



Sustainable Health and Agriculture for Resilient Populations

FINAL PROGRAM RESULTS REPORT

August 2013 – June 2015

**USAID/ZAMBIA
OFFICE OF FOREIGN DISASTER ASSISTANCE
SOUTHERN AFRICA**

Submitted to

USAID/OFDA

Submitted by

**Land O'Lakes, Inc.
P.O. Box 64281
St. Paul, MN 55164-0281**

September 18, 2015

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Administrative Data

Contact in Zambia:

Melvin Siwale, Chief of Party
Land O'Lakes, Inc. – Zambia Office
Phone: (260-1) 263929/30
Fax: (260-1) 265053
E-mail: melvin.siwale@idd.landolakes.com

Regional Office Contact:

David Harvey, Regional Director
Land O'Lakes, Inc. — Zimbabwe Office
Phone: 263 4304 756
E-mail: david.harvey@idd.landolakes.com

Contact in the U.S.:

Dimitri Obolensky, Program Manager
Land O'Lakes, Inc. – Minnesota Office
Phone: 1-651-375-5124
Fax: 1-651-375-5144
E-mail: DHObolensky@landolakes.com

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ACRONYMS AND ABBREVIATIONS

CA	Conservation Agriculture
CLTS	Community-Led Total Sanitation
DDCC	District Development Coordinating Committee
DDMC	District Disaster Management Committee
DMMU	Disaster Management and Mitigation Unit
D-RISK	Dynamic Research-Informed System for Managing Risk
DRR	Disaster Risk Reduction
EWS	Early Warning System
FAF	Field Agriculture Facilitator
FFS	Farmer Field Schools
FRA	Food Reserve Agency
GART	Golden Valley Agricultural Research Trust
GRZ	Government of the Republic of Zambia
IGA	Income Generating Activities
IMPACTS	Integrated Monitoring Performance Assessment Computerized Tracking System
IR	Intermediate Result
KPI	Key Performance Indicators
M&E	Monitoring and Evaluation
MAL	Ministry of Agriculture and Livestock
MLGH	Ministry of Local Government and Housing
MOH	Ministry of Health
MOU	Memorandum Of Understanding
NGO	Non-Governmental Organization
ODF	Open Defecation Free
OFDA	(US) Office of Foreign Disaster Assistance
PCI	Project Concern International
RMPP	Risk Management Policy and Practice
SDMC	Satellite Disaster Management Committees
SHARP	Sustainable Health and Agriculture for Resilient Populations
USAID	United States Agency for International Development
WASH	Water and Sanitation Hygiene

EXECUTIVE SUMMARY

The Sustainable Health and Agriculture for Resilient Populations (SHARP) project was implemented from August 1st, 2013 to June 30th, 2015 by Land O'Lakes in partnership with Project Concern International (PCI) with funding from the United States Agency for International Development (USAID), Office of Foreign Disaster Assistance (OFDA).

The project aimed to strengthen resilience of households in disaster-prone communities in Choma and Kazungula districts of Southern Province in Zambia. It had three main sectors: Agriculture and Food Security (AFS); Water, Sanitation and Hygiene (WASH); and Disaster Risk Reduction (DRR).

Below are the key results from each of the project components:

Agriculture and Food Security (AFS): The project provided 1,000 farmers with start-up food and fodder seed. These farmers along with another 955 farmers that did not receive seed were then trained in improved food and fodder crop production using a training of trainers approach on Answer Plots. Over three-quarters (78%) of the targeted farmers applied at least one new and improved food and fodder production practice due to the training. Improved practices were implemented on about 1,000 hectares of land, and yield drastically improved for the target crops. Additionally, about 70% of farmers were still producing fodder in the second season, as compared to none at baseline. The project also promoted the production of fodder barns along with purchase of metal silos to reduce crop loss and extend participants' months of food self-sufficiency. A total of 112 beneficiaries purchased metal silos, and 45 created fodder barns. Through the activities, the project was able to slightly increase the months of self-sufficiency by 0.2 months (or 0.6 months over midline) and the number of assets that the participants owned (57% of participants increased their asset index by 60%). It is expected that this effect will be much larger in the upcoming season, as the beneficiaries will be able to use their crop storage facilities to reduce food loss, and they will use the proceeds from their higher yields to invest in more assets.

Water, Sanitation, and Hygiene (WASH): A total of 56,244 people benefitted from WASH activities with 9,871 receiving direct hygiene promotion messages. WASH practices in the target households improved substantially. A total of 94% were disposing of solid waste appropriately by the end of the project compared to 56.8% at baseline. Other WASH practices that improved include the proportion of households with hand washing facilities, which increased from 57.7% at baseline to 81% at end-line. There were more households with latrines (93% at end-line) compared to baseline (85%). Also, significantly more households (71.8%) were treating water to make it safer to drink at end-line compared to 18% at baseline. Four (out of a targeted 200) communities were certified Open Defecation Free by project close and 18 others had been verified by the project and qualified for certification.

Disaster Risk Reduction (DRR): The project trained 1,711 committee members in disaster preparedness, mitigation and response, over three-quarters (77%) of whom retained the knowledge after the training. After the training the committee members were tasked with setting up DRR plans in their communities, including an early warning system to warn community members of an impending disaster.

A total of 111 communities developed DRR plans. Nine of the 10 camps targeted under the project had functional early warning systems in place, but the final evaluation ascertained that only 30% of the target community members had actually received early warning messages prior to the latest dry spell. The project

set up 10 weather monitoring points to measure temperature and rainfall in order to enhance farmer's access to weather information in the early warning system. At the end of the project, many of the DRR committees were continuing to determine how best to implement DRR plans in their communities.

While the project significantly strengthened communities' resilience to disasters, it fell short of meeting some targets. Some challenges that made it difficult to meet some set targets included the project life cycle (especially start-up activities) not aligning with the agriculture cycle and prolonged dry spells and flash flooding in the second agriculture cycle or season. Additionally, some targets were over-ambitious given the project time frame of 23 months and targeting the most vulnerable, and resource poor households in the targeted communities. The project had gaps between targets and achievements on linkages to fodder markets (63 out of 1,000), ODF certification (2% out of a target of 90%), creation of WASH action plans, DRR plans (111 out of 200) and training farmers in the integration of food and fodder (1,955 out of 3,000). However, the project fared fairly well in 12 of the 20 targets, and met and exceeded 4 targets.

Collaboration with other stakeholders, especially the government ministries and departments including Ministry of Agriculture Livestock (MAL), Ministry of Community Development, Ministry of Local Government and Housing, Meteorological Department, Disaster Management and Mitigation Unit, was a key best practice of the project which may ensure sustainability of some project activities. Collaboration was strongest at District and Community (Camp) level.

SECTION I: PROJECT OVERVIEW

The USAID/OFDA-funded Sustainable Health and Agriculture for Resilient Populations (SHARP) project was implemented in 10 camps in Choma and Kazungula districts of Southern Province, Zambia. The goal of the project was to strengthen the resilience of households in disaster-prone communities in Southern Zambia to create sustainable livelihoods. It had three main sectors: Agriculture and Food Security (AFS), Water, Sanitation and Hygiene (WASH), and Disaster Risk Reduction (DRR). The SHARP project lifecycle ran from August 1st, 2013 to March 31st 2015, but received a no-cost extension of 3 months and ended on June 30th 2015, for a total of 23 months of implementation.

Communities in Choma and Kazungula suffered the brunt of cyclical droughts and severe floods over the past 10 years, more so than other areas in Southern Africa.¹ As a result, livelihoods in these areas were increasingly fragile. In many communities, recurrent drought and floods resulted in poor household health and reduced ability to earn income; increased exposure to water-borne and diarrheal diseases; and significant deterioration in health or deaths among livestock. Both droughts and floods compromised the availability of food and grazing which predisposed livestock to disease. Furthermore, these communities suffered lack of access to clean water and sanitation infrastructure, they had poor environmental health and there was limited adoption of effective hygiene practices.

The project was designed to curb the effects of these climatic changes on vulnerable households using a multi-sectorial approach. In the AFS sector, the project aimed to improve and protect household food

¹ Zambia's Southern Province has experienced more severe dry seasons than the Central Province in the last 20 years. In Zambia, the mean temperature computed for the previous thirty years indicate that the summer temperature is increasing at a rate that is ten times higher than the global or Southern Africa rate of increase in temperature. Centre for Environmental Economics and Policy in Africa (CEEPA). 2006.

security and livelihoods for 1000 households by increasing productivity of food and fodder crops. In the WASH sector, the project aimed to enhance community and household management of water resources and sanitation practices by strengthening their capacity to manage solid waste, improve drainage and improve sanitation conditions and improve hygiene practices among 9,871 households. The DRR sector aimed to strengthen community resilience and capacity to cope with shocks and stresses by mobilizing communities to prepare for, mitigate and respond to shocks and stresses. This included strengthening the capacity of local communities, organizations and government entities to respond to disasters.

In order to meet these objectives, the project carried out several activities. Firstly the project identified operational camps in collaboration with key stakeholders from Ministry of Agriculture Livestock (MAL), Ministry of Community Development, Ministry of Local Government and Housing, Meteorological Department, Disaster Management and Mitigation Unit. A total of 10 camps were selected in the two districts (6 in Choma and 4 in Kazungula). Specific activities that were carried out in the camps are outlined below.

Agriculture & Food Security: Project Activities

The Agriculture component began with SHARP conducting a total of 22 community sensitization sessions with the identified communities to describe the project and its objectives and to identify beneficiaries that met the project selection criteria. The criteria included; low levels of food security, access to at least 0.5 hectares, one adult in the household above 18 and able to work, willingness to cultivate fodder and food crops, experience in livestock related activities. A total of 1,000 farmers were selected to participate (511 females). The project then distributed 9 different types of seed (4 food and 5 fodder) to the selected farmers (996 in the first year and 4 in the second year). This seed was distributed through a voucher system where the project identified and engaged two agro dealers (1 in each district) to provide the seed in exchange for the vouchers and a farmer contribution of 10% (\$5.23) for the 9 varieties of seed. The process of seed delivery and redeeming of vouchers was closely monitored by project staff to ensure that only the selected beneficiaries received seed, and that each farmer paid the right amount of money and received the correct quantities of seed.

The 1,000 beneficiaries were organized into 40 groups, with each group selecting a lead farmer (21 female and 19 male). The project, in collaboration with the Ministry of Community Development, trained the farmers in group governance and dynamics. Lead farmers were also trained in the integration of food and fodder crop production into conservation agriculture, grain protection technologies, use of herbicides, fodder harvesting processing and storage, and recording of weather data. These trainings were carried out by project staff in collaboration with Conservation Farming Unit (CFU), Ministry of Agriculture and Livestock (MAL) and the Meteorological department. Each lead farmer then began training the other members of their groups in what they had learned about improved food and fodder practices through holding farmer field schools (FFS) under the supervision of FAFs and MAL camp extension officers. Each lead farmer was equipped with a bicycle and played a key role in monitoring the progress of other group members.

The project established a total of 22 Answer Plot sites, in order to demonstrate and compare improved crop management practices with traditional ones for both food and fodder crops, and to facilitate the training of farmer group members. In the first year, the project established 10 Answer Plot sites, and in the second year

12 more were established in order to meet the demand from community-based farmers for more demonstration site locations, which could be accessed conveniently by all group members. In the initial program design, all SHARP beneficiaries were intended to access the 10 Answer Plots established under the Zambia Fodder Pilot (ZFP) project, which Land O'Lakes implemented from June 2012 to May 2014. However, the selected camps under SHARP were too far from the ZFP Answer Plot sites (the nearest ones being 30 kilometers away). The increase in SHARP Answer Plots from 10 in the first year to 22 in the second year was necessitated by the fact that some farmers had to walk long distances to attend training activities. Originally each Answer Plot was intended to serve an average 100 beneficiaries, but the number of Answer Plots was later increased so that each plot served approximately 45 beneficiaries. A total of 1,955 farmers (1,000 seed recipients and 955 other community members) were trained at Answer Plots during the life of the project. Nine of the 22 Answer Plots were hosted by females or established on plots of land that belonged to female beneficiaries.

The project also held 10 Farmer Field Days (1 per camp) in each agricultural season (a total of 20 Farmer Field Days for the life of project). An average of 87 farmers per camp attended each Farmer Field Day. The Field Days which were also attended by district level stakeholders including the MAL (District and Camp officers), Camp agriculture committee members, Meteorology Dept., Conservation Farming Unit (CFU), Golden Valley Agriculture Research Institute (GART), Department of Community Development, Agro dealers and traditional leaders. The field days demonstrated best practices and allowed the participants to share successes, lessons learned and results. The topics shared during the field days included: food and fodder crop harvesting and storage; use of the metal storage silos; hay baling and storage; benefits of conservation agriculture, especially on minimum tillage and early planting; usage of weather observation points; water sanitation and hygiene; and HIV/AIDS related issues. In order to ensure that key activities continue beyond the life of the project, stakeholders committed themselves to continue with some key activities; the Department of Mechanization and Farm Power of MAL committed to continue with the monitoring of fabrication, purchase and usage of metal silos. The Department of Meteorology will continue to record, monitor, analyze and interpret weather data, and will collaborate with MAL to disseminate it to farmers. The Department of Community Development will continue with the training and formalization of savings groups. The savings groups who are already functioning will be adopted by the department.

GART will continue to market fodder and link beneficiaries to prospective clients. The agro dealers such as ATS, Eliezer, SeedCo and TSS will continue to provide technical services and agriculture inputs such as seed, herbicides and crop protection chemicals.

WASH: Project Activities

All WASH activities were implemented by Project Concern International (PCI), who was an implementing partner of the project.

Before implementation of any WASH activities, the project completed a WASH/DRR assessment in January 2014 to assess existing hygiene conditions and practices in target communities, understand hazards that affect the communities, collect information about existing community resources, and assess the functionality of DRR and WASH management structures. Findings from the assessment served as a baseline against which changes could be measured, and also provided a useful tool to refine project strategies. One of the major findings of the needs assessment was that the existing WASH Satellite Committees did not

adequately plan for water and sanitation activities. While they looked at maintenance of community boreholes and usage of chlorine, the committees' strategies did not include other important WASH activities as defined by the Ministry of Health (MOH) and Ministry of Local Government and Housing (MLGH), such as hand washing and proper latrine construction.

To address this gap, the project incorporated modules on hand washing promotion and proper latrine construction into the training guidelines for WASH Satellite Committee Members. The modules were adapted from the existing "Community Led Total Sanitation Manual" and the "Dry Toilet Manual" from MLGH and MOH, and comprehensively address community WASH strategies, including the promotion of hand washing and construction of government endorsed latrines.

The project then facilitated the formation of 26 WASH committees in the two districts at satellite level. Each WASH satellite had a total of 10 members; the total number of WASH committee members at Satellite level was 260. The TOT Satellite Committee Members were trained to be responsible for rolling out hygiene education to their communities. In the third quarter of year one, the project team adopted a cascade training of trainers (TOT) approach, whereby each satellite member was tasked to train 9 other people from their community to form a village committee. PCI partnered with national CLTS trainers from the local government to train an additional 2,420 (1,235 females and 1,185 males) community members as WASH TOTs to reach out to households.

By the close of the project period, a total of 56,244 village members had received hygiene education aimed at addressing risky behaviours as identified through assessments and prioritised in the WASH strategy. This included education on the construction of pit latrines that were in line with MLGH and MOH standards, education on the construction of hand washing facilities including simple tippy-taps, and safe disposal of solid waste.

The project conducted verification exercises to check ODF status in target communities. The communities began the process by conducting a self-assessment and filling an ODF claim form. A total of 76 communities initially reported to be ODF and 21 were verified as being due for formal certification. However, only 8 of the 21 communities verified had been formally certified by the end of the project. The formal recognition, including a celebratory ceremony, takes an additional period of 3 months from the time of verification until the communities have been formally certified.

In terms of sustainability of activities in this sector, The District WASH Committee under the Ministry of Local Government and Housing committed themselves to continuing with the sensitization of communities on sanitation and hygiene and the verification and certification of communities as ODF. The WASH champions have been linked to the District WASH committee and they will continue to make follow ups in the community to ensure that most of the communities reach ODF status.

DRR: Project Activities

The project began DRR activities by conducting an inventory of existing community DRR committees in 10 project camps. The inventory found that the committees were non-existent in all 6 project camps in Choma and that in Kazungula district they existed but were inactive in all 4 project camps. The project mobilized a total of 26 DRR Committees at Satellite level, known as Satellite Disaster Management Committees (SDMC). The SDMCs were composed of representatives from the community's local political,

educational, and health institutions, and typically included a village headman or leader, a teacher, and a representative from a clinic or health post in the community, in addition to other selected community members. The selection was done by members of the village. The project then supported SDMC members to mobilize villages under their satellite camps to form Village Disaster Management Committees (VDMCs). A total of 200 VDMCs were formed. Each VDMC was comprised of about 10 members including the SDMC member.

The project partnered with DDMU, which is a unit under the Office of the Vice President, to adapt national DRR training guidelines in line with identified and known risks in the two project districts. The project trained the satellite committee members through a training of trainers. The satellite committee members were then responsible for leading and coordinating their village committees to identify and disseminate traditional early warning signs and develop early warning systems, identify vulnerable groups, develop disaster risk preparedness plans, identify and access available community resources and external resources offered by the DDMUs, and identify and utilize existing coping mechanisms with follow-up and support from program staff. A total of 1,711 (793 females and 918 males) satellite and village committee members were trained and by the end of the project, and 111 Community DRR plans were developed.

In order to enhance community access to weather information, the project set up 10 weather monitoring points (1 in each targeted camp). Previously, farmers only received weather information from camp officers, who obtained weather data from only 2 weather stations that covered the entire province. Having weather information at the community level has helped the farmers plan based on more targeted data. Some members of the DRR committee including teachers, pupils and lead farmers as well as MAL camp extension officers were trained in the collection, recording and reporting of weather data.

In order to ensure sustainability, DMMU and DDMC indicated that they will continue working with the communities through the DRR committees on strengthening the Early Warning System and DRR plans.

SECTION II: PROJECT RESULTS

AGRICULTURE & FOOD SECURITY

This sector had two major intermediate results: IR 1.1, *Productivity of Food and Fodder Crops in Vulnerable Households Increased* and IR 1.2, *Livelihoods Improved Among Households Selling or Purchasing Food or Fodder*.

INTERMEDIATE RESULT 1.1: Productivity of Food and Fodder Crops Increased In Vulnerable Households Increased

The table below is a summary of indicators under Intermediate Result 1.1

Table 1.1

Indicator	Performance Indicator	Unit	Disaggregation	Baseline Value	Project Target	Project Actual	
I.R 1.1.1	<i>Projected increase in number of months of food self-sufficiency due to distributed seed systems/agricultural input for beneficiary households</i>	#	Total	0	1.4	0.2	
			Sex of household head	Male	0	1.4	0.2
				Female	0	1.4	0.2
I.R 1.1.2	<i>Number of people benefiting from seed systems/agricultural input activities</i>	#	Total	0	1000	1000	
			Sex	Male	0	600	590
				Female	0	400	410
I.R 1.1.3	<i>Percentage of households whose wealth asset index has increased by 60%</i>	%	Total		70%	57%	
			Sex of household head	Male		70%	60%
				Female		70%	54%
I.R 1.1.4	<i>Number of hectares (ha) under integrated food and fodder crop</i>	#	Total	0	500	943 ²	
			Sex	Under Males	0	200	461
				Under Females	0	300	482
I.R 1.1.5	<i>Number of individuals applying new technologies or management practices as a result of project assistance</i>	#	Total	0	1000	862 ³	
			Sex	Males	0	400	422
				Females	0	600	440

² Note that this figure was collected through monitoring data with the participants, and differs from the final value of 1,767 Ha that was extrapolated by the final evaluation survey. The project team felt that the monitoring data that was collected at the time of planting would more accurately reflect the land size.

³ Note that this figure is collected through monitoring data with the participants, and differs from the final value of 1000 that was collected through the final evaluation. The project team felt that the monitoring data that was collected at the time of planting would more accurately reflect the number of participants that adopted new practices.

I.R 1.1.6	<i>Number of individuals who have received trainings on food and fodder production practices/techniques.</i>	#	Total		0	3000	1955
			Sex	Males	0	1200	785
				Females	0	1800	1170
I.R 1.1.7	<i>Number of food and fodder crop storage facilities built and used</i>	#	Total		0	500	159 ⁴
			Sex	Under males	0	200	75
				Under females	0	300	84

IR 1.1.1 Increase in number of months of food self-sufficiency

One of the key indicators of food security is the number of months that households have adequate food to meet their needs. At baseline, the number of months of household food self-sufficiency was 10.7 months. However, during the mid-term assessment, the project discovered that those sampled at baseline were actually a bit better off than the actual program participants. This was due in part to the fact that the baseline was required to be conducted before beneficiaries had been selected. The number of months of food self-sufficiency of program participants at midterm was 10.3 months. While the project aimed to increase the time of food self-sufficiency by 1.4 months from baseline, the end-line found that the beneficiaries had 10.9 months of food self-sufficiency, an increase of only 0.2 months, but 0.6 months over mid-term. Additionally, the project expects this to increase even more in the next season because the beneficiaries were just starting to build and buy storage facilities to reduce crop loss. This improvement in self-sufficiency is a notable achievement given the fact that these households were more vulnerable than most in the community, and that the crops in the region were adversely affected by a dry spell, especially in the second year of the project.

