	2.5	-0.1	ns	974	215
Female	1.8	3.4	1.6	ns	1,131	218
Percentage of children under age 5 with diarrhea in the last two weeks (Total)	27.2	26.7	-0.5	ns	2,153	432
Male	28.8	27.0	-1.7	ns	1,010	220
Female	25.9	26.4	0.5	ns	1,143	212
Percentage of children under age 5 with diarrhea treated with oral rehydration therapy (Total)	68.6	52.3	-16.2	**	580	118
Male	67.7	45.0	-22.7	**	289	62
Female	69.5	60.2	-9.3	ns	291	56
Prevalence of exclusive breast-feeding of children under six months of age	66.0	76.6	10.6	ns	182	47
Male	59.8	79.1	19.2	+	69	28
Female	70.0	73.0	3.0	ns	113	19
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	10.0	6.3	-3.7	ns	634	141
Male	8.4	7.4	-1.0	ns	329	76
Female	11.8	5.0	-6.8	+	305	65
Prevalence of children 6-23 months who consume targeted nutrient-rich value chain commodities**	10.2	11.6	1.4	ns	633	141
Male	9.8	10.9	1.0	ns	329	76

	2015 Baseline	2019 Endline	Raw Difference *Endline-Baseline*	Significance Level[1]	# Observations Baseline	# Observations Endline
Female	10.7	12.5	1.8	ns	304	65
Prevalence of children 6-23 months who consume foods made from orange-fleshed sweet potatoes (OFSP)	10.1	10.2	0.1	ns	633	141
Male	9.8	8.3	-1.5	ns	329	76
Female	10.4	12.5	2.1	ns	304	65
Prevalence of children 6-23 months who consume foods made from bio-fortified beans	0.3	2.0	1.7	ns	633	141
Male	0.0	2.5	2.5	ns	329	76
Female	0.6	1.5	0.9	ns	304	65
GENDER INDICATORS						
Percentage of men and women married or in union who earned cash in the past 12 months	82.5	53.8	-28.7	***	3,055	773
Percentage of men who earned cash in the past 12 months	95.8	79.5	-16.2	***	1,463	376
Percentage of women who earned cash in the past 12 months	70.4	29.5	-40.9	***	1,592	397
Percentage of men in union and earning cash who make decisions alone about the use of self-earned cash	51.7	42.9	-8.8	*	1,272	265
Percentage of women in union and earning cash who make decisions alone about the use of self-earned cash	26.9	34.8	8.0	ns	1,098	103
Percentage of men in union and earning cash who make decisions jointly with spouse/partner about the use of self-earned cash	35.5	33.2	-2.3	ns	1,272	265
Percentage of women in union and earning cash who make decisions jointly with spouse/partner about the use of self-earned cash	35.6	30.7	-4.9	ns	1,098	103
Percentage of men and women with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	85.7	87.3	1.5	ns	1,271	290
Percentage of men with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	75.5	84.2	8.7	ns	507	95

	2015 Baseline	2019 Endline	Raw Difference *Endline-Baseline*	Significance Level[1]	# Observations Baseline	# Observations Endline
Percentage of women with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	92.6	89.4	-3.2	ns	764	195
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	45.5	45.4	-0.1	ns	502	93
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	39.2	34.1	-5.1	ns	559	132
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	26.5	41.4	14.9	*	502	93
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	24.4	28.3	3.9	ns	559	132
Percentage of men in union with children under two who make child health and nutrition decisions alone	19.0	16.9	-2.1	ns	502	95
Percentage of women in union with children under two who make child health and nutrition decisions alone	35.9	32.1	-3.8	ns	559	139
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	42.2	61.9	19.6	**	502	95
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	42.1	40.4	-1.8	ns	559	139

[1] ns = not significant, + p<0.1, * p<0.05, ** p<0.01, *** p<0.001
[2] Expressed in constant 2010 USD
[3] Women age 15-49 with a live birth in the past 5 years
NA: Not available, cell has less than 30 observations