IR 1.1.2 Number of people benefiting from seed systems/agricultural input activities

The project target was 1000 and this target was met. A total of 1,000 people (of whom 590 were women) were supported with start-up seed for food and fodder production. The beneficiaries each contributed 10% of total cost towards the purchase of seed. Each beneficiary received four types of food crop seed, including Maize, Beans, Sorghum and Groundnuts; and five types of fodder crop seed, including cowpeas, velvet beans, pigeon peas, sun hemp and Rhodes grass. Findings from the final evaluation showed that crop production for all the crops increased from baseline in terms of the number and proportion of beneficiaries cultivating the crops supported by the project. The proportion of beneficiaries growing maize increased from about 96% at baseline to about 99% at end-line. For beans, sorghum and groundnuts the increase was from 3.4% to 47.3%, 1.8% to 52.5% and 46.8% to 77.3%, respectively. None of the project participants were cultivating fodder crops at baseline, and at end-line it was found that 56.8% were growing Sun hemp, 31.6% were growing Rhodes grass, 70.2% cowpeas, 35.7% pigeon peas and 54.7% were growing velvet beans.

⁴ Note that this figure was collected through monitoring data through the metal silo sales and lead farmers, and differs from the finding of 449 in the final evaluation, which was an extrapolation from the random survey with participants.

IR 1.1.3 Percentage of households whose wealth asset index has increased by 60%

The project aimed to increase the wealth asset index of 70% of the households by 60%. In the calculation of the wealth asset index, both productive and non-productive assets were considered. At end-line, 57% of the households had increased their wealth asset index by 60%, falling short of the target of 70%. This could be due to relatively poor weather patterns during the project, which resulted in lower than ideal harvests, and thus less money with which to purchase additional assets. Yet, the fact that 57% of the households could acquire new assets in spite of this challenge is a notable achievement.

IR 1.1.4 Number of hectares (ha) under integrated food and fodder crop

The project target was 500 hectares under integrated food and fodder crop. In Year 1, the project monitoring data indicated that this target was exceeded by monitoring data showing 1,039 hectares under integrated food and fodder in the first season and 943 in the second season. This was a good result and showed that even without receiving seed in the second year, farmers were still able to sustain food and fodder production. The Final Evaluation found that that beneficiaries in the two districts had planted a total of 1,767 ha under integrated food and fodder crops production. The total number of hectares for males was 844 ha and that for females it was 923 ha. There was a significant difference in the number of hectares in the project monitoring data and final evaluation data. This is because at final evaluation the ‘recall’ method was used, in which farmers are expected to remember how many hectares they planted 5 months prior to data collection, while the project monitoring data is based on a physical measurement of the size of the field while crops are still growing. The project monitoring data is therefore a more accurate measure.

IR 1.1.5 Number of individuals applying new technologies or management practices as a result of project assistance

The aim of the project was to have all 1,000 beneficiaries applying new technologies or improved farm management practices. The project recorded that a total of 862 farmers out of the targeted 1000 had applied new technologies in Year 2 compared to 741 farmers in Year 1. The Final Evaluation however showed that (79%) were applying new conservation farming practices or new technologies. While the target was not reached, this result is a significant achievement. During the project closeout workshops, Ministry of Agriculture and Livestock (MAL) officials were impressed with this achievement by the project and indicated that in their own interventions, only about 30% of the farmers they trained would typically adopt conservation farming practices. The contributing factors which may explain the higher adoption rates by SHARP participants include SHARP’s simplified and focused training approach, the presence of lead farmers within community to provide immediate support to farmers on-demand, and consistent follow up with farmers and lead farmers by project staff.

Experience has proven that the program target was too ambitious. It is impractical to assume that all people that attend training would continue with the project and be interested in implementing new practices. In addition, behavior change and adoption of new practices a longer time period than the 23 months of project implementation. At the end-line, some beneficiaries expressed that they may have implemented more improved practices if they had access to farming equipment such as ‘Chaka’ hoes that would have enabled them to adopt practices such as minimum tillage which is one of the core conservation farming practices. Chaka hoes are more expensive than ordinary hoes and also are not readily available in local community markets.

IR 1.1.6 Number of individuals who have received trainings on food and fodder production practices/techniques

The project aimed to train 3,000 individuals (1,000 seed recipients and 2,000 other community members) on food and fodder production and techniques. The project design anticipated that for each seed recipient trained, 2 additional household members would participate in training activities. However, it was found that most beneficiaries could not have more than 1 member of the household attending training activities due to other commitments, such as household chores and other farming activities which households considered a priority. By the end of the project, a total of 1,955 people were trained, of these 955 were households that did not receive seed from the project. The target of 3,000 could not be met. However, due to the Answer Plot approach in which any member of the community could attend farmer field schools at these Answer Plots, farmers from other households that did not receive seeds also participated in training activities. Even though the target of 3,000 individuals was not met, more households than the 1,000 originally planned benefitted from the project from training activities. This is a notable achievement in terms of capacity building.

IR 1.1.7 Number of food and fodder crop storage facilities built and used

The target for this indicator was 500 food and fodder storage facilities built and used. At the end of the project a total of 157 crop storage facilities had been built, of which 112 were food grain storage facilities, and 45 were fodder storage facilities. The project promoted metal silos as an effective method for grain storage in order to sustain food security at the household level. While only 112 silos had been purchased and utilized by the close of the project, the project team employed strategies to ensure that more farmers would continue to purchase metal silos after the project life. The artisans trained in metal silo fabrication remain with construction materials to fabricate additional metal silos, and orders for silos continued to be collected even in the final days of the project. At the time of the SHARP project evaluation, artisans confirmed having received orders from farmers for additional 64 silos to be built and delivered after the project ends.

INTERMEDIATE RESULT 1.2: Food security and livelihoods improved among households selling or purchasing food or fodder

Table 1.2 below shows the summary of indicators under Intermediate Result 1.2.

Table 1.2

Indicator	Performance Indicator	Unit	Disaggregation	Baseline Value	Project Target	Project Actual	
I.R 1.2.1	<i>Number of producers linked to fodder market outlets to sell their produce</i>	#	Total	0	1000	63	
			Sex	Males	0	400	26
				Females	0	600	37
I.R 1.2.2	<i>Number of firms/agro-dealers linked to livestock producers and providing new business services</i>	#	Total	5	5	5	

IR 1.2.1 Number of producers linked to fodder market outlets to sell their produce

The target on this indicator was to have all 1,000 farmers linked to fodder market outlets; however by the end of the project only 63 farmers were linked to fodder buyers, with one farmer who already sold fodder. The buyers of fodder that the beneficiaries were linked to include local livestock owners, Golden Valley Agriculture Research Trust (GART) and a local Agro Dealer. The project fell short on meeting this target due to several factors. The largest factor was that in the first year, farmers were encouraged to grow fodder solely for the multiplication of harvested seed, because the quantities of seed quantities they obtained from the project were not enough to produce significant amounts of fodder in the first year. Fodder seed was not readily available from seed companies that sell fodder, hence it was not possible to give beneficiaries more seed than the allotted 2.6 Kgs of seed for each farmer. Secondly, during the second project year, there was a dry spell and many farmers did not manage to plant any fodder. Those who did lost most of their crop due to the bad weather. Finally, those farmers who did harvest significant quantities of fodder generally preferred to keep it to feed their own livestock rather than selling it. Overall, this target was set too ambitiously at program start-up, since fodder production itself is a new concept and not all of the beneficiaries would want to adopt commercial fodder production before utilizing the fodder to feed their own livestock.

IR 1.2.2 Number of firms/agro-dealers linked to livestock producers and providing new business services

The project aimed to link five agro dealers/firms to project beneficiaries and this target was met. These included: Eliezer, Technical Sprayer Services, Seed Co, Lima Chuma and Agricultural Technical Services. Eliezer and Technical Sprayer Service were engaged to implement the voucher system used in seed distribution and Seed Co provided some additional varieties of seed to farmers, while Lima Chuma and Agricultural Technical Services sold products such as herbicides and fertilizers to beneficiaries.

WATER AND SANITATION HYGIENE

This sector had two major Intermediate Results: IR 2.1: *Communities and local institutions strengthened to manage solid waste, improve drainage, and improve sanitation conditions*; and IR 2.2: *Household Hygiene Practices Improved*.

INTERMEDIATE RESULT 2.1: Communities and local institutions strengthened to manage solid waste, improve drainage, and improve sanitation conditions

The table below shows a summary of performance by indicator under Intermediate Result 2.1.

Table 2.1

Indicator	Performance Indicator	Unit	Disaggregation	Baseline Value	Project Target	Project Actual	
I.R. 2.1.1	<i>Number of people benefiting from solid waste management, drainage and/or vector control activities</i>		Total	0	59,228	56,244	
			Sex	Males	0	28,281	26,997
				Females	0	30,947	29,247
I.R. 2.1.2	<i>Number of communities with DRR action plans developed that address priority environmental health conditions</i>	#	Total	0	200	111	
			District	Choma	0	120	71
				Kazungula	0	80	40
IR 2.1.3	<i>Percent of households that dispose of solid waste appropriately</i>	%	Total	56.8%	100%	94%	
			Sex of household head	Male headed	56.8%	100%	97%
				Female-headed	56.8%	100%	91%

IR 2.1.1 Number of people benefiting from solid waste management, drainage and/or vector control activities

The project aimed to reach 59,228 people with solid waste management, drainage and vector control activities (9,871 directly and the remainder indirectly). The project managed to reach 56,244 (95% of target). The target could not be met as the WASH champions did not reach enough households by the end of the project. The project team realized that there might be a shortfall at midterm and took action to distribute 60 bicycles to WASH champions to enable them to reach more households. While these bicycles were helpful in helping to reach more beneficiaries, the project period elapsed before the target was fully reached.

IR 2.1.2 Number of communities with DRR action plans developed that address priority environmental health conditions

A total of 111 DRR action plans addressing priority environmental health conditions were developed against a target of 200. Some committee members were unable to reach remotely and sparsely located villages during the project period due to transportation challenges and so the target could not be met.

IR 2.1.3 Percent of households that dispose of solid waste appropriately

During the WASH needs assessment it was found that a total of 56.8% of the households in target communities were disposing of solid waste appropriately. The project aimed to increase the baseline figure by 50%, which would be over 100% or all households disposing of solid waste appropriately. The target of +50% was chosen before the needs assessment was conducted, so the resulting target of over 100% became too ambitious for a 23-month project to achieve. At project end line, 94% (37.2% over baseline) were disposing of solid waste appropriate, which is a notable achievement. Behavioral change practices normally take much longer.

INTERMEDIATE RESULT 2.2: Household Hygiene Practices Improved

Table 2.2 below shows a summary of indicators in this intermediate result

Table 2.2

Indicator	Performance Indicator	Unit	Disaggregation	Baseline Value	Project Target	Project Actual	
I.R 2.2.1	<i>Number of people receiving direct hygiene promotion (excluding mass media campaigns and without double counting)</i>	#	Total	0	9,871	9,374	
			Sex	Males	0	3,948	3,999
				Females	0	5,923	5,375
I.R 2.2.2	<i>Percent of target communities certified open defecation free (ODF)</i>	%	Total	0	90%	4%	
			District	Choma	0	90%	3%
				Kazungula	0	90%	5%

IR 2.2.1 Number of people receiving direct hygiene promotion (excluding mass media campaigns and without double counting)

The project aimed to reach 9,871 people from different households directly with hygiene promotion messages and achieved a total of 9,374 (95% of target). The project trained committee members known as Champions who were tasked with reaching out to households in their communities. The Champions could not reach all the target households in their communities with direct hygiene promotion messages. See indicator 2.1.1 for more information.

Several household hygiene practices improved markedly over the life of the project, particularly the number of households treating water. From baseline to end-line, the percentage of households treating water increased from 18% to 71.8%, the percentage with handwashing facilities increased from 57.68% to 96%, and the percentage of households with latrines increased from 85% to 93%.

IR 2.2.2 Percent of target communities certified open defecation free (ODF)

Only 2% (4) out of a target of 180 communities were certified Open Defecation Free during project implementation. At project close, 18 others were verified by the project team to be qualified for certification. The project target was set at 90% of the 200 target communities to be certified ODF. Even though the target was not reached, the target communities made major strides toward becoming ODF; at final evaluation 93% of the community members had pit latrines, although some indicated that their pit latrines had collapsed due to heavy rains which came toward the end of March 2015.

DISASTER RISK REDUCTION

This sector had two major Intermediate Results; IR 3.1: *Communities mobilized to prepare, mitigate and respond to shocks and stresses* and IR 3.2: *Capacity of local communities, organizations and government to respond to disasters strengthened*.

INTERMEDIATE RESULT 3.1: Communities mobilized to prepare, mitigate and respond to shocks and stresses

Table 3.1 below summarizes the indicators under this intermediate result

Table 3.1

Indicator	Performance Indicator	Unit	Disaggregation	Baseline Value	Project Target	Project Actual	
I.R 3.1.1	<i>Number of people participating in training on disaster preparedness, mitigation and response</i>	#	Total	0	2,031	1,711	
			Sex	Males	0	805	918
				Females	0	1,208	793
I.R 3.1.2	<i>Percentage of people who retain skills and knowledge after two months</i>	%	Total	0	70%	77%	
			Sex	Females	0	70%	77%
				Males	0	70%	77%
I.R 3.1.3	<i>Percentage of attendees at joint planning meetings who are from the local community</i>		Total	0	85%	76%	
			Sex	Males	0	85%	48%
				Females	0	85%	28%

IR 3.1.1 Number of people participating in training on disaster preparedness, mitigation and response

A total of 1,711 people were trained in disaster preparedness, mitigation and response, against a target of 2,031. All beneficiaries of DRR who received training belong to either a satellite or village committee. The target could not be met because some community members did not turn up for training meetings.

IR 3.1.2 Percentage of people who retain skills and knowledge after two months

The project aimed for at least 70% retention of skill and knowledge among the people who were trained. The project carried out post-tests with those that were trained and found that 77% of the trainees were able to retain significant knowledge from the training. This is an indication that a good proportion of people understood the training topics.

IR 3.1.3 Percentage of attendees at joint planning meetings who are from the local community

The project aimed to have at least 85% of community members attend joint planning meetings. The project was able to accomplish 76%. The target could not be met as other members of the community could not come for the joint planning meetings that were organized in collaboration with Disaster Management and Mitigation Unit (DMMU). Each community only had one meeting and so those who missed this joint planning meeting did not have another opportunity to attend.

INTERMEDIATE RESULT 3.2: Capacity of local communities, organizations and government to respond to disasters strengthened

The table below summarizes the achievements on indicators under this intermediate result

Table 3.2

Indicator	Performance Indicator	Unit	Disaggregation	Baseline Value	Project Target	Project Actual	
I.R. 3.2.1	<i>Early warning system in targeted community is in place for all major hazards with appropriate outreach to communities</i>	(Yes / No)		No	Yes	No	
I.R. 3.2.2	<i>Percentage of community members who received at least one early warning message from at least one source prior to a disaster occurring</i>	%	Total	0	70%	30%	
			Sex	Males	0	70%	32%
				Females	0	70%	28%
I.R. 3.2.3	<i>Number of DRR plans created through D-RISK mapping process</i>	#	Total	0	200	111	
			District	Choma	0	120	67
				Kazungula	0	80	44

IR 3.2.1 Early warning system in targeted community is in place for all major hazards with appropriate outreach to communities

The project aimed to have a functional Early Warning System in each community. At final evaluation it was found was evident that DRR Committee members obtained early warning system messages and shared them with community members in 9 out of 10 project camps. 1 camp did not have a fully functional early warning system.

IR 3.2.2 Percentage of community members who received at least one early warning message from at least one source prior to a disaster occurring

The target on this indicator was to have at least 70% of community members receiving at least one early warning message from at least one source prior to a disaster. In the final evaluation it was found that 30% of the community members had received an early warning message. The final evaluation established that it was DRR Committee members who obtained early warning system messages and shared them with the rest of the community members.

IR 3.2.3 Number of DRR plans created through D-RISK mapping process

A total of 111 DRR plans were created through the D-RISK mapping process. While all the communities had participated in mapping hazards and resources, only 111 had created action plans to go along with the maps. Hence the target was not reached. The final evaluation found that most aspects within the DRR plan were yet to be implemented as the village committee members were still planning ways to share the plan with their communities. One of the most common aspects of the DRR plans implemented thus far were ongoing village discussions to share information on early warning signs and possible measures that households should consider to build their resilience to shocks and stresses.

SECTION IV: MAJOR CONSTRAINTS AFFECTING RESULTS

In the Agriculture and Food Security component the major constraint faced was that the project timeline did not align with the crop cycle; in particular, the project began 2 months after farmers had started their agricultural activities/season, meaning that Land O'Lakes was rushed in carrying out some activities such as selecting beneficiaries, developing a seed voucher system, and distributing seed while the seed could still be planted. This resulted in relatively poor training attendance and application of technologies, especially in the first year.

Both growing seasons included in the 23 months of project implementation were also marked with prolonged dry spells, with the second season being worse, resulting in crop failure and lower yields. This affected the ability of beneficiaries to purchase assets including metal silos, due to the fact that they had no extra income from crop sales. At this stage of the project, especially the first year, DRR interventions had not fully developed the target communities' capacity to mitigate the effects of drought, though much improvement was noted in the second year.

In the WASH and DRR sector, delays in sub-contract finalization for the implementing partner organization resulted in late start-up in rolling out the work plan activities. Consequently, key activities, such as the training of committee members were delayed. By mid-term very few households were reached by the committee members, and by the end of the project fewer households were reached than targeted. This affected the number of individuals reached with hygiene promotion messages, the number of beneficiaries adopting improved hygiene practices and number of people trained in DRR.

In all sectors beneficiaries indicated that their lack of equipment affected adoption of improved practices. In the agriculture sector, beneficiaries indicated that if the project had provided Chaka hoes, more farmers

would have adopted minimum tillage as an improved practice. In DRR and WASH, beneficiaries would have had more success in building improved latrines and hand washing facilities, and treating their drinking water if they had the concrete and chlorine necessary. DRR and WASH committee members also indicated they would have been able to reach the target number of community members and household if they had more bicycles.

SECTION V: BEST PRACTICES AND LESSONS LEARNED

Some of key best practices include the following;

Answer Plot approach: Hands-on training at Answer Plots during Farmer Field Schools promoted higher assimilation and adoption of improved practices in crop production. The farmers were able to test different agricultural theories and practices, see for themselves what worked best, and replicate these practices in their own fields. This resulted in higher uptake of improved practices such as conservation farming.

Integration of fodder in Conservation Agriculture using CA practices: The production of fodder crops (legumes) resulted in higher application of conservation farming practices such as crop rotation. Farmers understood from training that legumes retain and add nutrients to the soil and about 80% of farmers practiced crop rotation.

Early planting: The project promoted early planting in which farmers were encouraged to plant immediately after the first rains. Early planting resulted in farmers having a better crop than those who did not plant early. Plants that were planted later were more adversely affected by the dry spell.

Training of Trainers approach: The training of trainers approach in which lead farmers and WASH champions would train fellow community members allowed for a more personalized type of training in which beneficiaries received individualized attention and enhanced the adoption of improved practices as well as the greater outreach to more members of the community.

Building on existing skills: The project trained artisans who already had skills in blacksmithing and metal work; this made their ability to learn how to make metal silos much easier, and reduced the time it would have taken to train novices. Two of the artisans the project trained were from the previous Zambia Fodder Pilot Project that was implemented between 2012 and 2014.

The major lesson learned in the project is that collaboration with government departments is very important in all projects and it can be a key in ensuring success and sustainability. Collaboration with stakeholders will ensure sustainability beyond the life of the project, especially for key interventions, such as fodder cultivation, use of metal silos, group savings, ODF verification and certification, DRR plans and early warning systems. For example, the government of Zambia's MAL is ready to continue the monitoring of metal silo fabrication and has appointed two project trained artisans as master trainers, and the Department of Community Development has incorporated 2 farmer groups into government sponsored village banking activities. More groups are expected to be adopted and supported by the department.

SECTION VI: CONCLUSIONS

The Agriculture and Food Security component of the project performed fairly well in meeting the set objectives, and the start-up seed support in the first year ensured that farmers had inputs to improve their food security. Also farmers grew fodder in communities where fodder production was previously absent. The use of Answer Plots coupled with the Farmer Field School approach enhanced farmers' perception and use of the knowledge gained to improve crop production and storage practices. The Answer Plots managed to create mutually beneficiary relationships between the farmers in the targeted communities and the seed, fertilizer and agro-chemical companies. In spite of the challenges faced by the project at start-up and weather-related impediments, beneficiaries have more months of food self-sufficiency than at baseline. The project met 3 of the 9 targets set and performed fairly well on 5 of them despite the short life of the project. The voucher system employed by the project, despite the hurried start-up and involvement of agro-dealers, faced minimal challenges and managed to fully account for the projects' seed distribution (involving 4 food and 5 fodder crops) to all the 1,000 beneficiaries.

In the WASH sector, the project reached 95% of the targeted population and recorded a marked increase in various improved hygiene practices compared to baseline. Improved hygiene practices included treatment of water, handwashing facilities, latrine construction and proper disposal of solid waste. The project did not fully meet any of the set targets in this sector, but recorded fairly good results in 3 of the 5 targets set.

In the DRR sector of the project, only 1 of the 6 targets were met. However, the project recorded notable achievements including the training of 84% of the target population and a functional early warning system in place in 9 out of 10 camps.

While the majority of targets were not met, this was mainly due to the targets being set too high. The project recorded good results which confirm that the resiliency of vulnerable households has been considerably strengthened through project activities. Collaboration with key stakeholders may also ensure continuity on some activities whose achievements were low by the end of the project time frame.

ANNEXES

- I. SUCCESS STORIES (4)
- II. FINAL EVALUATION REPORT



SNAPSHOT

Age-Defying Ambition

Artisan continues to expand his business beyond the golden years



A wood and metal artisan improves his skills to support business development in his community.

More than thirty minutes' drive from Zambia's Southern Province lives Mdala (meaning old man in Tonga language) Mwanza. In stark defiance of his white hair and wrinkled skin, Mwanza walks at an impressive clip and maintains a youthful glint in his eyes. A wood and metal artisan by profession, Mwanza, in his mid-sixties, is one of only six experts in his trade selected to lend his skills for his community's development under the Sustainable Health and Agriculture for Resilient Populations (SHARP) project.

SHARP is a 23-month project that aims to increase food security, health and disaster-risk reduction in Zambia's Choma and Kazungula Districts. Implemented by Land O'Lakes International Development with funding from the United States Agency for International Development (USAID), the project is addressing household food security, improving water, sanitation and hygiene (WASH) in communities, and strengthening household resilience to disasters. Under the project's agriculture and food security component, SHARP is promoting effective grain storage through facilitating the production of metal silos and encouraging their use by farmers.

Mwanza saw this project as an opportunity to improve his knowledge of agriculture and improve life for his family. At the time, Mwanza had no idea that a part from improving his farming practices, the project would also help his other businesses. "I have been a carpenter and tinsmith since 1972. I could not imagine that an agriculture project would make such a big difference to my business," Mwanza said.

In June 2014, together with nine counterparts in the trade, Mwanza took part in a week-long training in Monze area, not far from his Musokotwane home. During the training, Mwanza and his peers learned how to design the metal silos, develop production specifications, and cost, price and market the products. Mwanza emerged among eight artisans, whose work was deemed of superior quality to continue in the project. He later became one of only six artisans who sailed through the next vetting stage, when he successfully built three, well-crafted sample silos to market the new storage facility to farmers.

Metal silos are a major improvement from traditional grain storage facilities which leave the contents vulnerable to pests,

rodents, theft, and damage from moisture. These silos are neat and portable, and can store grain for many years without damage. By providing safe and hygienic storage for produce, metal silos not only guarantee food security for these households, but also allow farmers flexibility on when to sell their grain, enabling them to fetch better prices in the market.

Since the training, Mwanza has built more than 17 metal silos, selling a total of nine in the span of just one month. At a production speed of one silo per day and with each silo selling for 300 Zambian Kwacha (approx. \$40) each, Mdala Mwanza's workshop is in business. "Business is good. The metal silos are attracting clients for my carpentry business too" Mdala Mwanza explains. "Earlier today, I attended a cooperative meeting to market the silos. There seems to be a lot of interest and I expect many more customers," he adds.

With new clients on the horizon, Mwanza is proud to know he can continue to work and produce well into his golden years.



SNAPSHOT

Leading by Example for Food Security

Farmer improves maize yields, withstanding climate shocks



“In previous years, food shortages would force me to rely on relatives for basic financial support,” Stella recalls. “Now that I have the means to not only drastically increase my yield but also safely store my produce, I can take advantage of better prices in the market, to sell my grain early in the year.”

In Kazungula District, the sandy soil and dry heat betray the region’s proximity to the Kalahari Desert. Here, like in many other areas of Zambia’s Southern Province, subsistence farming is the main economic activity. However, the quirks of erratic weather patterns as a result of climate change make the communities vulnerable to drought, floods and other shocks.

Stella Simukali is a subsistence farmer who lives in southern Kazungula District. In mid-2013, she heard about an upcoming project that would help enhance the livelihoods of vulnerable communities in the area. Stella was selected as one of several community representatives to participate in the Sustainable Health and Agriculture for Resilient Populations (SHARP) project.

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Around the time of the first meeting, Stella had just harvested about 75 bags of maize – a respectable yield for her farm. Relatively young and very eager to learn new technologies, Stella quickly adopted the conservation practices taught under the project. She began to apply fertilizer appropriately, and carried out intercropping, crop rotation, and ripping and basin-making to ensure soil conservation. One year later, she harvested exactly double the number of bags, thanks to improved practices learned from the SHARP project.

As a lead farmer of the Sikale Farmers’ Group, which was formed with support from Land O’Lakes at the start of the project, Stella was also quick to learn the essentials of producing and storing fodder. “As a lead farmer, I must lead by example and the silo is very helpful in training my peers on the benefits of improved storage,” Stella explains.

So far, she has invested in one metal silo – one of the innovations in the project – to ensure her surplus maize is safely and hygienically stored, away from pests and the

dreaded aflatoxin fungus. She is impressed that almost one year after purchasing the 480 Zambian Kwacha silo, her grain is as clean and fresh as the day she stored it. “With this metal silo, I do not have to incur costs and possible health risks associated with the excessive use of storage pesticides, as was the case with the traditional storage mechanisms. My grain is also safe from theft, since the metal silo fits nicely in this hut,” Stella adds.

“In previous years, food shortages would force me to rely on relatives for basic financial support,” she recalls. “Now that I have the means to not only drastically increase my yield but also safely store my produce, I can take advantage of better prices in the market, to sell my grain early in the year,” Stella adds. The proper storage provided by these silos will also guarantee food security for Stella’s household. She plans to invest in at least two more silos for storing sorghum and groundnuts.



SNAPSHOT

They Sharpened my Skills!

Zambian farmer cracks the nut on profitable farming.



Catherine shares her experiences with the SHARP project during a District Closeout Stakeholder Meeting in Choma District in late May 2015.

Catherine's participation as a lead farmer in the SHARP project gave her a vision for farming as a viable business, and showed her how to make the most of it to ensure her family has a nutritious diet, improve their livelihood and boost her household resilience.

Catherine Chitiku Hazinji is a woman with big dreams. A “Jill of all trades” living in Muyuni Village in Mapanza, Choma District, her petite frame and understated speech make it is easy to underestimate her drive and ambition. She is a farmer, trained Community Livestock Worker, bicycle-repairer, shop owner, tailor, and mother of eight.

While she had always been a self-starter, Catherine's participation as a lead farmer in the Sustainable Health and Agriculture for Resilient Populations (SHARP) project since 2013 gave her a vision for farming as a viable business, and showed her how to make the most of it to ensure her family has a nutritious diet, improve their livelihood and boost her household resilience.

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In early 2014, Catherine only harvested 10 bags of maize from her 10 hectare farm, far below the potential amount. “Like many others here, my family depends on maize for our livelihood. However, I did not know much about proper maize farming and I used to farm haphazardly and without any particular strategy. Every year, I was frustrated because my yields were low,” Catherine confesses.

The implementation of SHARP brought with it many welcome changes by way of improved farming techniques for enhanced crop productivity for Catherine and the farmer group from her district. Together they learned about early land preparation, how to make and apply manure for improved soil fertility, use fertilizer correctly, and practice proper soil conservation. Catherine also learned the benefits of using a metal silo for safe storage, crop rotation for optimal land use, and how to make fodder for improved livestock nutrition. This farmer's group - for which Catherine serves as Secretary - is one of 40 similar

groups formed with the support of Land O'Lakes during the SHARP project.

Catherine's bumper harvest of 200 bags of maize early this year is testimony to the benefits of these improved practices. Worth about 21,000 Zambian Kwacha (approx. \$3,000), this harvest is all the more remarkable considering the erratic rainfall patterns suffered in most of this region during the most recent wet season. Catherine's participation in SHARP has also helped to diversify her farm produce to include legumes such as velvet peas, pigeon peas, cow peas, and sun hemp for improved animal nutrition. And application of fodder farming will go a long way in ensuring resilience for her family during times of drought.

Improved productivity means that she now has more than enough maize, sorghum, beans and groundnuts for her family's consumption, with plenty left to sell. She finds the income from these sales increasingly useful in expanding her other businesses and providing a better life for her family. "We want to ensure that our children have a bright future. Two of them are already studying in good private schools," Catherine says.

Catherine doesn't mind that her strong entrepreneurial spirit often gets her teased in the community. "Some people say that I behave like a man, but all I know is that my new knowledge will push me forward," she says confidently. "This project sharpened my skills!"



SNAPSHOT

Artisan welding his way to Success

An artisan man learns a new skill to diversify his income



Tulaya demonstrates how to open the metal silo to access stored produce.

By providing safe and hygienic storage for surplus produce, metal silos not only guarantee food security for these households, but also allow farmers flexibility on when to sell their grain, thereby enabling them to fetch better prices in the market.

“Kalabana Walalya” is the message printed on the back of Tulaya Mupeta’s overalls. It means “be versatile and you will reap the rewards” in Bemba - a major Bantu language spoken primarily in North-Eastern Zambia. Tulaya spends his days shuttling between a hot furnace and a work bench at his small workshop at a busy market in Choma Town, in Zambia’s Southern Province. As a blacksmith, his livelihood depends on churning out the shiny metal items displayed neatly outside his workshop.

When Tulaya heard about a new metal product that could help him diversify his merchandise, he jumped at the chance to join lead farmers and artisans on a learning tour in Chipata District, almost 600kms (370 miles) away in Zambia’s Eastern Province. “A blacksmith’s tools are often expensive so when I heard that there was a new product that could assure me of a good return on investment,” says Tulaya. Organized by the Sustainable Health and Agriculture for Resilient Populations (SHARP) project, the learning tour was one of the project’s first activities towards promoting effective grain storage as a way of improving food security.

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As a preliminary step towards introducing metal storage silos among the target communities, the SHARP team embarked on a rigorous process to identify artisans who could learn to fabricate the metal silos, and lead farmers who could serve as early adopters of the technology. Tulaya was among a total of 15 people who participated in the learning tour.

Metal silos are a major improvement from traditional grain storage facilities which leave the contents vulnerable to pests, rodents, theft, and damage from moisture. These silos are neat and portable, and can store grain for many years without damage, or the use of pesticides or insecticides. By providing

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safe and hygienic storage for surplus produce, the silos not only guarantee food security for these households, but also allow farmers flexibility on when to sell their grain, thereby enabling them to fetch better prices in the market.

During the workshop, Tulaya and his peers learned how to design the metal silos, develop production specifications, and cost, price and market the products. Tulaya became one of six initial artisans who sailed through the next vetting stage, when he successfully built three, well-crafted sample silos to market the new storage facility to farmers. Of the original 10 artisans, Tulaya was among eight whose work was deemed of superior quality.

Tulaya's silos are now being fabricated on order and with pre-payments from farmers. So far, he has orders for 44 silos, at least six of which have already been fully paid for.

Previously, Tulaya's income could barely sustain his family. With a wife and four children – the eldest of whom is scheduled to go to college soon, household expenses are high. "I used to make roughly 10 to 15 Kwacha (\$1-\$2) per day before I diversified into silo-making. Now, I make at least twice that," Tulaya explains.

Tulaya's also received a significant boost to his portfolio when his meticulous work caught the eye of Ministry of Agriculture and Livestock (MAL) officials. The officials subsequently selected him and another artisan to work as master trainers for various players in the value chain. At the Ministry's invitation, he has since trained 12 agricultural officers and eight locals on the fabrication and use of the metal silos.

Tulaya's motto, "Kalabana Walalya" is being passed along the country as he trains artisans from other provinces on crafting, pricing and marketing the silos.



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**Sustainable Health and Agriculture for Resilient Populations
(SHARP)**

Final Evaluation Report

**USAID/ZAMBIA
OFFICE OF FOREIGN DISASTER ASSISTANCE
SOUTHERN AFRICA**

Submitted to:

The Chief of Party

PLOT 191B CHINDO ROAD
KABULONGA, ZAMBIA

Submitted by:

FRONTLINE CONSULTING SERVICES

Lottie House Suite C
Cairo Road North-End
P.O. Box 30950
Lusaka, Zambia

LUSAKA

JUNE, 2015

ACKNOWLEDGEMENT

This Sustainable Health in Agriculture for Resilient Populations (SHARP) End of Project Evaluation was commissioned by Land O' Lakes Inc. Frontline Consulting Services wishes to thank the Land O' Lakes Team for giving us the opportunity to undertake the assignment. The Land O'Lakes team, comprised of the Zambia Country Office and Global Monitoring and Evaluation Expert, provided invaluable guidance and expertise from inception and throughout the evaluation exercise.

We also wish to express our gratitude to the Choma Land O'Lakes office for providing assistance and guidance in identifying and locating respondents for the evaluation exercise. In the districts, we would like to thank the District Agricultural Coordinators (DACO) for Choma and Kazungula, the Community Development Office in Kazungula and the Traditional Royal Leadership in the Project Areas for making an input into the exercise. Chief Mapanza of Choma District deserves special mention in this regard for availing himself and his palace staff for interviews and providing critical insights into the Project.

The Consulting Team wishes to thank the various other respondents, particularly the farmers and other stakeholders in all the Project areas of Choma and Kazungula. Without their input, the exercise would not have been successfully undertaken. The Consulting Team also wishes to acknowledge the tremendous work which the data collection teams put in the evaluation exercise. The two supervisors and the enumeration teams for both Choma and Kazungula put in exemplary effort for us to meet the required number of household respondents. Their resilience and dedication to the exercise was key to the success of the exercise. Michael Soko of Ideal Research Solutions provided invaluable expertise in the digital data collection and analysis aspect of this evaluation.

Lastly, but not at all the least, we acknowledge the hard work and dedication of our Consultancy Team members. Specifically, the core team members included Christopher Shanda (Field Team Leader), Kelvin Luputa, Godfrey Chileshe, and Joan Mute. Other Team members were Richard Bwalya and Evans Kangwa.

Frontline Consultancy Services

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ABBREVIATIONS AND ACRONYMS

ATS	Agriculture Technical Services
CEO	Camp Extension Officer
CF	Conservation Farming
CLTS	Community Led Total Sanitation
DRR	Disaster Risk Reduction
FDG	Focus Group Discussion
GART	Golden Valley Agricultural Research Trust
GRZ	Government of the Republic of Zambia
KII	Key Informant Interviews
KPI	Key Performance Indicator
MAL	Ministry of Agriculture and Livestock
ODF	Open Defecation Free
PCI	Project Concern International
SHARP	Sustainable Health and Agriculture for Resilient Populations
SOW	Scope of Work
TV	Television Set
WASH	Water Sanitation and Health
ZMK	Zambian Kwacha

EXECUTIVE SUMMARY

The final evaluation of the Sustainable Health and Agriculture for Resilient Populations (SHARP) was conducted from April to June, 2015 in Choma and Kazungula districts in Zambia. SHARP was a 20 month project which commenced in August 2013, and was implemented in ten agricultural camps, six in Choma district and four in Kazungula district. The project was implemented by Land O'Lakes in partnership with Project Concern International (PCI) and funded by the United States Agency for International Development (USAID), Office of Foreign Disaster Assistance (OFDA).

AGRICULTURE AND FOOD SECURITY (AFS)

The main findings in this section include:

- 79% of participants implemented CA practices learned through the project, and 1,767 HA were under these CA practices in the last agriculture season (2014/15)
- There was a significant drop in areas under crop production as beneficiaries diversified. For example, between the two agricultural seasons, average maize field size dropped from 3.9 ha to 2 ha while yields improved from 0.4 tons/ha to 1.0 tons/ha. Groundnuts also showed a similar pattern, but the drop in the average area planted was excessive (over 3 ha to 0.6 ha); average groundnut yield in Choma was 74.2Kg/Ha at baseline while at end-line it is 445Kg/Ha, depicting a six-fold increase though still much lower than the average national yield which stands at about 730Kg/Ha. The yield for sorghum in Kazungula is 652Kg/Ha, an increase from 127Kg/Ha recorded at baseline.
- Participants continued to grow a number of fodder and food crops in the 2014/15 season without receiving seed from the project. Beneficiaries have engaged in seed multiplication especially fodder seed, like sunhemp and velvet beans. Rhodes grass did not perform well partly due to dry spells.
- All beneficiaries who received fodder seed grew it, sales were insignificant; only one farmer sold fodder to an individual buyer (Mayor of Choma). In total 63 farmers in Choma were linked to fodder markets. Linkage to fodder markets requires huge quantities of fodder, which stage the beneficiaries had not reached.
- There was a large increase in the percentage of people that had food and fodder barns; the proportion of people with fodder barns increased from 0.3% (baseline) to 11%, (end-line) for food barns, the proportion increased from 11% (baseline) to 55% at end-line and metal silos the proportion increased from 0.3% at baseline to 22.7% at end-line.
- The performance of the agricultural component of the project was affected by many factors which include timing of the start of the project for the agricultural season, delayed distribution of seed in the first season and intermittent rains and dry spells. Another challenge raised by respondents in the AFS component was associated with the AnswerPlot concept; sometimes farmers failed to turn up for group work at AnswerPlots which factor affected crop performance and associated learning.

The progress against the KPIs is as follows:

I.I.I: Increase in number of months of food self-sufficiency due to distributed seed system/agricultural input for beneficiary households

At baseline the sampled households were obtained from the population in the target districts; the months of self-food sufficiency was 10.7. At mid-term, the figure dropped by 0.4 months.

It is important to notice that, the sample at mid-term and end-line was obtained from the direct beneficiaries who, according to the selection criteria used, were among the worst hit in terms of food security. At end-line, the figure improved by 0.6 months. This achievement was lower than the target of 1.4 decrease in months of food self-sufficiency.

I.I.2: Number of people benefiting from seed systems/agricultural input activities

According to monitoring data the number of farmers who received field crop and fodder seed was 1,000 by the time of the end-line survey. In the first year (2013/14) season 996 were given and 4 in the 2014/15 season. On this indicator, the project achieved the planned target.

I.I.3: Percentage of households whose asset index has increased by at least 60%

The wealth asset index increased from 30.9% at baseline to 55% at end-line. The percent of households whose asset index increased by at least 60% was 57%. This was lower than the life of activity target of 70%.

I.I.4: Number of hectares (ha) under integrated food and fodder crops production

The survey showed that the beneficiaries in the two districts had planted a total of 1,767 ha under integrated food and fodder crops production. Total ha for males was 844 ha and that for females it was 923 ha. This result is much higher than the project life of activity target of 500 ha.

I.I.5: Number of individuals applying new agriculture technologies or management practices as a result of project assistance

At the time of the end-line survey, there were 697 individuals of the 906 active individuals applying new technologies. Active individuals referred to individual beneficiaries who were reported as still participating in project activities by the project at the time of end-line survey. In the first season of the project 996 of the beneficiaries accessed various seeds which they used in new technologies (for example cowpeas for crop integration); four accessed similar seeds the following season for the same purpose. Thus in the full life of activity of the project the 1,000 targeted beneficiaries applied new agriculture technologies at some point in time. The target under this indicator was achieved.

I.I.6: Number of individuals who have received trainings on food and fodder production practices/ techniques

In the twelve months preceding the end-line survey, 870 beneficiaries received training on food and fodder production directly; in the first season, 1,000 beneficiaries who accessed seeds accessed training through AnswerPlots. During group discussions, discussants revealed that there was a spillover effect of 2-3 individuals who in turn were coached by direct beneficiaries giving an estimate of between 2,000 and 3,000 individuals indirectly. The target set for the life of activity of the project was achieved.

I.I.7: Number of food and fodder crop storage facilities built and/or bought and used

The total number of crop storage facilities built and or bought and used (metal silos and other food & fodder barns) were 449 according to records available with SHARP. The facilities are evident at farmer level. The SHARP life of activity target was 500. During discussion with SHARP implementation team it was disclosed that 260 metal silos had been ordered by the farmers. The artisan in Choma confirmed having an order of about 32 silos per month. SHARP

also disclosed that they were in the process of securing up to 500 metal silos. The number achieved by end line survey (449) was lower than the estimated life of activity target of 500.

I.2.1: Number of producers linked to fodder market outlets to sell their produce

Sixty three farmers (63) in Choma were linked to fodder markets, Golden Valley Agriculture Research Trust (GART) and an individual (Mayor of the City of Choma). By the time of the survey, GART was still assessing the fodder for possible purchase; the mayor had already been buying the fodder from the one of the farmers. In this indicator the target of 1,000 was not achieved.

I.2.2: Number of firms/agro-dealers linked to livestock producers and providing new business services

SHARP achieved the target of 5 agro dealers linked to farmer groups. The list of agro dealers confirmed during group discussions included Eliezer, Agriculture Technical Services (ATS), TSS, Seedco, Lima Chuma and ATF

Conclusion of AFS

Overall, the findings show that the project was successful in training the beneficiaries and introducing fodder production for integration with food crops. The AnswerPlot concept used in training was effective in the target communities except for some challenges like failure for some farmers to turn up to provide labor when needed. This affected performance of the AnswerPlot as a teaching aid.

The majority of the participants (79%) are implementing conservation agriculture techniques promoted through the project as compared to 29% at baseline. The distribution of seed in the first season by the project was a booster for continued growing of both food and fodder crops introduced as was seen in the second season when farmers still the crops. The development is expected to be sustained because farmers have started multiplying seed for legumes introduced.

The technologies introduced for agricultural production resulted in efficient use of resources by farmers. Average field sizes for a number of crops dropped significantly as yield increased; maize yield more than doubled from 0.4 tons/ha to 1 ton/ha for example.

The project also successfully promoted the use of food and fodder barns, as 10.5% and 22.7% of the beneficiaries in Choma and Kazungula now have fodder barns, as compared to less than 1% at baseline. Similarly proportion of beneficiaries with metal silos also increased to 4.6% and 11.1% from less than 1% in Choma and Kazungula respectively. Since metal silos are being locally made by local artisans trained by the project; with the increasing the demand for the metal silos, it is expected that the number of these silos will increase significantly in the coming years. At the time of the survey, there 260 orders for the silos made by farmers.