ANNEX H: MULTIPLE REGRESSION ANALYSIS

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

- Farmers' use of financial services
- Farmers' adoption of at least three sustainable agricultural practices
- Households with adequate food consumption (HHS)
- Underweight of CU5
- Stunting of CU5

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

- **Survey round:** a dummy variable for survey round (0=baseline, 1 = endline) was included to measure the changes in the dependent variables over time independent of any of the other explanatory variables in the model;
- **Project participation:** this variable was included to measure the extent to which changes in the dependent variables are associated with the respondents' participation in project-supported activities;
- **Gender variables:** a measure of whether the household included a woman who earned cash in the past year;
- **Household characteristics** that measure household demographic characteristics, including gendered household type, and education characteristics of household members;
- **Non-food assets** as a measure of household wealth; and
- **District:** dummy variables for districts (Machinga is the excluded comparison district) to account for any geographic factors not captured in other explanatory variables.

Table 11 reports the results from the regressions estimating the probability that a farmer used financial services and the probability that farmers adopted at least three sustainable agricultural practices. Adoption of agricultural practices showed significant decreases from baseline to endline, controlling for all the other explanatory variables in the equations. That said, participation in agricultural trainings is positively associated with increased rates of adoption of sustainable agricultural practices. This suggests that project participation, in the form of agricultural trainings, promoted increased use of sustainable agricultural practices; however, there were factors over time unrelated to household socio-economic characteristics that not only acted as a barrier, but in fact encouraged lower usage of the types of practices promoted by Njira. Note that adoption of sustainable agricultural practices and participation in value-chain activities are not included as explanatory variables for the adoption of sustainable agricultural practices, as they are used in the definition of the dependent variable.

Both the practice of value chain activities and usage of sustainable agricultural practices promoted by Njira were associated with higher uptake of financial services. This could represent an intensification of implementation of multiple agricultural programming activities offered (e.g., promotion of improved

agricultural practices, use of agricultural financial services, and value chain activities) to Njira project participants.

There were no observable differences between male and female farmers with respect to use of financial services or adoption of sustainable crop practices, when controlling for socio-economic characteristics, time, geography, and project participation.

In these regression models, a variable measuring non-food assets was included as an explanatory variable to measure the effect of wealth on use of financial services or adoption of sustainable practices. This wealth variable is positively associated with adoption of sustainable agricultural practices, suggesting that access to savings is a requirement to adopt these practices. The wealth variable is also positively related to use of financial services, which implies that wealthier households, in general and when controlling for project participation (i.e., accounting for promotion of improved access to financial services in the sample likely targeted to poorer farming households), enjoy greater access to financial services.

Table 11: Regression results for use of financial services and adoption of sustainable crop practices

Dependent variable	Use of financial services in the past 12 months	Adopt sustainable crop practices (3 or more)
Survey round		
Endline	0.07	-0.78***
Project participation		
Sustainable agricultural practices/technologies	0.08**	
Participated in value-chain activities	0.76***	
Participated in agriculture trainings	0.12	0.65***
Gender variables		
Female farmer	0.05	-0.08
Household with female cash earner	0.12	0.25
Household characteristics		
Household size	0.04	0.06**
Gendered household type (Adult-female headed)		
Adult males no adult female	-0.89+	-0.18
Adult female and adult male	0.18	-0.16
Child-headed – no adults	-4.08***	5.85***
Share of adults with more than primary education	0.16	0.39*
Non-food assets	0.00**	0.00**
District (Machinga)		
Balaka	0.34+	0.56*
Constant	-1.94***	0.00
Observations	*4621*	*4628*

+ p<0.1; * p<0.05; ** p<0.01; *** p<0.001

Table 12 provides estimates from the regressions of child nutritional variables: underweight and stunting. When controlling for household socio-economics characteristics, project participation, and geographic fixed effects, neither the probability of stunting nor of a child being underweight changed from baseline to endline.