Under the AFS, the Researchers recommend as follows:

1. The project should incorporate incentives in the concept of the AnswerPlots to curb labor shortage. One method is to increase the AnswerPlot field size to an economic level, say 0.5 ha. The proceeds could then go to the host farmer as incentive. In this way the host farmers will be compelled to provide their own labor in the event that member farmers fail to carry out.
2. The response on metal silos by farmers is quite significant. In order to enable many farmers access the facility, SHARP should consider strengthening marketing skills for the artisans through appropriate training and linkages with lead farmers or agro-traders in the community. Similarly, the project should create linkages for fodder marketing for markets beyond the producing districts.

WATER SANITATION AND HEALTH (WASH)

Main findings under WASH are as follows:

- SHARP facilitated formation of 26 WASH Satellite Committees with representation from each of the target areas. Then the members of the satellite committees formed village committees in their community, and those provided outreach to the community members. The SHARP project also helped with the training of the village communities. The committee was trained in WASH practices and group formation. The committee in turn started training the community members and made follow ups to individual households to promote WASH practices. The last quarterly report of 2014 (SHARP) showed that 56, 244 individuals were trained by WASH activities. Estimates from the survey showed that 55, 268 individuals were reached. The number attained is much higher than the figure obtained at mid-term showing an increase in WASH activities in the target community. This led to the attainment of ODF status in some villages in SHARP target areas.
- The project showed general increase in most WASH practices from Action planning, hand washing, drinking water treatment and storage to waste management compared to the mid-term. From the group discussions it was evident that respondents were freely discussing WASH matters freely. Culturally, open defecation is usually not freely discussed in the public, but after participation in the project, the participants showed a significant improvement in the way respondents were debating; this has the effect of changing some retrogressive norms for the better.
- Although, 93% of the respondents said they had pit latrines, the March, 2015 heavy rains reversed some of the efforts. Some latrine collapsed as a result of inferior material used. It was revealed that some pit latrines were constructed without sanplasts leading to weak floors. The respondents suggested that the project should have constructed demonstration latrines to further improve skills.
- The target community showed significant improvement in levels of hygiene. For example during needs assessment 13.5% of the beneficiaries were throwing their solid waste in pit latrines compared to 71% at end-line; proportion of farmers treating drinking water increased in Choma and Kazungula from 17% to 31% in the former and 21% to 54% in the latter. In addition, the proportion of beneficiaries using the bush as toilets reduced from 11% during needs assessment to 1% at end-line. The high activity level of the WASH Champions and committee members is a good sign of sustainability of WASH activities. However, the attainment of ODF status is threatened by the poor construction of some pit latrine which challenge if unchecked has potential to reverse the positive gains under the WASH component.

The progress towards key performance indicators under this component is as follows:

2.1.1: Number of people benefiting from solid waste management, drainage and/or vector control activities

SHARP facilitated formation of 26 WASH Satellite Committees with representation from each of the target area. The committee was trained in WASH practices and group formation. The committee in turn started training the community members and made follow ups to individual households for implementation of WASH practices; this was revealed during group discussions with the champions and community members. The last quarterly report of 2014 (SHARP) showed that 56, 244 individuals were trained by WASH activities. The number attained is much higher than the figure obtained at mid-term showing an increase in WASH activities in the target community. This led to the attainment of ODF status in some villages in SHARP target areas.

2.1.2: Number of people receiving direct hygiene promotion messages

By end-line survey, the project had trained 9,374 individuals on hygiene; this includes 3,562 achieved at mid-term. The life of project target was 9,871. The indicator is lower than target partly due to slow start up of project activities.

2.1.3: Percentage of households that dispose of solid waste appropriately

Disposing solid waste appropriately was defined as having a formal latrine structure, and disposing of stool of infants and babies either through burying it in the yard or putting it in a latrine. At mid-line, the achieved value was 83.2%. At end-line, the proportion was 94.4%; the project life of activity target was 100%. The achievement was slightly lower than the target.

2.2.1: Number of people receiving direct hygiene promotion

From the end-line survey, the estimated number of people receiving direct hygiene promotion through training directly was 9,374. The March, 2015 report indicated 9,374 individuals the project life of activity target is 9,871. The achievement was lower than the target.

2.2.2: Percent of target communities' certified open defecation free (ODF)

Eight of the 200 villages in SHARP target areas were certified ODF. The local council, however, indicated that all villages were certified ODF (Choma). During group discussions, the beneficiaries indicated that not all were certified. According to discussants, 100% compliance on all WASH practices was slow to attain because it was contra-cultural; others said it was difficulty to fetch water because water sources were not near.

Conclusions of WASH

The project performance was commendable in promoting hygiene practices as 9,211 beneficiaries were reached directly. The target communities showed improvement in some hygiene practices such treating water for drinking. This was evident in both districts as the proportion of beneficiaries involved in treating water increased from 33% in Choma and 24.8% for Choma and Kazungula respectively at mid-term to 48.5% in Choma and 63.5% in the same order. Another improved practice witness was disposal of solid waste where 94.4% indicated that they were disposing of their solid waste appropriately. Habitual hand washing before meals and after using the toilet were confirmed and most homes hand washing containers near their pit latrine. However, not all practices have constitutently improved showing resistance to customary practices. Appropriate water storage decreased as seen between mid-term and end-line.

To strengthen the capacities of WASH Champions and sustain achievements observed, the following is recommended:

1. Future project should consider construction and building capacity in the construction of pit latrines by putting up demonstration pit latrines in strategic places in the community. Further, provision of sanplats by the project, though expensive, could greatly improve waste management in the community in future projects.
2. Improve access to water at household level through construction and capacity building in the construction of rain water harvesting in the target communities.

DISASTER RISK REDUCTION

The findings under the DRR component are:

- SHARP set up 10 weather stations in schools and Agriculture Camp Officers' premises. Farmers accessed information from these points and 111 villages which developed DRR plans incorporated results from the weather points.
- Sixty percent (60%) of the target farmers received early warning sign messages. The outreach programs were spearheaded by villages committees which were formed by satellite committees. 75% and 44% in Choma and Kazungula, respectively said they got their early warning messages from the project. There were 26 satellite committees
- The survey shows that DRR meetings took place in the communities; 52% and 66.5% of the respondents in Choma and Kazungula respectively said they were involved in DRR community meeting and discussions. DRR meetings and discussions led to attainment of skills and knowledge in DRR issues.
- The project help joint planning meetings with stakeholders in the districts. By March, 2015, SHARP reported achieving 76% of the targeted project life of activity target of 86%. At the time of the survey, key informants confirmed having been involved in the joint planning meetings.
- Consistent documentation of information from weather points stationed at CEOs was a challenge. As a result the weather information from some CEOs was not helpful in mitigating effects of hazards. Some discussants indicated that information from weather points set up was mainly being used historically; the information helped explain why, for example, certain yields were low. It was also indicated that the same historical information was helpful in educating farmers on selection of crop types in future.
- The combination of DRR activities and active participation of committee members and stakeholders led to increased DRR preparedness in the target areas. For example, 60% of the respondents revealed during discussions they had received DRR messages prior to disasters which enabled them take informed decisions on crops to grow thus averting serious impact from hazards.

The progress towards key performance indicators under this component is as follows:

3.I.1: Number of people participating in training aimed at preparedness, mitigation and response to shocks and stresses

The achievement under this indicator is 1,711, slightly below the target of 2,013, according to the last donor report.

3.I.2: Percentage of people who retain skills and knowledge two months after training

According to the end-line survey conducted by the project after the committee training, 77% of the people who got trained were able to show signs of retention of skills and knowledge two months after training. However, it can be said that there was generally a ripple effect in that community members who were able to recite the various topics covered in DRR discussions was high. Target of 70% was achieved.

3.I.3: Percentage of attendees at joint planning meetings who are from the local community

Joint planning meetings in terms of attendees had achieved more than 85% of the target. According to the quarter report (March, 2015), there was 76% achieved. Supportive information during the FGDs and key informant discussions revealed that there was one major meeting for

both Choma and Kazungula where the DDMC representative and PCI project staff visited some camps.

3.2.1: Early warning system in target communities is in place for all major hazards with appropriate outreach to communities

From the survey, it was evident that DRR Committee members obtained early warning system messages and shared them with community members. This was lacking in Malindi camp, however. This indicator was not achieved.

3.2.2: Percentage of community members who received at least one early warning message from at least one source prior to a disaster

The survey gives an average of (30%) for both Choma and Kazungula receiving some form of early warning information at least from one source. The achieved value compared to the target (70%) is lower.

3.2.3: Number of communities that develop DRR action plans through the D-RISK process that address priority environmental health conditions

111 villages out of a target of 200 villages developed DRR plans (March, 2015 quarterly report). The plans were used by committee members for mitigating hazards. The remainder of the villages had started the planning process late and were still mobilizing community members at the time of the end-line; once made, the plans will be used in the coming season.

Efforts to strengthen the DRR activities in the community in future should consider the following:

1. Replace plastic rain gauges with metal ones for sustainability. Further, it is necessary to focus attention of strengthening the operations of the weather equipment at schools instead of CEO premises since the latter are sometimes out of station for workshops or meetings leading to failure to collect information consistently.
2. Future interventions in promoting weather points should focus primarily on how the points could be linked effectively with the meteorological department. Weather information collected only for a short period of time has little use in helping farmers predict weather patterns. According to the Met. Department of the Republic of Zambia, and climatological information, a minimum of 30 years weather data is required to make meaningful extrapolations to come up with predictions on likely weather events

Conclusions on DRR

The formation of the satellite committees and the subsequent establishment of village DRR committees in the target areas showed significant development of systems and skills to mitigate agricultural related hazards. 1,711 beneficiaries were directly trained by the system built. As a result of skills building, 111 of the 200 villages developed DRR plans, a significant step in mitigating natural hazards in agriculture. Stakeholders also showed significant capacities through the joint planning meetings that were successfully held.

The village committee members confirmed having had mapped hazards within their communities, and that based on the same, the DRR plans were developed. However, when it came to implementation of the said plans, there was a general expression that the most aspects within the DRR plan were yet to be implemented as the village committee members were still planning ways to share the plan to other targeted villages. Suffice to mention that one of the most common aspects of the DRR plan so far implemented are the onward village visitations for sharing information on early warning signs and possible measures that households could consider in building their resilience against the shocks and stresses. Most of such measures include the improved agricultural practices and

water and sanitation practices that the project areas have been learning and implementing such as toilet construction to reduce open defecation and enhance their environmental health conditions.

The DRR component did not perform as expected due to a number of challenges such as the delayed startup of community mobilization by village committees and limited members of field staff (there were only two field officers to support promote DRR among 10,000 households). Other challenges were associated with the performance of weather points placed at Camp Extension Officers' homes; there were gaps in information captured because sometimes the officers would be out of station. As a result only 30% of the beneficiaries indicated having received early warning message for use in their agricultural activities.

LESSONS LEARNED

1. Success and sustainability of interventions depend on involvement of all stakeholders. A case of joint meetings in SHARP showed potential for continuity. However, the project did not have its presence in the DDCC meeting. Further, the loyal establishment of Chief Mapanza expressed little knowledge about some of the SHARP activities. This gap is a threat to sustainability
2. Procurement of facilities/inputs to support farmer activities is crucial for attainment of agricultural objectives. Delays such as reported in the case of seeds in the first season of SHARP lead to a chain of negative impact on project activities. Whereas, the benefits of the voucher system are well understood in building capacities in Agro-Dealers and fostering linkages, projects should include methods of accelerating certain procedures which threaten success of investments.
3. Sound management of staff is key in implementation of projects and subsequent achievement of impact. New staff often take a while to learn the project approaches and concepts. This has effects on both effectiveness and efficiency. The case of replacement of all members of staff by PCI during SHARP implementation was one major contributing factors to the lapses observed in the implementation of activities; the low performance in Malindi in Choma is one case in point. For example, the satellite committee members in Malindi did not even have DRR plans which has long term effects on the area.
4. Strong collaboration between the project and district stakeholders particularly Government departments should be establishment from the start of the project and nurtured productively. For example, the office of the Ministry of Community Development were oblivious to the project activities regarding DRR in the district. As a major stakeholder, the Department felt that they could have played a more effective role in the implementation of project activities and sustainability post-project.
5. Weather monitoring points in the community are definitely a good and progressive concept. However, the approach to data collection on weather is more successful if the collection points have immediate use of the data and equipment; the case of the effective use of weather monitoring points at schools compared to CEOs' premises is a critical learning point.

SECTION I: BACKGROUND TO THE EVALUATION

PROGRAM DESCRIPTION

Land O'Lakes, in partnership with Project Concern International (PCI), has been implementing a 20-month livelihood project in 10 agricultural camps in the Kazungula and Choma Districts of Southern Zambia called Sustainable Health and Agriculture for Resilient Populations (SHARP). Funded by USAID/OFDA, SHARP's goal is to strengthen the resiliency of communities in southern Zambia to create sustainable livelihoods beyond the life of the project through activities in 1) **Agriculture and Food Security (AFS)**; 2) **Water, Sanitation and Hygiene (WASH)**, and 3) **Disaster Risk Reduction (DRR)**. Specifically, SHARP aims to meet the following objectives:

- Improve and protect household food security and livelihoods;
- Enhance community and household management of water resources and sanitation practices; and
- Strengthen community resilience and capacity to cope with shocks and stresses.

In the **agriculture and food security component**, the project distributed crop and fodder seed vouchers and provided crop productivity training to 1,000 farmers. The training was facilitated through the formation of 40 farmer groups with a chosen lead farmer, and 22 AnswerPlot sites, one in each camp in the region. As crop and fodder productivity increased, the project aimed to help the farmers sell their surplus product through business training and facilitating linkages with buyers.

In the **WASH component**, the project used the Community Led Total Sanitation (CLTS) approach and trained 26 satellite committees on improved WASH practices. In turn the 200 members of these committees each formed and trained village committees. The village committee members then mentored other community members in improving their WASH practices, with the ultimate goal of having their villages meet the standards to be certified as Open Defecation Free (ODF). The project expected to reach nearly 10,000 individuals directly and over 40,000 indirectly.

In the **DRR component**, the project took a similar community led approach by training 26 distinct satellite committees in how to assess environmental health conditions, and map community risks, hazards, and assets. These committee members would then form and train village committees in 200 villages. The village DRR committees would engage with project staff and other community members to design and implement DRR action plans to address the issues, prevent, prepare for, mitigate and respond to shocks and stresses and establish early warning systems in their communities.

PURPOSE OF EVALUATION

The final evaluation will assess the appropriateness, effectiveness, efficiency, and sustainability of SHARP's approach and implementation. Specifically, the final evaluation will meet the following objectives:

- Assess the appropriateness of the strategies employed by Land O'Lakes in the program given the goal and beneficiaries' needs;
- Assess the degree to which the project has met its projected goals, objectives, outcomes and targets and explain deviations;
- Provide an objective description of the overall effectiveness and sustainability of the program and its various activities;
- Identify key strengths and weaknesses of the program;
- Identify key lessons learned and recommendations which should be adopted by Land O'Lakes for similar programs in Zambia or elsewhere.

SECTION II: METHODOLOGY

EVALUATION DESIGN

The evaluation used both qualitative and quantitative methods, including household surveys, focus groups discussions, and key informant interviews. The evaluation looked at two separate populations, the AFS beneficiaries, and the WASH/DRR beneficiaries. Two household surveys were conducted, one with each population, using a quasi-experimental design with a randomly selected significant proportion of each of the populations (male and female – Table 2), in addition to a comparison group outside of the program target area. The design was similar to that of the baseline to facilitate comparisons on key performance indicators.

DATA SOURCES

Data sources included the target households for the agriculture and food security, DRR and WASH activities; WASH Champions in the ODF groups/WASH Village Committees, lead farmers, members of staff from Ministry of Agriculture and Livestock (MAL), Ministry of Community Development Mother and Child Development (MCDMCH), the local council, the Meteorological Department, Agro-dealers and traditional leaders including members of staff of Land O'Lakes and Project Concern International (PCI) implementing the SHARP project.

TABLE I: SURVEY TOOLS BY DATA SOURCES BY PURPOSE OF ASSESSMENT

Data collection tool	Data sources targeted	Purpose of Assessment
Review of project documents,	Baseline, MTR, Progress reports, work-plans, Field visit reports	Obtain project incite as basis for evaluation
Semi-structured questionnaires	AFS beneficiaries, DRR & WASH beneficiaries, two communities outside SHARP	Individual interviews for quantitative information on evaluation objectives
Focus Group Discussions (FGD) Guide,	AFS beneficiaries, DRR & WASH beneficiaries.	Obtain community views on evaluation objectives
Key Informant Interviews (KII) Guide,	MAL, Local Government, Traditional Leaders, Local Government, Vice Presents Office-DRR Unit, SHARP members of staff, Agro dealers, , MCDMCH, Answer Plot focal point farmer, Lead farmers, WASH Champions, Satellite Committee members.	Individual discussions to gain deeper understanding of evaluation objectives
Transect walk & ODF Discussion Guide	WASH Champions	ODF verification of certification
The Most Significant Change technique (MSC) for case studies.	Direct project beneficiaries.	Identify and document stories of impact

SAMPLING RESPONDENTS FOR HOUSEHOLD INTERVIEWS

The survey was conducted in all the ten agricultural camps where SHARP is implemented. The SHARP Implementing Team provided two separate sample frames of the target farmers: (i) Agriculture and Food Security (AFS) Households and, (ii) DRR and WASH households. The AFS households totaled 906 after removing households that had either shifted, were deceased or inactive¹; there were 536 (59%) females in the AFS households. The WASH and DRR households totaled 9,374 with about 23% female headed households. Within each population, households were sampled randomly, using circular sampling from the sample frame, and assuring proportionate distributions across camps and sex, according to prevalence in the population of each target area (Agriculture Camp). To achieve a significance level of 95% with a confidence interval of 5, the target sample size for the AFS household survey was 278, and 371 for the DRR/WASH. The control sample was 194, giving a total target sample size of 843. The response rate 73% (271) for the WASH/DRR 90% (250) in AFS target

¹ Inactive households were 'beneficiaries' who stopped participating in any project activities for unknown reasons

areas. Due the spacey population distribution, it was a challenge for some respondents to turn up for interviews in selected areas. Later, the Research Team opted for household follow-ups in order to reach more respondents although the approach was limited by time. In the control areas the rate of response achieved was 99% (192).

TABLE 2: Target Area (Agriculture Camp) By Number Of Beneficiaries Per Area

AGRICULTURE CAMP	AGRICULTURE & FOOD SECURITY TARGET GROUP				WASH AND DRR TARGET GROUP			
	No. of Bens	F	M	Sampled	No. of Bens	F	M	Sampled
Dundwa	85	62%	36%	30	1112	12%	12%	42
Kabanze	91	63%	37%	28	278	3%	3%	18
Kabimba	84	67%	33%	17	1152	12%	12%	3
Kabuyu	100	62%	38%	28	423	5%	5%	41
Malindi	76	49%	51%	23	746	8%	8%	29
Mang'unza	96	43%	57%	25	1273	14%	14%	44
Musokotwane	96	57%	43%	27	1403	15%	15%	27
Sihumbwa	93	57%	43%	24	772	8%	8%	38
Simango	89	62%	38%	20	593	6%	6%	19
Simaubi	96	70%	30%	27	1622	17%	17%	9
Total Treatment	906	59%	41%	249	9374	100%	100%	270
Mapanza	58	50%	50%	59	58	50%	50%	59
Mukuni	39	50%	50%	61	39	50%	50%	12
Total Control	97	50%	50%	120	97	50%	50%	71

FIELD IMPLEMENTATION

PERSONAL INTERVIEWS – HOUSEHOLD BASED

The consultancy team deployed twelve enumerators (six in Choma and six in Kazungula) and two field supervisors for household interviews. In Choma the field team was led by two senior consultants, the DRR and WASH specialists; in Kazungula the Agricultural Specialist led the team. Data were collected electronically through android tablets and consolidated centrally through a server in Lusaka. Data analysts checked the data for validity and correctness on a daily basis and communicated seemingly 'strange' responses for re-check by the enumerators. Overall, the electronic tool proved vital in reducing errors. The team had a full-time computer expert engaged to ensure that any challenges arising from the online tool were rectified immediately.

All Key Informant Interviews and Focus Group Discussions were conducted by the senior consultants. FGD were restricted to ten to twelve members per event and lasted between one and half hours to two hours. To enhance quality, the FGDs had two persons facilitating, one leading the discussion and another taking notes. At the end of each FGD, the two facilitators reviewed the notes to ensure that all points raised were included. FGD and KII results were used to triangulate the results from the household survey. Key informants (by position) are shown in Table 3 whereas Table 4 shows the summary of FDGs conducted.

TABLE 3: Key Informant Interviews Conducted By Area

District	Planned	Achieved	Remarks
Choma	11	18	<ol style="list-style-type: none"> 1. AFS Manager-Land O'Lakes 2. AFS Facilitator Macha 3. Chief Mapanza 4. WASH Facilitator 5. PCI WASH Champions (7) 6. Satellite Committees Leaders (3) 7. Answer plot host farmer 8. Lead Farmer (2)
Kazungula	9	11	<ol style="list-style-type: none"> 1. Senior Agriculture Officer 2. District Agricultural Coordinator 3. Crop Husbandry Officer 4. Technical Services Branch Officer 5. Former PCI Facilitator 6. Technical Sprayer Services – Manager 7. Assistant Community Development Officer 8. Two Lead Farmers 9. WASH Satellite Committee Chairperson 10. AFS Facilitator – Kazungula

TABLE 4: Focus Group Discussions By Area

District	Agriculture Camp	Planned	Achieved			Total
			DRR	WASH	AFS	
Choma	Dundwa	3-4	1	1	1	3
	Malindi	3-4	1	1	1	3
	Kabanze	3-4	-	1	1	2
Kazungula	Sihumbwa	3-4	1	2	1	4
	Simango	3-4	1	2	1	4
	Musokotwane	3-4	1	2	1	4
Total	All areas	20	5	9	6	20

MOST SIGNIFICANT CHANGE STORY BUILDING

Success stories were developed in a consultative process with staff members, as well as during FGDs and KII. Features for proposed stories of success were discussed with stakeholders individually to assess the merits of success. Most of the stories suggested were centered on the same themes and showed limited scope. In the end, two stories were deemed appropriate and documented. The stories focused on the success associated with improving farmers' storage capacities and attainment of the ODF status through consistent and focused work by WASH Champions.

ODF VERIFICATION

SHARP provided a list of 24 villages which were presumably ODF certified in SHARP target areas. There were 1,027 households in the said villages. The Research Team verified certification in two stages and three stages for some households; (i) discussion with the Community Led Total Sanitation Officers (CLTS) at the Councils. During the discussion each village listed was counterchecked against records available, (ii) discussion with WASH Champions and during FGDs and, (iii) Physical inspection for households which were in the vicinity of interview assembly points organized by the implementation team.

DATA QUALITY CONTROL

The data collection team was thoroughly trained in both the paper and electronic questionnaires. All members were involved in the pre-test. Enumerators were divided into two groups each closely supervised by an experienced person and overseen by a senior consultant. The Supervisors held random checks with enumerators and revisited

3-4 entries randomly selected while in the field; further they held discussion on the data entries after each day's work prior to uploading. These interactions were vital in ensuring the capture of quality data. Upon receipt of the data, the analysts ran simple statistics to identify outliers. In incidences where 'strange' values were noticed, the supervisors were immediately notified for follow-up. The process adopted for quality control guaranteed good quality data from the survey.

STUDY CHALLENGES

Low Respondent Turnout: Sampled farmers were invited through the project field officer to assemble in selected points for interviews. This was planned in order to make data collection faster. However, in practice, only a few respondents would turn up. As a result, the rate of response was affected negatively. One main reason for the low turnout was fatigue among the respondents. Some cited the frequent interview visitations by other institutions, including Government, over the ODF exercise; others referred to the recent interviews during the mid-term and finally some respondents indicated that they had very busy schedules trying to salvage their fields after the late rains which destroyed some drying crops. To circumvent this challenge, the consulting team members started household follow-up visits and thus spent much longer in the field than anticipated.

Insufficient impact-based evidence for Success Stories: Although a number of 'success stories' were collected during FGDs, KII and staff consultation, the scope was limited. More than half of the stories were focused at crop diversification through the introduction of fodder crops; other 'stories' were 'activity based'. This is not surprising because the life of activity for SHARP was in essence less than two seasons. As a result only three success stories were compiled..

ODF Village Verification: The verification for ODF status village by village and household by household as stipulated in the SOW could not be achieved due to time and other resource limitations. The transect walks were restricted to households within the vicinity of where farmers were gathering for individual interviews. To achieve the same purpose the team held consultations with the Council and later discussed the ODF certification and gaps at group level with the community.

SECTION III: RESULTS, FINDINGS AND DISCUSSIONS

PART A: AGRICULTURE AND FOOD SECURITY

INTRODUCTION

The Main Objective of the AFS Component: To improve and protect household food security and livelihoods.

The Indicators under this objective were:

- i. Increase in number of months of food self-sufficiency due to distributed seed system/agricultural input for beneficiary households
- ii. Number of people benefiting from seed systems/agricultural input activities
- iii. Percentage of households whose asset index has increased by at least 60%
- iv. Number of hectares (ha) under integrated food and fodder crops production
- v. Number of individuals applying new agriculture technologies or management practices as a result of project assistance
- vi. Number of individuals who have received trainings on food and fodder production practices/ techniques
- vii. Number of food and fodder crop storage facilities built and/or bought and used
- viii. Number of producers linked to fodder market outlets to sell their produce
- ix. Number of firms/agro-dealers linked to livestock producers and providing new business services

Activities under AFS Component:

According to the project reports availed, in the **agriculture and food security component**, the project distributed crop and fodder seed vouchers and provided crop productivity training to 1,000 farmers. The training was facilitated through the formation of 40 farmer groups with a chosen lead farmer. Initially 10 demonstration plots or AnswerPlot® sites, one in each camp in the region were planned to be established but in the end 22 were put up. The project envisaged that as crop and fodder productivity increased, the project would help the farmers sell their surplus product through business training and facilitating linkages with buyers.

The report also indicate that the project trained 10 local artisans to produce metal silos and sponsored an exchange visit for the artisans and selected lead farmers to the Eastern Province, where the government is already promoting metal silos. The project then connected the farmers with artisans to order metal silos. The project also procured weather equipment and set 10 weather stations, one in each camp.

The following are the findings of the end-line survey for the Agriculture and Food Security Component:

DEMOGRAPHIC CHARACTERISTICS FOR THE AGRICULTURAL HOUSEHOLDS

The characteristics investigated for the households included the sex of the respondent, the marital status of the respondents, the sex of the head of the household, the highest level of formal education attained by the respondent, the main occupation of the respondent, and the relationship of the respondent to the head of the household.

The results show that the majority of the respondents (79%) were male. At baseline the proportion of male respondents was 51.9%. The results also show that the majority of respondents (77%) were married. About 62% of the respondents attained only up to primary school level of education. About 88% of the respondents are farmers by occupation. The proportions of married respondents at end-line and the highest level attained by respondents are very similar to those at baseline. The details of the demographic characteristics of the agricultural households are given in table 5 below.

TABLE 5: DEMOGRAPHIC CHARACTERISTICS OF THE AGRICULTURAL RESPONDENTS

Demographics of respondent	Category	Baseline	End-line					
			Choma		Kazungula		Total	
		%	N	%	N	%	N	%
Sex of Respondent	Male	51.9	163	77.6	128	80.5	291	79.1
	Female	48.1	47	22.4	31	19.5	78	20.9
	Total	100.0	210	100.0	159	100.0	369	100.0
Marital Status	Single	7.3	14	6.7	3	1.9	17	4.3
	Married	77.9	156	74.3	127	79.9	283	77.1
	Separated/Divorced	5.5	17	8.0	13	8.2	30	8.1
	Widowed	9.3	23	11.0	16	10.0	39	10.5
	Total	100.0	210	100.0	159	100.0	369	100.0
Education	None	2.6	6	2.8	6	3.8	12	3.3
	Primary	61.1	127	60.5	102	64.2	229	62.4
	Secondary	33.8	75	35.7	50	31.4	125	33.6
	Tertiary	2.6	2	1.0	1	0.6	3	0.8
	Total	100.0	210	100.0	159	100.0	369	100.0
Occupation	Farmer	95.5	204	97.1	125	78.6	329	87.9
	Paid employment	0.6	4	1.9	3	1.9	7	1.9
	Small-scale trading	3.9	2	1.0	17	10.7	19	5.9
	Other	-	0	0	14	8.8	14	4.4
	Total	100.0	210	100.0	159	100.0	369	100.0
Relationship to head	Self	67.0	150	71.4	103	64.8	258	68.1
	Spouse	29.4	50	23.8	54	34.0	104	28.9
	Other	3.4	10	4.7	2	1.2	12	3.0
	Total	100.0	210	100.0	159	100.0	369	100.0

WEALTH ASSETS

The project aims to increase the wealth index of the farmers in the intervention areas. We expect that as the farmers use improved farming practices, they will get higher yields of food and fodder that they can sell and use the money to buy more assets. These assets could include building or buying a food or fodder barns. Wealth assets include both productive and non-productive assets. By definition assets are items owned by individuals which have value. These include productive and non-productive assets. For our context assets assessed include houses, food storage silos and barns, beds. Others are TV and radio sets, chairs and sofas, ox-carts, ploughs, axes, cell phones, treadle pumps, cattle and oxen.

CHARACTERISTICS OF HOUSE OF RESPONDENTS

Assessment of house characteristics included the determination of the following: the roofing material of the house, the floor type, the number of housing structures in the household, number of rooms in the main house, main type of toilet the household uses, as well as the main type of water source, as well as the assets which the household owns.

Table 6 below shows the findings of the house characteristics of respondents. The results show that the majority of the houses are roofed by grass thatch (68.6%), with iron roofs at 31.1%. The floors are predominantly the earth/mud type (77.9%) and the most common toilet type is the pit latrine (82.7%). 74.8% use boreholes as the source of water.

The results show that there is an increase in the proportion of respondents whose roofs are made of grass thatch between baseline and end-line and a corresponding decrease in the number of households with iron roofs. At baseline the proportion of households with grass thatched houses was 58% compared to 68.6% at end-line. The proportion having iron roofs at baseline was 40.5% compared to 31% at end-line. There are no differences in figures for proportions having mud floors between baseline and end-line results for floor as is the case for latrine types, while there is an increase of 6% in households with access to borehole water at end-line compared to baseline.

The decrease in the number of households owning iron roofs and the corresponding increase in grass thatched roofs at end-line can be explained by the fact that the sample at baseline was better off than the sample at end-line. The project deliberately targeted economically marginally households thus the lower levels of affluence evidenced.

TABLE 6: CHARACTERISTICS OF AGRICULTURAL RESPONDENTS' HOME

Characteristics	Category	Baseline	Midterm						End-line					
			Choma		Kazungula		Total		Choma		Kazungula		Total	
		%	N	%	N	%	N	%	N	%	N	%	N	%
Roof Material	Iron	40.5	54	39.7	26	24.8	80	32.8	83	39.5	36	22.6	119	31.1
	Thatch	58.0	82	60.3	79	75.2	161	66.8	127	60.5	122	76.7	249	68.6
	Plastic	0	0	0	0	0	0	0	0	0	1	0.6	1	0.3
	Total	100	136	100.0	105	100.0	241	100.0	210	100.0	159	100	369	100.0
Floor Material	Earth/Mud	77.4	119	87.5	91	85.8	210	86.8	158	75.2	128	80.5	286	77.9
	Concrete	22.6	17	12.5	15	14.2	32	13.2	52	24.8	31	19.5	83	22.2
	Total	100.0	136	100.0	106	100.0	242	100.0	210	100.0	159	100.0	369	100.0
Type of toilet	VIP	4.9	2	1.5	1	0.9	3	1.2	4	1.9	1	0.6	5	1.3
	Pit Latrine	84.3	128	94.8	59	55.7	187	77.6	202	96.2	110	69.2	312	82.7
	Communal	2.1	3	2.2	13	12.6	16	6.6	0	0	0	0	0	0
	Bucket	0.5	0	0	1	0.9	1	0.4	0	0	0	0	0	0
	No Toilet	8.2	2	1.5	32	30.2	34	14.2	4	1.9	48	30.2	52	16.1
	Total	100.0	135	100.0	106	100.0	241	100.0	210	100.0	159	100.0	369	100.0
Source of drinking water	Tube well/Borehole	68.8	88	64.7	75	70.8	163	67.4	48	60.9	40	88.8	88	74.8
	Protected dug well	4.9	18	13.2	1	0.9	19	7.9	23	15.2	0	1.0	23	8.1
	Unprotected dug well	9.1	16	11.8	0	0	16	6.6	10	11.3	5	1.0	15	6.1
	River/Ponds/Streams	16.9	14	10.3	30	28.3	44	18.2	0	12.6	2	7.2	2	10.0
	Other	0	0	0	0	0	0	0	0	0	0	2.0	0	1.0
	Total	100.0	136	100.0	106	100.0	242	100.0	91	100.0	47	100.0	138	100.0

TYPE OF ASSETS OWNED

Table 7 below gives the details of the proportions of respondents owning various types of assets. The results show that the status of asset ownership by households is not different to baseline and mid-line results except for ownership of metal silos and fodder barns which are higher at end-line. 11.1% of respondents reported owning metal silos and 22.7% owning fodder barns. This is compared to 0.3% for metal silos at baseline compared to 11.1% at end-line. For fodder barns end-line ownership is at 22.7% compared to 0.3% at baseline. This status improvement can be attributed to the Project activities of promoting the use of metal silos and production and use of fodder crops

TABLE 7: PROPORTION OF HOUSEHOLDS OWNING TYPE OF ASSET

Type of Asset	Baseline	End-line					Total
		Choma N=152			Kazungula N=98		
	N=392	M	F	Total	M	F	
Houses	94.4	100	100	100	100	100	100
Metal silos	0.3	5.1	4.1	4.6	8.5	13.7	11.1
Cement & wire food barn	1.5	1.3	4.1	2.7	2.1	0	1.1
Mud plated basket (food barn)	11.0	91.0	90.5	90.8	53.2	56.9	55.1
Fodder barns	0.3	11.5	9.5	10.5	27.7	17.6	22.7
Beds	81.6	97.4	94.6	96.0	93.6	92.2	92.9
TV sets	24.5	17.9	9.5	13.7	31.9	17.6	24.8
Radios	51.5	56.4	36.5	46.5	63.8	45.1	54.5
Chairs	34.4	87.2	78.4	82.8	91.5	92.2	91.9
Sofas	20.4	17.9	18.9	18.4	42.6	29.4	36.0
Scotch carts	23.5	28.2	29.7	29.0	36.2	29.4	32.8
Ploughs	58.7	76.9	74.3	75.6	93.6	80.4	87.0
Axes	72.2	100	93.2	96.6	100	98.0	99.0
Cell phones	65.3	78.2	73.0	75.6	85.1	76.5	80.8
Treadle pumps	4.1	1.3	0	0.7	4.3	2.0	3.2
Others		17.9	10.8	14.4	10.6	15.7	13.2

TYPE OF LIVESTOCK OWNED

The types of livestock considered for assessment were traditional cattle, dairy cattle, oxen, goats, sheep, donkeys, pigs, chickens and other types of livestock. Table 8 below shows the proportions of respondents owning types of livestock at baseline, mid-line and end-line.

TABLE 8: TYPE OF LIVESTOCK OWNED BY DISTRICT AND SEX OF HEAD OF HOUSEHOLD AND PROPORTION OF HOUSEHOLDS OWNING AT BASELINE & END-LINE

Type of livestock	Baseline	End-line							
	Total N=376	Choma			Kazungula			Control	
		Male	Female	Total	Male	Female	Total	Mapanza	Mukuni
Traditional cattle	63.0	-	48.6	48.6	68.2	38.5	53.3	42.6	19.1
Dairy cattle	1.9	4.4	0	2.2	9.4	0	4.7	0	0
Oxen	-	17.5	10.8	14.15	48.2	23.1	35.6	2.05	12.8
Goats	38.0	64.9	59.5	62.2	40	30.8	35.4	41.6	37.4
Sheep	13.6	0	0	0	1.2	0	0.6	1	0
Donkeys	0.8	0	2.7	1.35	2.4	30.8	16.6	1	2.35
Pigs	0.8	7.9	0	3.95	17.6	0	8.8	4.1	0
Chickens	87.5	81.6	67.6	74.6	78.8	76.9	77.8	71.8	74.7
Others	-	0	5.4	2.7	1.2	7.7	4.45	0	2.35

OWNERSHIP OF LAND

Nearly all the land on which agricultural households are situated is part of the traditional land tenure system. This means that the land is under the authority of the traditional local leadership for administration. Although there is a provision for people occupying this type of land to apply for title from the local council, the overwhelming majority of the respondents are on traditional land tenure. The non-availability of title deeds poses as a barrier for borrowing funds from some lending institutions. This affects enterprise expansion and investment aspiration for farmers who may want to expand.

MAIN SOURCES OF INCOME

Assessment of main sources of income was done by determining the sources and the proportion of the respondents indicating those particular sources for income. An estimate of the amount of money raised from the specified sources was also sought and obtained. For crop and livestock income, the respondents were asked to state if they experienced any change in income from crop sales and livestock sales between the 2013/14 and 2012/2013 seasons.

Out of the exhaustive list of potential sources of income given as options, there are four main sources of income listed by the respondents. These are (in order of importance) sale of field crops, sale of garden crops, sale of chickens, and sale of goats. The proportions of respondents indicating these as the main sources of income were 57.5%, 35%, 31.5%, and 16.5% respectively. The main field crops grown as shown later are maize, sugar beans, groundnuts and sorghum. But the main one sold for cash is usually maize. Table 9 below shows the most common sources of household income.

**TABLE 9: MOST COMMON SOURCES OF INCOME FOR AGRICULTURAL HOUSEHOLD HEADS
DISAGGREGATED BY SEX**

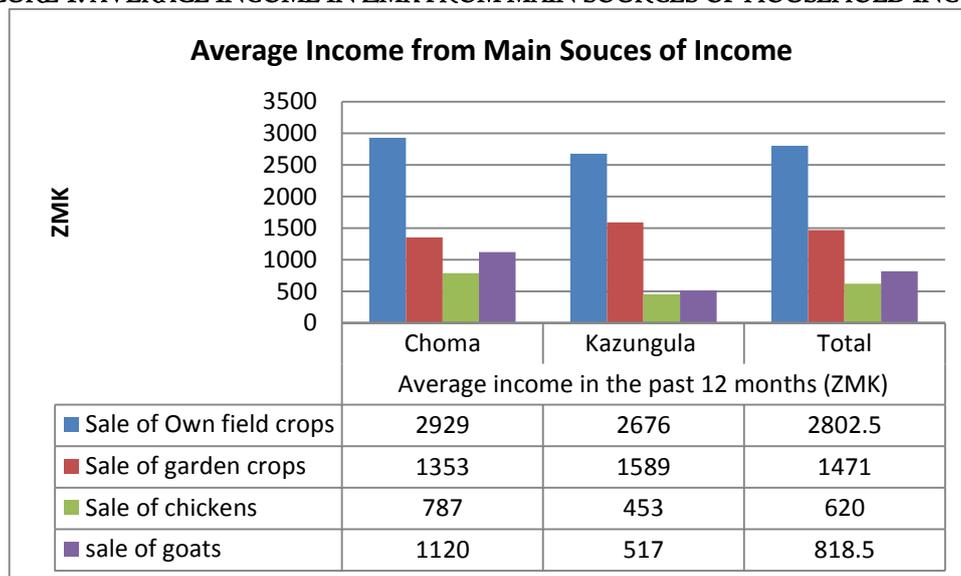
Source of income	Baseline		End-line											
	Choma	Kazungula	Choma			Kazungula			Mapanza			Mukuni		
			M	F	Total	M	F	Total	M	F	Total	M	F	Total
Sale of own field crop	97.8	96.4	72.8	47.4	60.1	63.5	46.2	54.9	65.3	22.2	43.8	14.0	27.8	20.9
Sale of garden crops	-	-	45.6	42.1	43.8	29.4	23.1	26.3	16.3	22.2	19.3	16.3	11.1	13.7
Sale of chickens	-	-	43.0	36.8	39.9	44.7	23.1	33.9	36.7	33.3	35.0	4.7	5.6	5.2
Sale of goats	-	-	28.1	26.3	27.2	11.8	0	5.9	30.6	11.1	20.9	2.3	5.6	4.0
Sale of cattle	44.2	25	7.0	2.6	4.8	3.5	15.4	9.5	2.0	0	1.0	2.3	0	1.2
Sale of other animals	-	-	.9	2.6	1.8	3.5	0	1.8	0	0	0.0	0	0	0.0
Milk sales	-	-	.9	0	0.5	1.2	23.1	12.2	0	0	0.0	2.3	0	1.2
Brewing	-	-	.9	0	0.5	0	0	0.0	0	0	0.0	2.3	0	1.2
Carpentry	0.4	1.8	1.8	0	0.9	7.1	0	3.6	0	0	0.0	11.6	0	5.8
Charcoal burning and selling	0	1.8	0	2.6	1.3	11.8	7.7	9.8	0	0	0.0	11.6	0	5.8
Fishing	1.4	0.6	3.5	2.6	3.1	1.2	0	0.6	0	0	0.0	4.7	0	2.4
Trading in food, groceries etc	5.8	24.8	5.3	2.6	4.0	1.2	23.1	12.2	2.0	22.2	12.1	7.0	11.1	9.1
Casual/piecework (agric)	0.7	3.0	9.6	10.5	10.1	0	0	0.0	0	0	0.0	0	0	0.0
Casual/piecework (non-agric)	-	-	8.8	5.3	7.1	10.6	7.7	9.2	12.2	22.2	17.2	9.3	5.6	7.5
Formal employment	-	-	.9	2.6	1.8	.0	0	0.0	0	0	0.0	11.6	5.6	8.6
Savings group	-	-	0	0	0.0	1.2	0	0.6	0	0	0.0	4.7	11.1	7.9
Remittances/gifts	-	-	.9	10.5	5.7	1.2	0	0.6	4.1	0	2.1	0	11.1	5.6
Other	0.4	4.2	1.8	2.6	2.2	20.0	15.4	17.7	2.0	11.1	6.6	23.3	16.7	20.0

AVERAGE INCOMES FROM MAIN SOURCES OF INCOME

From the main sources of income outlined, average estimates of incomes realized in the past 12 months were obtained from respondents. Given in figure 1 below are the estimated average incomes from sale of their own field crops, sale of garden crops, sale of chickens and sale of goats. On the average households earned about ZMK2,802 from the sale of their own field crops and ZMK1,471 from sale of garden crops. The sale of chickens and goats was estimated at ZMK620 and ZMK818 respectively. However, the Consultants wish to caution on the accuracy of these figures as they entirely depend on the farmers' recollection and not from written down records. It is also a noted practice by small-scale farmers to usually state lower than actual incomes earned. This is because they

would like to be seen as more deprived than they actually are and therefore place themselves in a position to qualify for relief in the event that a particular Project aims to provide relief.