Neither of the project participation measures were associated with the probability of stunting or of a child being underweight. Use of cleansing agent and water for washing is surprisingly associated with higher likelihood of underweight. Neither of the WASH measures is associated with child stunting.

Child age is strongly associated with a higher likelihood of stunting (the negative coefficient on the squared age term means that this effect is relatively less for older children than for younger ones). A greater number of CU5 in the household implies a higher probability of children under 5 in the household being stunted; however, perhaps unintuitively, it is related to a lower probability of the CU5 in the household being underweight.

Wealth (as measured by non-food assets) is not related to either child stunting or probability of being underweight. On the other hand, higher education level of the household is associated with a lower probability of a child being underweight.

Table 12: Regression results for child nutritional variables, underweight and stunting of CU5

Dependent variable – probit regression	Underweight (%<-2sd)	Stunting (%<-2sd)
Survey round		
Endline	-0.24	-0.27
Project participation		
Child rations	-0.19	-0.18
Nutrition training	-0.03	0.14
WASH practices		
Using an improved drinking water source	-0.12	-0.05
Have cleansing agent and water	0.61*	-0.24
Child characteristics		
Child age (months)	0.02	0.07***
Child age (months) squared	0	-0.00***
Male child	-0.18	-0.14
Had diarrhea in the last two weeks	0.12	-0.02
Gender variables		
Household with female cash earner	-0.06	-0.18
Household characteristics		
Household size	0.03	-0.05
Count of children under 5 in household	-0.38+	0.41***
Gendered household type (Adult-female headed)		
Adult males no adult female	-3.35***	-3.89***
Adult female and adult male	0.24	0.21
Child-headed – no adults	-3.57***	-3.81***
Share of adults with more than primary education	-0.94*	-0.4
Non-food assets	0.00	0.00
District (Machinga)		
Balaka	-0.04	-0.06
Constant	-0.92	-1.20**
Observations	2496	2482

+ p<0.1; * p<0.05; ** p<0.01; *** p<0.001

Table 13 presents regression results for household food security. The dependent variable is households reporting moderately or severe food insecurity based on the Household Hunger Scale. Overall, the

probability that a household reports moderate or food is unchanged from baseline to endline, controlling for other factors.

Receiving food or cash rations reduced the prevalence of hunger for households in the Njira project area; however, receiving training or other project activities was inversely related to food security. One interpretation of these contradictory results is that the training and other project activity variable is picking up a targeting effect (i.e., Njira trainings targeted to less food-secure households) and once this effect is controlled for, it is apparent that receipt of cash and food rations positively impacted food security.[32]

Households with female case earners were not associated either positively or negatively with household food security, all else being equal. Household education and wealth levels (as measured by non-food assets) are more likely to be food secure, all else being equal.

Table 13: Regression results for household food security status (moderate or severe household food insecurity based on HHS)

Dependent variables – probit regression	% HH with moderate or severe food insecurity
Survey round	
Endline	0.06
Project participation	
Food or cash assistance (0-2)	-0.37*
Nutrition training or other project activities (0-2)	0.26+
WASH practices	
Using an improved drinking water source	-0.10
Have cleansing agent and water	0.09
Gender indicators	
Household with female cash earner	-0.25
Household characteristics	
Household size	-0.02
Gendered HH type (Adult-female headed)	
Male headed HH - no adult females	-0.56
Male and female headed HH	-0.19
Child headed HH - no adults	5.15***
Share of adults with more than primary education	-0.59**
Non-food assets (USD 2015)	-0.00***
Njira Districts (Machinga)	
Balaka	-0.19+
Constant	0.91***
Observations	2916

+ p<0.1; * p<0.05; ** p<0.01; *** p<0.001

[32] There is significant overlap and correlation between the two participation variables (food/cash assistance and training/other). Of those that received any form of training or cash/food rations ~40 percent received all forms (i.e., cash rations, food rations, nutrition training, and another activity).