FIGURE I: AVERAGE INCOME IN ZMK FROM MAIN SOURCES OF HOUSEHOLD INCOME



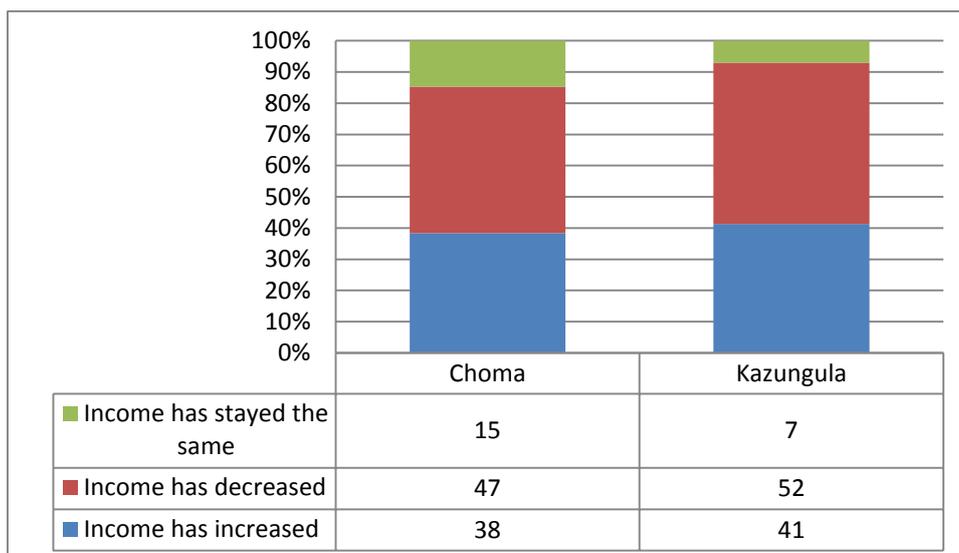
CHANGE IN INCOME FROM CROPS AND LIVESTOCK SALES BETWEEN 2012/I3 AND 2013/I4 SEASON

The respondents were asked to state whether there was a change in their incomes from the sales of crops and livestock between 2012/I3 and 2013/I4 seasons.

CHANGE IN CROP INCOME

In relation to the income earned in the past 12 months, respondents were asked to indicate whether in there were increases, decreases or no change in incomes from sales of crop compared to the previous marketing season (2012/I3). There were more people who indicated that they had a reduction in income from crop sales than those who said there was an increase. 47% and 52% of respondents in Choma and Kazungula respectively indicated that there was a decline in income from food crop sales in 2013/I4 season compared to the previous season. Those who indicated that they experienced an increase were 38% for Choma and 41% for Kazungula. Figure 2 below shows percentages of respondents indicating whether they had an increase, decrease or no change in their incomes.

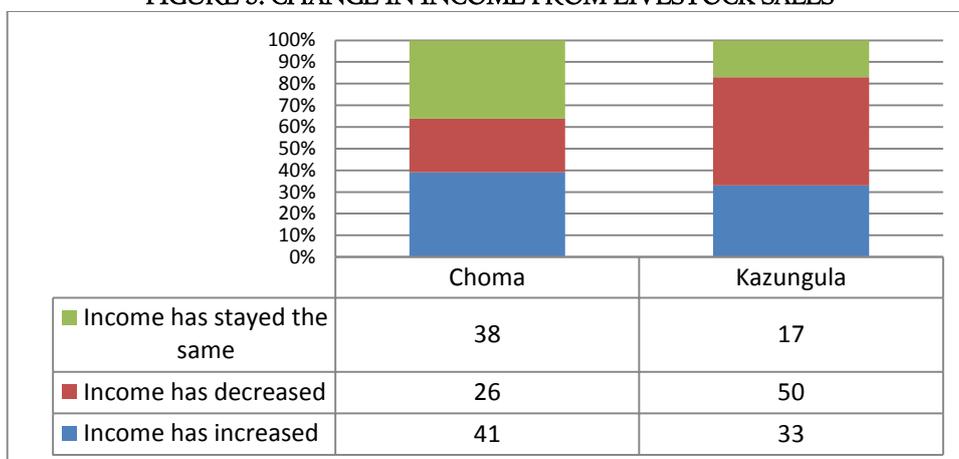
FIGURE 2: CHANGE IN INCOME FROM CROP SALES



CHANGE IN LIVESTOCK INCOME

Figure 3 below shows change in incomes from livestock sales, in Choma those who said they had an increase were slightly more at 41% compared to 38% who said incomes had remained unchanged. 28% in Choma said the incomes from livestock sales decreased. In Kazungula 50% said the incomes from livestock sales had decreased with 33% saying they had an increase and 17% had no change.

FIGURE 3: CHANGE IN INCOME FROM LIVESTOCK SALES



PRODUCTION AND YIELDS

CROPS GROWN

In assessing crops grown, the evaluation considered field and garden crops. Field crops considered for assessment were those whose production was supported by the project as well as those crops not supported by the project. The crops supported by the project are maize, sugar beans, sorghum and groundnuts. The seeds grown for these crops were distributed to the farmers through agro dealers who were contracted by the project. Technical Sprayer Services of Livingstone supplied Kazungula farmers while Eliezer Agro Dealers of Choma supplied Choma farmers.

The results show that nearly all the respondents (99.3%) grew maize. This result is almost equal to that obtained at baseline. This is because while maize production was supported by Land O’ Lakes, it is also heavily supported by government through the Farmer Input Support Program (FISP). This finding is consistent with the picture

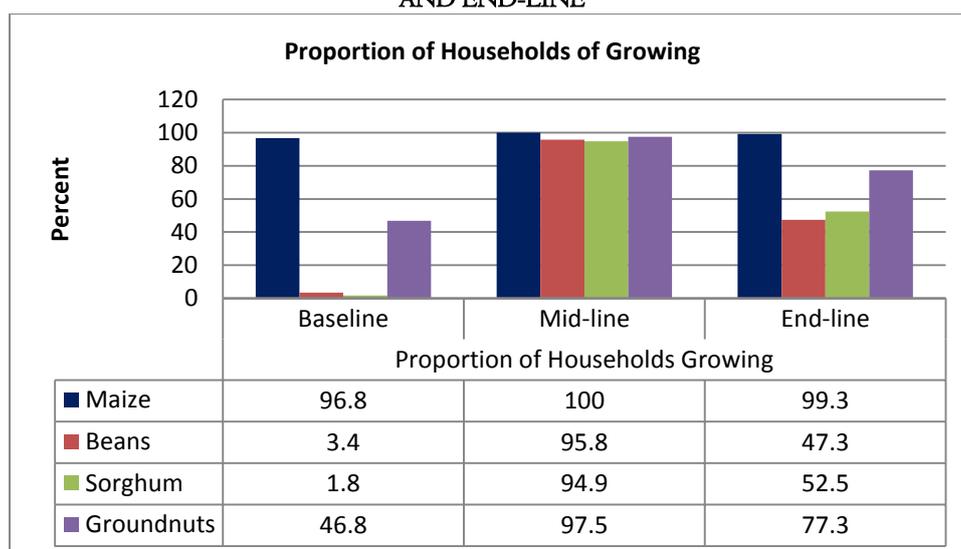
across the country and in Southern Province in particular. For sugar beans, sorghum and groundnuts, the proportions of respondents who grew them has increased generally over time. The proportion of farmers growing them at end-line is larger than at baseline but lower than at mid-line. 47.3% grew sugar beans compared to 3.4% at baseline and 95.8% at mid-line. For sorghum the proportion is 52.5% compared to 1.8% at baseline and 94.9% at mid-line, while for groundnuts the proportion growing is 77.3% compared to 46.8% at baseline and 97.5% at mid-line. Figure 4 below shows the changes in production between baseline and end-line survey.

The explanation for this intermediate reduction in production for field crop production could be due to the fact that the project didn't supply seed in the 2014/15 season and many of the farmers who wanted to grow these crops had relied on the project for the supply of seed. Although the Project supplied seed for production in the first year, the general feeling was that the seed quantities supplied were too little and not all farmers who wanted to receive them were given. This came out during the FGDs with the farmers in most of the camps surveyed. Discussions with farmers through the FGDs and Key Informant interviews with relevant stakeholders highlighted the issue of inadequate seed quantities given to the farmers. Farmers were of the view that the amounts allocated to them should have been a bit more than what they received. Another concern was the late delivery of seed in the season when seed was supplied by the project. Table 10 below shows the types of field crops grown and the proportions of respondents growing them.

TABLE 10: PROPORTION OF HOUSEHOLDS GROWING TYPE OF FIELD CROPS

Type of Field crop	Baseline	End-line		
	Total N=380	Choma N=209	Kazungula N=151	Total N=360
Maize	96.8	100	98.7	99.3
Sugar Beans	3.4	59.3	35.3	47.3
Sorghum	1.8	50.2	54.9	52.5
Groundnuts	46.8	90.0	64.7	77.3

FIGURE 4: COMPARISON OF HOUSEHOLDS GROWING FIELD CROPS BETWEEN BASELINE, MID-LINE AND END-LINE



AVERAGE SIZE OF LAND FOR FOOD AND FODDER CROPS

Land size has a dramatic effect on rural household incomes. Those households who control the smallest land sizes make less from crop sales than those who control larger land sizes. The estimates of average land under field crop production, and harvest for 2013/14 season were obtained from the farmers. Estimates for area under production for 2014/15 were also obtained. Assessment of size of land on which smallholder farmers conduct their farming has always been a challenge due to the inaccuracies associated with the measurements given by respondents. Sizes of land are usually based on crude methods of measuring usually based on pacing or visual estimates, or amount of inputs applied. As such, these measurements should be treated with caution and should only be used as a general guide. However, results from this survey shows that on the average households have about 5.8Ha of land on which they grow food and fodder crops. In Choma this area is 5.6Ha, while in Kazungula it is 5.9Ha.

AVERAGE AREA UNDER FIELD CROP PRODUCTION

Table II below depicts the production for maize, beans, sorghum and groundnuts for 2013/14 and 2014/15 seasons. The figures shown are averages which are indicative of household production. The average area under maize is about 2Ha for both seasons while that for beans, sorghum and groundnuts is between 0.5Ha and 0.6Ha.

At baseline the average area under crop production that was collected was for maize, groundnuts and sorghum only. Choma reported average area under maize at 3.25Ha and groundnuts at 3.9Ha. There was no data for sorghum and beans. Kazungula on the other hand had only average area for sorghum, 0.91Ha. The average area under maize production per household has reduced by 1.25Ha in Choma while that for groundnuts has reduced by more than 3.4Ha. The area under sorghum production in Kazungula also shows a reduction by almost 50%. The explanation for this reduced area under production could be alluded to the economic status of the sample population as explained in section 3.1.3, that the sample at baseline could have been more affluent than the sample of project participants at end-line.

CROP YIELDS

Harvested amounts for crops grown compiled are only for the 2013/14 season. The results show that an average of 2MT of maize was harvested by each household. This gives an average yield of 1MT/Ha for both districts. This is lower than the national average which is about 2.4MT/Ha and global average of about 8MT/Ha. However, compared to baseline data which recorded yields for maize in Choma at 420Kg/Ha, this is a marked improvement (238%).

For groundnuts the yield in Choma was 74.2Kg/Ha at baseline while at end-line it is 445Kg/Ha, depicting a six-fold increase though still much lower than the national yield average for groundnuts which stands at about 730Kg/Ha. The yield for sorghum in Kazungula is 652Kg/Ha, an increase from 127Kg/Ha recorded at baseline. The yields for beans are estimated at about 101kg/Ha which is also very low compared to the national average for beans which is about 1MT/Ha.

The sharp improvement in productivity evidenced in both maize and groundnuts is an indication of the improvement in crop production practices by the farmers to which the project may have contributed a great deal.

The results also show that farmers retained an average of about 42Kg of maize, 10kg of beans, 7kg of sorghum and 21kg of groundnuts per household for seed. The degree of intercropping was also assessed by asking the farmers how many other crops apart from the main crop were planted in the field. Inter-cropping with at least one crop is practiced in maize only and was indicated by farmers for the 2014/15 season. The main crop intercropped with maize is cow peas. The increased intercropping could be the result of skills gained and seed available for cow peas.

TABLE II: FIELD CROP PRODUCTION FOR 2013/14 AND 2014/15 SEASONS

Field Crop	District	2013/14 Season				2014/15 Season	
		Total Ha under crop	How many other crops	Harvest (kg)	Amount of Seed kept (kg)	Total Ha under Production	How many other crops

Maize	Choma	2.0	1	2081	42	2.1	2
	Kazungula	1.8	1	2236	42	1.9	2
	Total	1.9	1	2159	42	2.0	2
Beans	Choma	0.5	0	37	9	0.5	0
	Kazungula	0.6	0	84	10	0.5	0
	Total	0.6	0	61	10	0.5	0
Sorghum	Choma	0.5	0	47	6	0.6	0
	Kazungula	0.5	0	326	9	0.6	0
	Total	0.5	0	187	7	0.6	0
Groundnuts	Choma	0.6	0	267	14	0.6	0
	Kazungula	0.4	0	215	28	0.4	0
	Total	0.5	0	241	21	0.5	0

Apart from the crops supported by the Project, farmers also grew other crop types as shown in the table 12 below. We asked the farmers about growing these other crops, but not about the areas under production or harvest. . The table shows the proportion of farmers who grew these crops in the 2014/15 season. About 25.8% of farmers in Choma indicate growing sunflower and 12% soybeans. In Kazungula 21.4% grow bulrush millet with rest of the crops grown by less between 1.3% and 7.5%. At baseline survey other crops grown which were assessed were cassava, bulrush millet, sweet potatoes, and bambara nuts. The data collected was yield related and no proportions of households growing were reported. In the end-line survey we didn't collect yield related data but got proportions of farmers growing the same crops so no meaningful comparison can be made in terms of changes of values.

TABLE 12: OTHER FIELD CROPS GROWN

Crops	District	
	Choma	Kazungula
Cassava	8.1	3.8
Bulrush Millet	2.9	21.4
Sweet potatoes	-	6.9
Sunflower	25.8	6.3
Soybeans	12.0	1.3
Bambara nuts	8.6	7.5
Sugar cane	9.6	1.3

GARDEN CROPS GROWN

Vegetables make up a significant share of the total food consumed in Zambian households. The most commonly consumed vegetables are rape, cabbage, tomato and onions. Farmers produce these both for home consumption and sale of excess for household income. For the assessment of garden crops grown, the farmers were asked if they grew any garden crops in the past 12 months and if they did which of the crops they grew. A total of 88% indicated growing garden crops in both districts with Choma having 85% and Kazungula 91%. This is proportion is much larger than at baseline when only about 1% of the respondents grew vegetables. The results show that the majority of farmers who grow garden crops produced rape and tomatoes (83% and 62.6% respectively). About 32.6% grew cabbage. Generally, the proportions of farmers growing all the garden crop options given are larger at end-line than at baseline. 62.6% of farmers are growing tomatoes compared to 18.8% at baseline. The trend is the same for all the garden crops. The growing of vegetable crops and increase in production over time could be linked to the ability of households to access sources of seed and the ability to purchase. Another attribution to the increase could be the demand for vegetables as they constitute a major part of the Zambian diet. Table 13 below shows the proportions of farmers growing garden crops at baseline, mid-line and end-line.

TABLE 13: TYPES OF GARDEN CROPS GROWN BY HOUSEHOLD

Type of garden crop	Baseline	End-line		
	Total N=16	Choma N=77	Kazungula N=46	Total N=123
Tomato	18.8	54.5	70.8	62.6
Rape	55.6	86.9	79.2	83.0
Impwa	0	6.1	25.0	15.5
Cabbage	25.0	44.4	20.8	32.6
Onion	18.7	21.2	16.7	18.9
Pumpkin	11.1	0	4.2	2.1
Chinese cabbage	-	5.1	2.1	3.6
None	-	-	-	-
Other	-	5.1	33.3	19.2

FODDER CROPS GROWN

The project promoted the production of fodder crops in all the project areas of the two districts. The fodder crops for which seed was provided by the project were Rhodes grass, velvet beans, sun hemp, cow peas, and pigeon peas. The fodder production interventions included training farmers on fodder production and providing seed to the farmers. In the second year, SHARP didn't supply any seed to the farmers and fodder producing households were therefore expected to provide their own seed. The distribution of the seeds was done by two contracted agro dealers namely of Technical Sprayer Services in Kazungula and Eliezer Agro Suppliers in Choma, who were mandated by the project to stock and distribute to eligible farmers in specified quantities. Table I4 below shows the types of fodder crops grown as well as the proportions of farmers growing in 2013/14 and 2014/15 agricultural seasons.

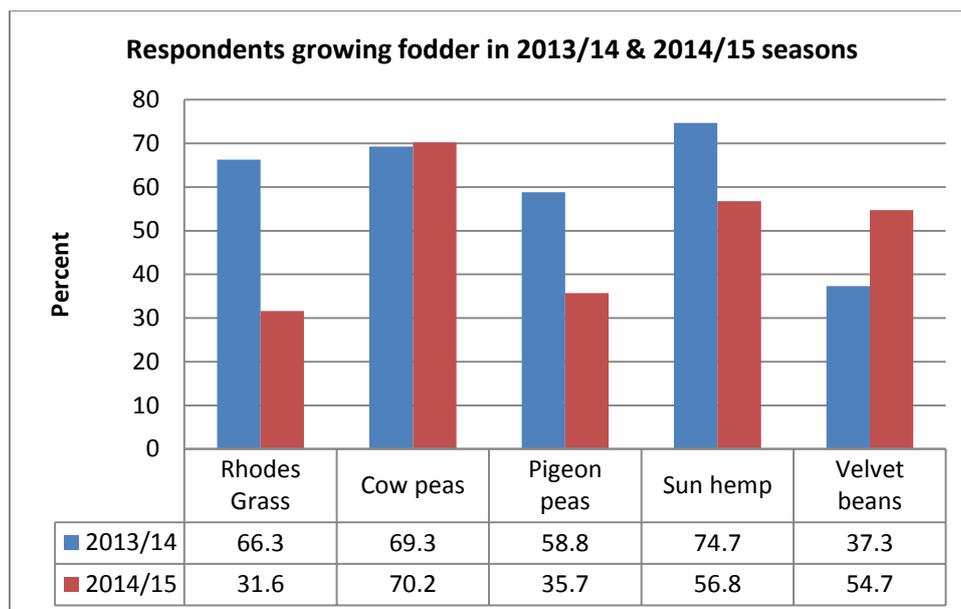
TABLE I4: TYPE OF FODDER CROPS GROWN BY HOUSEHOLD AND PROPORTION OF HOUSEHOLDS GROWING IN 2013/14 & 2014/15 SEASONS

Type of Fodder crop	2013/14 Season			2014/15 Season		
	Choma N=	Kazungula	Total	Choma	Kazungula	Total
Rhodes Grass	73.6	59.1	66.3	37.7	25.6	31.6
Cow peas	56.9	81.8	69.3	68.3	72.2	70.2
Pigeon peas	55.6	62.1	58.8	32.5	39.0	35.7
Sun hemp	73.6	75.8	74.7	53.7	60.0	56.8
Velvet beans	39.9	34.8	37.3	63.6	45.8	54.7

Results show that in 2013/14 season 90% of the farmers grew fodder crop in both districts. Choma had 84% while Kazungula had 96% growing fodder. In 2013/14 of the fodder crops grown, sun hemp was grown by the largest proportion (74.7%). Rhodes grass, cow peas, pigeon peas and velvet beans were grown by 66.3%, 69.3%, 58.8% and 37.3% respectively. In the 2014/15 there was a continuation of fodder production with farmers providing their own seed. In 2014/15 season 31.6% grew Rhodes grass, 70.2% cow peas, 35.7% pigeon peas and 56.8% sun hemp. Velvet beans were grown by 54.7%.

Comparing the two seasons we see that there was an increase in the number of farmers growing velvet beans in 2014/15 while those growing cow peas remained the same. There was a reduction in the number of farmers growing Rhodes grass, pigeon peas, and sun hemp in 2014/15. At baseline no one grew fodder crops so the achievement in fodder production is remarkable. The fact that farmers can supply their own seed stock has a strong bearing on the ability for the fodder crop production to be sustainable beyond the project. Figure 5 below illustrates the changes in the proportions of farmers growing fodder between 2013/14 and 2014/15 seasons.

FIGURE 5: COMPARISON OF PROPORTION GROWING FODDER BETWEEN 2013/14 & 2014/15



Key Informant discussions as well as FGDs revealed that the supply of fodder seed in 2013/14 was untimely in many cases. This was confirmed by the SHARP AFS managers, that the procurement process took too long and this resulted in inputs arriving late for distribution and planting. The Agro Dealer for Kazungula confirmed the farmers' complaint that the seed was delivered late to some farmers.

For those farmers who grew fodder only one farmer sells it. The results show that only one farmer in Choma is reported to have sold fodder to a customer within town. This was confirmed by discussions with the project manager in Choma and the customer himself. The rest of the fodder producers use it to feed their cattle. Results also show that an average of 6 cattle per household are fed on fodder. The figure for Choma is 7 while that for Kazungula is 5. Farmers indicated that they do not feed fodder to other livestock such as goats, sheep, and pigs.

FGDs also indicated that the fodder crop production, though a new innovation, was a very beneficial addition to their crop enterprise diversity. The knowledge in production techniques and usage of fodder was appreciated. Of the fodder crops grown, and for those farmers who grew fodder, the most valued was cowpeas and sun hemp, while the least was Rhodes grass and pigeon peas. It is apparent that the innovation is still a novel one for many farmers and more time dedicated to teaching them production techniques would have yielded better results. However, some non-participating farmers in some communities like Simango in Kazungula District have shown interest in growing fodder crops. A few challenges highlighted in fodder production included late supply and low quantities of seed given in the 2013/14 season. The distributor in Kazungula confirmed that they received the seed stock rather late and even what was received was too little to meet the farmers' demands. This sentiment was echoed more often during the FGDs in all the camps.

The area under fodder production is still small. The average total area under fodder production is estimated at not more than 0.5Ha for each farmer. In Choma the average area under fodder crops in 2013/14 season was estimated at about 0.1Ha per household. In 2014/15 season this increased to about 0.5Ha. In Kazungula the average area under fodder was 0.1Ha in 2013/14 season and there was no change in the 2014/15 season.

SOURCE OF SEED

Farmers were asked to state which sources they obtained their seed from for production in the 2013/14 and the 2014/15 seasons. A diversity of sources for farm inputs is an indication of the degree to which farmers have been

linked to suppliers and also provides for assurance of sustainability of availability, unlike in a case where farmers were dependant on a single supplier. In the 2013/14 season the majority (59.2%) indicated that they got their maize seed from the Project (Land O' Lakes). 33.4% indicated that they obtained their seed from their own harvest. For sugar beans, groundnuts and sorghum, the major source of seed in 2013/14 season was Land O' Lakes. In the 2014/15 season most of the farmers used seed from their own production. This result could be because the Project supplied seed to farmers in the 2013/14 season and not in the 2014/15 season and translated into less production as shown above.

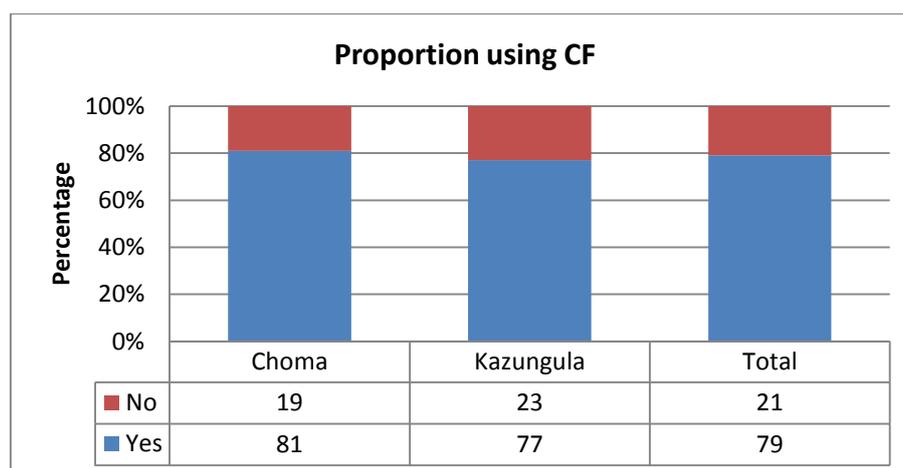
Although Eliezer Agro Dealers in Choma and Technical Sprayer Services of Livingstone were the main suppliers to whom farmers were linked by the project, the results show very few farmers (less than 1%) used these sources for seed although they used other agro dealers and local stores. There are indications that most of the farmers are not able to remember the names correctly of these agro dealers to whom they were linked and could only remember the names of the managers. This therefore could explain the small proportion recorded.

CONSERVATION FARMING PRACTICE

The project trained farmers in the project areas in conservation farming (CF) techniques. CF techniques were some of the new technologies promoted by SHARP as climate smart approaches to farming to mitigate against adverse weather patterns. CF training was one of the major activities conducted at the demonstration plots or Answer Plots established in all the camps. CF technologies taught included: ripping, use of planting basins or pot-holing, crop rotation, intercropping, use of cover crops, use of green manure, use of animal manure, farm forestry or agro-forestry, and use of weed killers or herbicides. Farmers indicated during the FGDs that the training in CF techniques was very useful. The only concern raised was with the basin technique as they considered it to be too labor intensive.

During the end-line survey respondents were asked whether they practiced CF practices or not, and if they did practice, which of the CF practices were adopted and being used on their farms. They were also asked the proportion of their farm land on which they used CF techniques. Results are depicted in figure 5 below. The results show that 79% of the respondents uses CF. Some of the main reasons given by farmers not using CF techniques were that it required the acquisition of land tilling implements such as the 'Chaka' hoe and rippers which they could not afford, and that the use of basin formation for example required the use of much more labor than they could manage. In Choma, this proportion is 81%, slightly higher than for Kazungula (77%). This is an increase from about 29.4% at Baseline.

FIGURE 6: PROPORTION OF RESPONDENTS USING CF



The most commonly practiced CF technique is ripping with 82.6% of those that do CF techniques reporting using it. In Choma the proportion is 76.1% while in Kazungula it is higher with 89.1% using it. The next commonly used CF technique is the use of planting basins (51.3%). This is followed by crop rotation and the use of animal manure, (48.7% and 42.6% respectively). Most farmers indicated that they started using CF techniques after receiving training from the project. The proportion varied from technique to technique but generally more

than 50% of the farmers were instigated to use CF after receiving training. More than 50% of the farmers also indicated that they used CF techniques on more than $\frac{1}{4}$ of their farm land. The details of the types of CF techniques and number of farmers using them are shown in table I5 below.

TABLE 15: TYPES OF CONSERVATION PRACTICE USED

Type of CF used	Baseline	End-line												
		Choma			Kazungula			Treatment	Mapanza (Control)			Mukuni (Control)		
	N=	Male	Female	Total N=146	Male	Female	Total N=98	Total N=244	Male	Female	Total	Male	Female	Total
Ripping	71.3	73.6	78.6	76.1	78.3	100	89.1	82.6	70.8	66.7	68.7	12.5	0	6.2
Basins & potholes	33.9	53.8	53.6	53.7	47.8	50	48.9	51.3	54.2	100	77.1	75	85.7	80.3
Crop rotation	34.8	39.6	28.6	34.1	43.5	83.3	63.4	48.8	25	0	12.5	18.8	0	9.4
Intercropping	9.6	20.9	10.7	15.8	39.1	83.3	61.2	38.5	16.7	0	8.3	18.8	28.6	23.7
Cover catch crops	1.7	7.7	0	3.8	39.1	50	44.5	24.2	4.2	0	2.1	6.2	0	3.1
Green manure	1.7	12.1	0	6.05	10.1	33.3	21.7	13.9	4.2	0	2.1	0	0	0
Animal manure	39.1	42.9	25	33.9	36.2	66.7	51.4	42.7	41.7	0	20.8	6.2	14.3	10.2
Farm forestry/agro forestry	3.4	0	0	0	2.9	0	1.4	0.7	0	0	0	6.2	0	3.1
Weed killers	0	9.9	3.6	6.7	2.9	0	1.4	4.1	4.2	0	2.1	0	0	0

TRAINING RECEIVED

Respondents were asked whether they received any type of skills training in the previous 12 months prior to the survey. If they did receive any training, who or which organization provided the training. The results in table 16 show that the largest proportion of respondents received training in agricultural production related skills namely; conservation farming (74.1%), fodder production (61.5%), and crop husbandry (51.5%). Other training topics reported include weather monitoring (34.7%), disaster risk reduction (33.8%), and early warning (33.8%). Other project related topics were those for WASH. These topics include hygiene and sanitation (40.2%) and environmental health (29.8%).

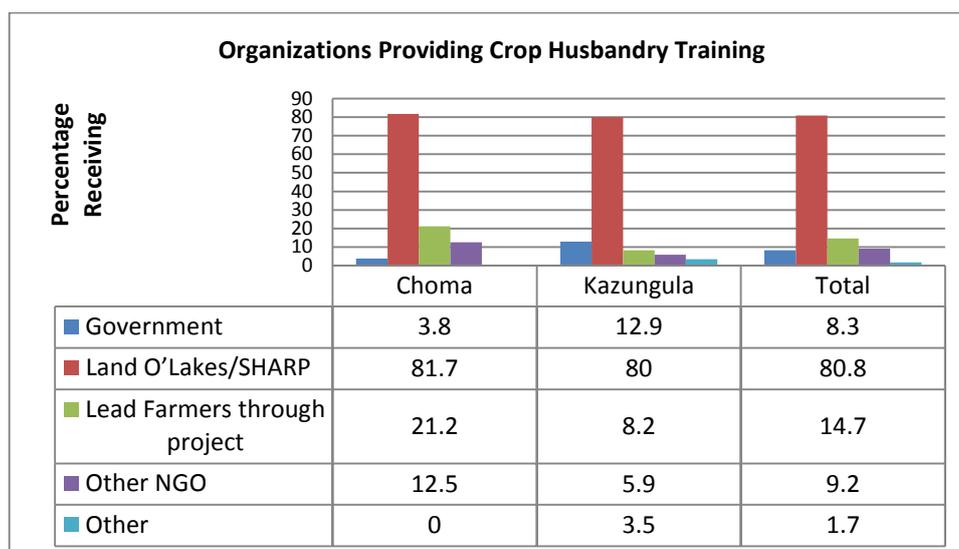
TABLE 16: TYPE OF TRAINING RECEIVED AND PROPORTION OF FARMERS RECEIVING

Type of Training	District		Total N=369
	Choma N=210	Kazungula N=159	
Crop husbandry	49.5	53.5	51.5
Conservation farming	79.0	69.2	74.1
Human Nutrition	26.7	37.7	32.2
Fodder production	67.1	56.0	61.5
Business (agribusiness, financial management, book keeping)	43.8	30.2	37
Savings	15.2	34.0	24.6
Group governance	8.1	25.2	16.6
Gender issues	15.7	34.6	25.15
Disaster Risk Reduction	30.5	37.1	33.8
Early Warning	27.6	34.0	30.8
Weather monitoring	34.3	35.2	34.7
Natural Resources Management	7.1	19.5	13.3
HIV & AIDS	33.3	66.0	49.6
Environmental health	15.7	44.0	29.8
Hygiene and Sanitation	33.3	47.2	40.2
Others	0	1.9	0.9
None	9.5	11.9	10.7

ORGANIZATION PROVIDING TRAINING

The farmers indicated that they received most of the training on agriculture related skills from the project (Land O' Lakes). This includes training crop husbandry, CF, fodder production, weather monitoring, and early warning. Other training which was provided by Land O' Lakes was in hygiene and sanitation. The graphs below illustrate the share of the organizations providing training in the various skills areas. Figure 6 shows that more than 80% of the respondents received their crop husbandry training from the project.

FIGURE 7: PROPORTION OF RESPONDENTS RECEIVING CROP HUSBANDRY TRAINING FROM ORGANIZATIONS/ENTITIES/INDIVIDUALS



Most of the training on crop husbandry and CF was conducted at the Answer Plots and by the Lead Farmers as alluded to earlier in the report. About 92% of the farmers who received some type of training indicated that they received training at the Answer Plots. Table 17 shows the proportions of farmers trained at the Answer Plots. On the average the farmers attended about 7 training sessions with the Lead Farmer and 5 at the Answer Plots.

TABLE 17: PROPORTION OF FARMERS TRAINED AT THE ANSWER PLOTS

Choma			Kazungula		
Males	Female	Total	Males	Female	Total
N=78	N=73	N=151	N=47	N=51	N=98
93.6	84.9	89.2	91.5	98.0	94.7

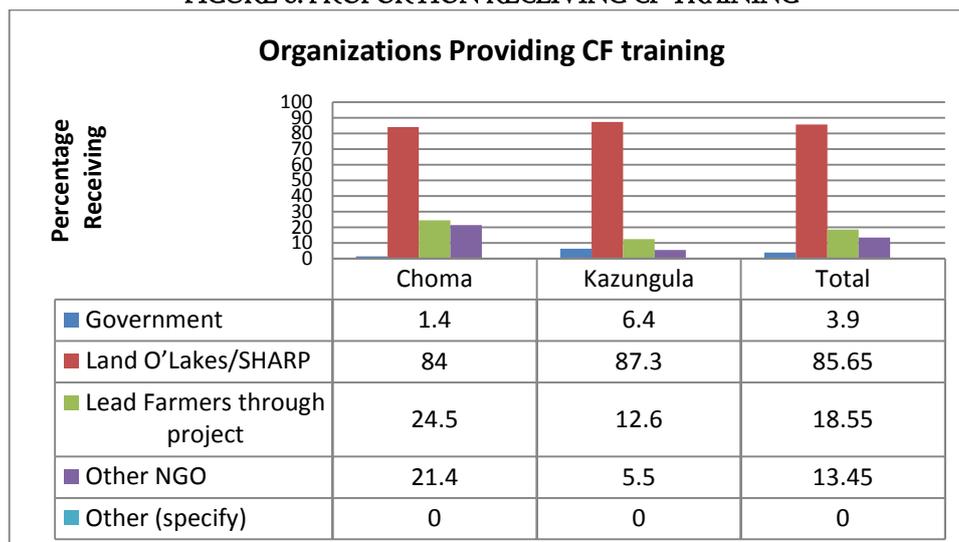
Discussions with Lead Farmers and FGDs revealed that the Answer Plot concept is a very good one. The approach ensures that the farmers are exposed to practical applications of methods taught; this makes learning and adopting ideas very easy. Generally, the plots did very well except for cases that due to poor rains, the crops did not perform well. In such instances it becomes difficult to put forth new ideas to farmers. In other cases due to poor management, sorghum plots performed poorly due to bird attack. A suggestion was made during discussions with a key informant that perhaps a suitable variety of sorghum should be used instead of the one that is susceptible to bird attack. The suggestion is to grow red sorghum as opposed to the white variety which was distributed. The red sorghum is less prone to be attacked by birds than the white variety.

Another challenge brought out during the discussions with some Lead Farmers was the fact that they were not provided with all the equipment required to manage a field plot. They felt that they needed to be provided with 'Chaka' hoes and rippers for CF practice. A suggestion which was also brought out at mid-line, to have the activities such as field days at the Answer Plot coincide with specific cultural practice for target crops.

In the final analysis the general conclusion is that the Answer Plots achieved their intended objectives although this achievement would have been enhanced if the challenges highlighted above were addressed.

Figure 8 shows the proportion of farmers receiving CF training from various organizations, entities and individuals. As is the case for crop husbandry, more than 90% of respondents have been trained by SHARP. The graph shows that there is 18.5% who said they were trained by Lead Farmers and 85.6% by Land O' Lakes. However, this may be misleading because sometimes the farmers use Land O' Lakes to mean those activities conducted by the field facilitator and others would specifically state the Lead Farmer.

FIGURE 8: PROPORTION RECEIVING CF TRAINING



The project provided most of the training for all the other crop production, DRR and WASH related training. The proportion of respondents who indicated that they received DRR, Early Warning, Weather related as well as Hygiene training from Land O' Lakes, Lead Farmer or satellite committee was more than 90%.

USE OF WEATHER DATA

The project put in 10 weather stations in the project areas situated at schools and managed by the school authorities. The results show that 48.7% of the respondents receive weather related data. 49.4% are from Choma while 48% are from Kazungula. The majority of the farmers (53%) indicated that they receive the weather data once in a month. The weather data is usually disseminated by the Lead Farmer and at community meetings. When asked whether this data is given out in a timely manner, the majority (83%) affirmed that it was given timely. Although an overwhelming majority of the farmers indicated that they used this data to make farming decisions, FGD and Key Informant interviews revealed the contrary. What was revealed in the Key Informant Interviews and FGDs was that the weather data which is usually disseminated is of a historical nature and farmers do not have the capacity to use this data to make projections of what future weather patterns are going to be like. From a climatologic perspective 30 year cycles of data collection of different parameters is what is considered sufficient to provide data to feed into climate models. However, real time weather data is useful to make an informed postmortem of a past growing season. As such, it may be erroneous to conclude that the farmers actually use this weather data in the manner indicated in the questionnaire.

FOOD STORAGE

The project is promoting use of food barns and fodder barns especially the metal silo for grain storage. The metal silo as an innovation for on-farm storage has been in use in the Eastern Province of Zambia and has tremendous benefits in reducing post harvest losses from insect pest damage. The project has trained artisans to produce the metal silos for supply to farmers who will be able to produce and supply the silos to farmers in both project districts.

TYPES OF STORAGE BARNs

In assessing this indicator the research team asked respondents to indicate what types of food storage they use at their homes. Options indicated were the mud-plated barns, the cement and wire food barn, storage inside the house on the floor, the metal silo and others. It should be noted that farmers may have more than one food storage type in their household. The responses were able to provide us with the number of respondents using metal silos. Table 18 shows the types of grain storage the respondents use and the proportions using the particular storage type.

TABLE 18: TYPES OF GRAIN STORAGE AND PROPORTION OF RESPONDENTS OWNING

Type of Storage	Baseline			End-line					
	Choma N=252	Kazungul a N=161	Total N=413	Choma			Kazungula		
				Male N=78	Female N=73	Total N=151	Male N=47	Female N=51	Total N=98
Mud plated barns	15.0	5.0	11.0	92.3	94.5	93.4	59.6	62.7	61.1
Cement and wire food barn	0.8	2.5	1.5	1.3	5.5	3.4	2.1	2.0	2.0
In room within the house	-	-	-	15.4	9.6	12.5	12.8	5.9	9.3
In metal silos	0.4	0.6	0.5	2.6	2.7	2.6	6.4	5.9	6.1
Fodder barns	0.4	0	0.2	11.5	9.5	10.5	27.7	17.6	22.7
Others	-	-	-	1.3	1.4	1.3	25.5	29.4	27.4

The results show that majority of respondents use mostly the mud plated food barn for storing their crop. In Choma 93.4% of respondents indicated that they used this type of barn while in Kazungula the percentage of respondents using the mud plated barn was 61.1%. The metal silo is used by only about 4.4% of the respondents. The figure for Kazungula is larger than that for Choma with 6.1% and 2.6% respectively. Records with the project however, indicate that a total of 120 metal silos have been bought by farmers and to-date 64 order have been made. All the respondents who have acquired the metal silos have been using them for an average of only one year. The use of grain storage has increased between baseline and end-line. In Choma at baseline only 15% were using the mud plated barn and at end-line the number was 93.4%. In Kazungula those using the mud plated barn at baseline were 5% and at end-line the number was 61.1%. The number using fodder barns increased from about 0.2% at baseline to 16.6% at end-line for both districts. This increase in the use food grain storage is an indicator of increased food production and security.

In Choma all those who own metal silos indicated obtaining them from the project, while in Kazungula the proportion of farmers who obtained them from the project is 83%. The farmers who have heard about the metal silos but have not bought or ordered cite the price as a deterrence on their part. This is exemplified by 62% of the respondents. Focus group discussions also revealed that the price of the metal silos is an issue, inhibiting adoption. Many farmers felt that although they were keen to use such an innovation which in their view was very essential, the high cost would hinder them from acquiring them. The rest indicated non-availability as the main reason for not acquiring the metal silos by the time of the end-line survey.

PROGRESS TOWARDS ACHIEVEMENT OF OBJECTIVES AND INTERMEDIATE RESULTS ON AFS

I.I.1: Increase in number of months of food self-sufficiency due to distributed seed system/agricultural input for beneficiary households

At baseline the sampled households obtained from the population in the target districts was 10.7 deduced from the. At mid-term, the figure dropped by 0.4 months. It is important to notice that, the sample at mid-term and end-line was obtained from the direct beneficiaries who, according to the selection criteria used, were among the worst hit in terms of food security. At end-line, the figure improved by 0.6 months. This achievement was lower than the target 1.4 increase in months of food self-sufficiency.

I.I.2: Number of people benefiting from seed systems/agricultural input activities

According to monitoring data the number of farmers who received field crop and fodder seed was 1,000 by the time of the end-line survey. In the first year (2013/14) season 996 were given and 4 in the 2014/15 season. On this indicator, the project achieved the planned target.

I.I.3: Percentage of households whose asset index has increased by at least 60%

The wealth asset index increased from 30.9% at baseline to 55% at end-line. The percent of households whose asset index increased by at least 60% was 57%. This was lower than the life of activity target of 70%.

I.I.4: Number of hectares (ha) under integrated food and fodder crops production

The survey showed that the beneficiaries in the two districts had planted a total of 1,767 ha under integrated food and fodder crops production. Total ha for males was 844 ha and that for females it was 923 ha. This result is much higher than the project life of activity target of 500 ha.

I.I.5: Number of individuals applying new agriculture technologies or management practices as a result of project assistance

At the time of the end-line survey, there were 697 individuals of the 906 active individuals applying new technologies. Active individuals referred to individual beneficiaries who were reported as still participating in project activities by the project at the time of end-line survey. In the first season of the project 996 of the beneficiaries accessed various seeds which they used in new technologies (for example cowpeas for crop integration); four accessed similar seeds the following season for the same purpose. Thus in the full life of activity of the project the 1,000 targeted beneficiaries applied new agriculture technologies at some point in time. The target under this indicator was achieved.

I.I.6: Number of individuals who have received trainings on food and fodder production practices/ techniques

In the twelve months preceding the end-line survey, 870 beneficiaries received training on food and fodder production directly; in the first season, 1,000 beneficiaries who accessed seeds accessed training through AnswerPlots. During group discussions, discussants revealed that there was a spillover effect of 2-3 individuals who in turn were coached by direct beneficiaries giving an estimate of between 2,000 and 3,000 individuals indirectly. The target set for the life of activity of the project was achieved.

I.I.7: Number of food and fodder crop storage facilities built and/or bought and used

The total number of crop storage facilities built and or bought and used (metal silos plus food and fodder bans) is 449 according to records available with SHARP. The facilities are evident at farmer level. The SHARP life of activity target was 500. During discussion with SHARP implementation team it was disclosed that 260 metal silos had been ordered by the farmers. The artisan in Choma confirmed having an order of about 32 silos per month. SHARP also disclosed that they were in the process of securing up to 500 metal silos. The number achieved by end line survey (449) was lower than the estimated life of activity target of 500.

I.2.1: Number of producers linked to fodder market outlets to sell their produce

Sixty three farmers in Choma were linked to fodder markets, Golden Valley Agriculture Research Trust (GART) and an individual (Mayor of the City of Choma). By the time of the survey, GART was still assessing the fodder for possible purchase; the mayor had already been buying the fodder from the one of the farmers. In this indicator the target of 1,000 was not achieved.

I.2.2: Number of firms/agro-dealers linked to livestock producers and providing new business services

SHARP achieved the target of 5 agro dealers linked to farmer groups. The list of agro dealers confirmed during group discussions included Eliezer, Agriculture Technical Services (ATS), TSS, Seedco, Lima Chuma and ATF.

PART B: DISASTER RISK REDUCTION (DRR)

INTRODUCTION

The main objective of the DRR Component is: To Strengthen community resilience and capacity to cope with shocks and stresses

Indicators under this objective were:

- i. Number of people participating in training aimed at preparedness, mitigation and response to shocks and stresses
- ii. Seventy percent (70%) of people who retain skills and knowledge two months after training
- iii. Eighty five (85%) of attendees at joint planning meetings who are from the local community
- iv. Early warning system in target communities is in place for all major hazards with appropriate outreach to communities
- v. Seventy (70%) of community members who received at least one early warning message from at least one source prior to a disaster
- vi. Two hundred (200) DRR Action Plans developed by communities through the D-RISK process that address priority environmental health conditions

The summary of activities undertaken under this component was as follows:

Project reports indicate that in the **DRR component**, the project trained 26 distinct satellite committees in how to assess environmental health conditions, and map community risks, hazards, and assets. These committee members formed and trained village committees in 200 villages. The village DRR committees then engaged with project staff and other community members to design and implement DRR action plans to address the issues, prevent, prepare for, mitigate and respond to shocks and stresses and establish early warning systems in their communities.

According to project reports, the project worked with local government stakeholders and disaster management unit to adapt national DRR training guidelines to train satellite disaster management committee members. However, the Choma district community development officer who is the secretary of the District Development Coordinating Committee (DDCC), indicated that project's activities with respect to DRR were not done in full coordination with the district government offices. The officer said, "if they had linked their activities with government, they would have achieved more success". The lack of coordination in the beginning was corroborated by a key informant who was a project facilitator in the DRR/WASH component in Kazungula. However, both sources of information indicated that the situation got better towards the end of the project.

DEMOGRAPHIC CHARACTERISTICS OF DRR/WASH RESPONDENTS

The end line survey collected data about the sex of the respondent, the marital status, type of marriage (monogamous or polygamous), highest level of education attained by respondent, occupation of the respondent and the relationship of the respondent to the head of household if the respondent was not the head. The needs assessment on the other hand only collected data on sex of the respondent and highest level of education attained. As such comparison between end line and needs assessment will only be done for the sex of respondent and level of education.

Table 19 shows the results of demographic characteristics of the DRR/WASH respondents of the end-line survey. The results of the end-line survey show that 51.4% of respondents attained primary level education in both districts. Those who attained secondary level of education are 44.8%.

TABLE 19: CHARACTERISTICS OF DRR/WASH RESPONDENTS

Category		Needs Assessment		End line		
		Choma N=303	Kazungula N=122	Choma N=236	Kazungula N=105	Total N=336
Sex of Respondents	Male	41.2	54.9	-	-	-
	Female	58.8	45.1			
Av Age				42.8	42.8	42.8
Highest level of School Attended (%)						
None		3.0	2.5	3.0	1.9	2.4
Primary		49.8	52.5	54.2	48.6	51.4
Secondary		47.2	45.0	41.1	48.6	44.8
Tertiary		0	0	1.7	1.0	1.3

HOUSEHOLD CHARACTERISTICS OF WASH/DRR RESPONDENTS

The results about the house characteristics of the WASH/DRR respondents show that most respondents' homes have thatch roofs (60%) and mud floors (74.2%). The results also reveal that the proportion of respondents whose houses have concrete floors is 24.6%. Only Forty two percent of households are also roofed with iron sheets. Table 20 **Error! Reference source not found.** shows depicts the house characteristics of WASH/DRR respondents.

TABLE 20: HOUSE CHARACTERISTICS FOR WASH/DRR RESPONDENTS

House characteristics	Mid Term				End line				
	Choma		Kazungula		Choma		Kazungula		Total
Roof Materials									
-Iron sheets	N=136	39.0%	N=105	24.8%	N=236	49.2%	N=105	26.7%	37.9%
-Thatch	N=136	60.3%	N=105	75.2%	N=236	50.8%	N=105	73.3%	60.0%
Floor Material									
-Earth/mud	N=136	87.5%	N=106	85.8%	N=236	73.3%	N=105	75.1%	74.2%
-Concrete	N=136	12.5%	N=106	14.2%	N=236	26.3%	N=105	21.0%	23.6%

PARTICIPATION IN DRR TRAINING

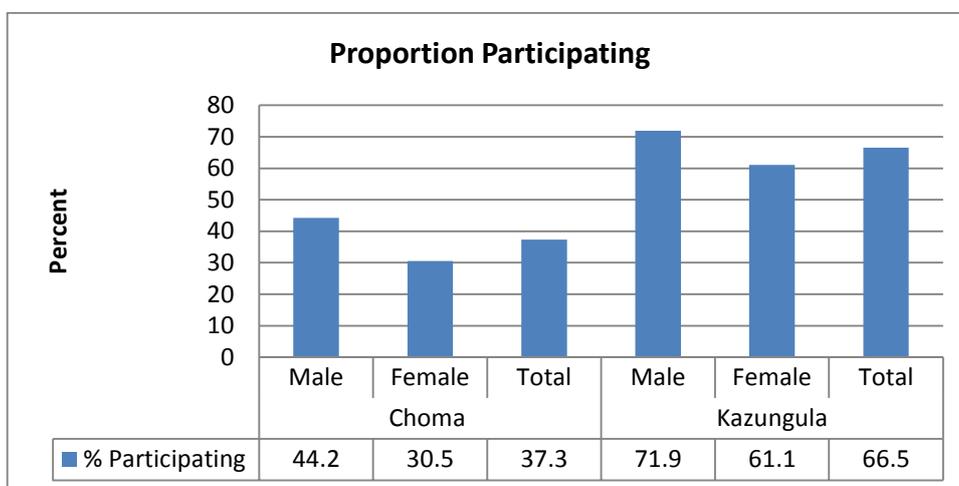
The project conducted training activities on disaster preparedness, mitigation and response. The project formed disaster management village committees in all targeted communities. The satellite committee members were trained in DRR issues who later trained the village committee members. According to the most recent quarterly report, there were 1082 village committee members trained. The village committees were expected to roll out similar DRR discussions in their communities among other community members as a way of sharing information and skills that would impact on their resilience against shocks and stresses from disasters.

The figure 8 below shows percentage of people who attended DRR discussions at community level facilitated by the village committees, an indicator that community based DRR discussions have been taking place by the village committee members.

The results indicate that 52% of respondents participated in community meetings. The figure is higher in Kazungula with 66.5% with Choma having 37.5% attendance, and a higher proportion of males indicated being involved in these discussions. The reason for the low attendance in Choma could be attributed to the fact that in some cases like in Malindi Camp, the satellite committee members failed to complete the training of other village members. The training was started and then halfway through the process the training activities stopped. Although these were resumed later, the slackening in effort by the committee members could have affected the enthusiasm of the other villagers. Discussants during FGDs also indicated that distances between villages were too large in

some cases and this made it difficult for satellite committee members to meet the villagers as regularly as they would have wanted to.

FIGURE 9: RESPONDENT’S PARTICIPATION IN DRR COMMUNITY DISCUSSIONS



Supporting information from key informants as well as focus group discussions (FGDs) in both Choma and Kazungula camps revealed that village disaster management committee members, after they received the initial training in DRR, began conducting several onward information sharing and discussions in various villages on the reduction of disaster risks as a way of strengthening community resilience and the capacity to cope with shock and stresses. However, a few camps such as Malindi in Choma, expressed dissatisfaction with the training they received, as it was only half completed by the satellite committee members who never returned to the area. There is some loss of confidence in the committee in this area. It was revealed during discussions that the committee in this area had not been visiting community members for DRR discussions for some time.

RESPONDENT’S RETENTION OF SKILLS AND KNOWLEDGE IN DRR

The project aims at developing capacity in the community in terms of demonstrating minimum levels of skills and knowledge retention. While the retention of skills and knowledge two months after training among the people trained was 77% according to the last quarterly report. At end-line 91% of the community showed evidence of retention of skills and knowledge for the same period. The topics include identification of disasters, types of hazards, hazard mapping, how to mitigate and respond in times of disaster occurrence, among others. In addition, more than 70% of the respondents in both Choma and Kazungula said that they were well informed on matters of disaster risk reduction. During discussion, differentiating between a hazard and a disaster was a challenge for many. Discussants could not reach consensus on the distinction between hazard and disaster. Many simply referred to a disaster when they meant a hazard.

These findings were supported by information from key informants and focus group discussions which revealed similar topics as covered during the village discussions. Examples of hazards identified in their communities as well as traditional early warning signs compiled at village level were cited accordingly. These ranged from droughts, livestock disease, crop pests, and floods, among others. Preparedness and mitigation measures indicated in FGD discussions, against the major hazards included the use of improved agricultural methods such as conservation farming and especially fodder growing which was found to be a new agricultural practice for many farmers. Fodder growing was widely discussed as an intervention that would also help combat livestock disease through improved nutrition among livestock as the fodder crop would be used to feed their livestock. Other mitigation measures included the need to adopt hygiene practices in water and health management. Thus the construction of toilets and the need to establish hand washing facilities was emphasized as part of improving the respondents’ environmental health, and thereby a means of building their own resilience against the impact of major disasters in their areas.

Furthermore, it is interesting to note that apart from the topics directly associated to the DRR training and awareness which the farmers were subjected to, some participants within the FGDs were able to confirm the importance of some interventions such as introduction of metal silos, growing of fodder for animals and soil improvement, the adoption of water management and hygiene practices including toilet constructions-as a way of making the households more resilient against disaster related stresses and shocks. This is expected especially where farmers were participants in both DRR and AFS activities and all of them. The fact that they would be able to link fodder production, CF practices, water management, and sound hygiene practices as components of building resilience against climate adversity is proof of capacity built against disasters. Table 21 below shows the topics covered in disaster risk reduction and the proportion of farmers able to remember topics covered.

TABLE 21: TOPICS COVERED IN DISASTER RISK REDUCTION DISCUSSIONS

Topics Covered	End-Line					
	Choma			Kazungula		
	Male	Female	Totals	Male	Female	Total
Types of Hazards	98	88	93	66	50	58
Hazard Mapping	74	60	67	49	23	36
Early Warning signs for disasters	88	92	90	98	82	90
How to stay safe during disasters	81	84	82	73	64	68
How to mitigate disasters	79	56	67	66	59	62
How to respond to disasters	67	64	65	66	41	53

ATTENDANCE AT JOINT PLANNING MEETINGS

The project aimed at enabling planning meetings between farmers residing in the village communities and various officials from stakeholder entities, including the government. Results from the FGD show that in most agricultural camps, at least one meeting was attended by some members, where the representative of the District Disaster Management Committee was present and accompanied by PCI project staff. Fostering of linkages between DMMU and the satellite disaster management committee was therefore undertaken by the SHARP project. The end of quarterly report indicates that at these joint planning meetings, 76% of participants were the community members. This achievement was slightly lower than the life of activity target of 85%. Further information from one of the DDMC representative in Choma confirmed that although they were not involved at the inception of the project, the DDMC is aware of the structures established at village level and that it was hoped that the village committees and satellite committees be given the necessary support in continued capacity building so that they remain relevant to their communities.

STRENGTHENING OF DISASTER RESPONSE

AVAILABILITY OF EARLY WARNING SYSTEMS

WHAT DISASTER OCCURRED IN LAST 12 MONTHS

One of the objectives of strengthening community capacity for disaster response is to create early warning systems at community level. Members of the community should be able to know indicators of impending disasters. Respondents were asked to indicate the most common disasters which occurred in their localities in the past 12 months. The table 22 below gives the proportions of respondents who cited the types of disasters which occurred. Drought was the most commonly mentioned with an estimate of (95.7%) citing it. The term 'drought' was also used to describe a dry spell that just occurred in both areas. From the FGDs, it was highlighted that in both Choma and Kazungula the 2014/2015 agricultural season was hit by a long dry spell which occurred between December and January, a critical period for crop development. Heavy rains came in February when most crops had wilted. It was further discussed that only those who planted early would manage to harvest tangible yields, otherwise the majority had been affected negatively. The WASH/DRR Needs Assessment conducted in April, 2014 also highlighted droughts as a major hazard, together with floods and animal diseases.

TABLE 22: RESPONDENT'S CONFIRMATION OF DISASTER OCCURRENCE FOR THE PAST 12 MONTHS

Type of Disaster	End-Line				Control Camps			
	Choma N=186		Kazungula N=125		Mapanza N=55		Mukuni N=20	
	Male	Female	Male	Female	Male	Female	Male	Female
Flood	0	0	3.8	0	0	0	0	0
Drought	98.5	96.6	90.6	97.1	94.4	94.4	100	100
Animal Disease	10.6	10.3	15.1	5.9	16.7	11.1	50	11.1

The respondents were further asked to indicate the month in which they last experienced an occurrence of a disaster. The response to this question varied between Choma and Kazungula. 54% of the respondents indicated January 2015 while in Kazungula the largest proportion (38%) indicated December 2015. The details are given in table 23 below.

TABLE 23: DISASTER OCCURRENCE IN LAST 12 MONTHS

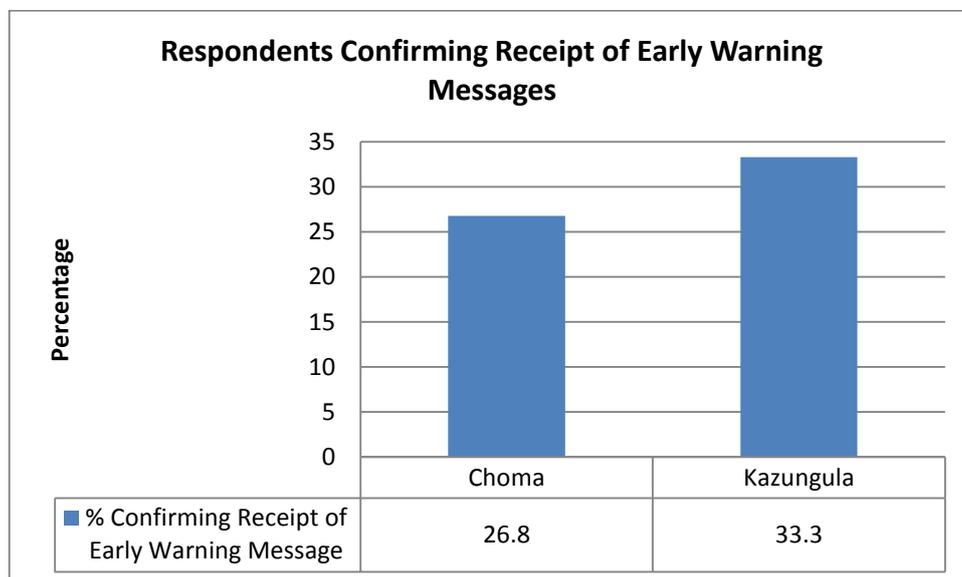
Period of Disaster occurrence	End-Line				Control Camps			
	Choma N=121		Kazungula N=81		Mapanza N=34		Mukuni N=11	
	Male	Female	Male	Female	Male	Female	Male	Female
March 2015	3.1	1.8	2.1	3.0	0	0	0	0
February 2015	13.8	23.2	14.6	12.1	29.4	11.8	0	0
January 2015	50.8	57.1	27.1	33.3	23.5	23.5	50	44.4
December 2014	29.2	12.5	33.3	42.4	41.2	58.8	50	55.6
November 2014	1.5	1.8	18.8	3.0	0	5.9	0	0
October 2014	0	0	2.1	6.1	0	0	0	0

RESPONDENTS RECEIVING EARLY WARNING MESSAGE

Averting disaster or disaster preparedness is dependent on robust early warning systems. Early warning messages should be able to be transmitted to targeted people effectively and efficiently. In assessing this factor, farmers were asked to indicate whether they had received an early warning message of one kind or another prior to a disaster occurring. The results show that only 30% of the respondents in both districts indicated receiving an early warning message. The proportions between Choma and Kazungula are similar. Further findings from key informants and FGDs confirmed the scenario, alluding to the fact that before the drought (dry spell), was experienced, most people never received any early warning message to have enabled them to put any mitigation measures in place, in order to cope with the stresses and shocks of the impending disaster. In fact, it was mentioned that many farmers had actually done early crop planting based on the trainings they had received from SHARP on the improved agricultural practices. Thus using early maturing varieties and the need to plant early was undertaken by some farmers accordingly. The drought experienced came as a surprise, especially considering that that even the traditional early warning signs pointed to a normal rain season. Those farmers who planted early were reportedly less affected in both Choma and Kazungula.

Figure 9 below depicts the proportion of respondents who confirm receipt of some early warning message prior to a disaster occurrence. The results show that on average 30% confirm receiving early warning message of one form or another prior to a disaster occurring. In Choma the proportion is about 27% and Kazungula 33%. The number of respondents confirming receipt of the early warning message was generally low suggesting that early warning systems though present in most camps, are still quite weak.

FIGURE 10: CONFIRMATION OF RESPONDENT RECEIVING EARLY WARNING MESSAGE PRIOR TO DISASTER OCCURRENCE



The control areas of Mapanza and Mukuni recorded very few of the respondents receiving any early warning information prior to the dry spell they experienced.

SOURCE OF EARLY WARNING INFORMATION

Respondents were asked to indicate which their main sources of early warning messages are. Results suggest that the few respondents who received some early warning information got it from DRR Committee members, radio, or the village headman or woman. The results show that 75% of respondents that received early warning messages in Choma received them from DRR Committee member while in Kazungula the number is 44%. Radio was another major source of early warning information, with an estimate of 43% for Choma and 23% for Kazungula.

Considering that most of the early warning information was emanating from DRR committee members, it is clear that early warning systems are available in a few of the targeted areas and that the committee members have tried to disseminate information on the early signs and alerting the community on the possible preparedness and mitigation measures that can be considered in order to reduce the impact when the disaster occurs. However, information from FGD indicate that the Early Warning systems that have been put in place with the help of the village committees in some camps, still require time to be well developed before its impact could be felt.

The weak early warning systems can be seen from the low rate in receiving warning information. Information from the FGDs also reveals that while radio and Zambia National Information Services (ZANIS) are other sources of early warning information, the content was not adequate to prepare the community against any eminent disaster. The participants further mentioned that if the information via Radio or ZANIS would have some recommendations of the actual preparedness and mitigation measures that could be put in place, the people would be more alert and that disaster impact would be much less.

TABLE 24: SOURCE OF EARLY WARNING INFORMATION

Source of Early Warning Message	End-Line			
	Choma N=35		Kazungula N=31	
	Male	Female	Male	Female
DRR Committee Member/Community member	70	80	47.4	41.7
Village Leader	10	26.7	15.8	8.3
Radio	60	26.7	5.3	41.7
NGO	10	0	15.8	8.3
Neighbor	0	0	0	8.3
Other	0	6.7	21.1	8.3

CREATION OF DRR PLANS

The project trained the community members in the aspects of creating DRR plans using a disaster risk mapping process. Key informants and FGD participants, confirmed having had mapped hazards within their communities, and developing the DRR plans based on this mapping. However, , most aspects within the DRR plan were yet to be implemented as the village committee members were still planning ways to share the plan with their communities. One of the most common aspects of the DRR plan so far implemented were the onward village discussions to share information on early warning signs and possible measures that households could consider in building their resilience against the shocks and stresses. Such measures include the improved agricultural practices and water and sanitation practices that the project areas have been learning and implementing, such as toilet construction to reduce open defecation and enhance their environmental health conditions.

According to the last donor report, III communities were verified to have DRR plans, which indicate that many targeted communities did not manage to develop and turn in their DRR action plans, as expected. For instance, among the visited camps during the survey, Malindi camp in Choma confirmed having no DRR plan in place due to incomplete training they received.

PROGRESS TOWARDS ACHIEVEMENT OF OBJECTIVES AND INTERMEDIATE RESULTS ON DRR

3.I.1: Number of people participating in training aimed at preparedness, mitigation and response to shocks and stresses

The achievement under this indicator is 1,711, slightly below the target of 2,013, according to the last donor report.

3.I.2: Percentage of people who retain skills and knowledge two months after training

According to the end-line survey conducted by the project after the committee training, 77% of the people who got trained were able to show signs of retention of skills and knowledge two months after training. However, it can be said that there was generally a ripple effect in that community members who were able to recite the various topics covered in DRR discussions was high. Target of 70% was achieved.

3.I.3: Percentage of attendees at joint planning meetings who are from the local community

Joint planning meetings in terms of attendees had achieved more than 85% of the target. According to the quarter report (March, 2015), there was 76% achieved. Supportive information during the FGDs and key informant discussions revealed that there was one major meeting for both Choma and Kazungula where the DDMC representative and PCI project staff visited some camps.

3.2.1: Early warning system in target communities is in place for all major hazards with appropriate outreach to communities

From the survey, it was evident that DRR Committee members obtained early warning system messages and shared them with community members. This was lacking in Malindi camp, however. This indicator was not achieved.

3.2.2: Percentage of community members who received at least one early warning message from at least one source prior to a disaster

The survey gives an average of (30%) for both Choma and Kazungula receiving some form of early warning information at least from one source. The achieved value compared to the target (70%) is lower.

3.2.3: Number of communities that develop DRR action plans through the D-RISK process that address priority environmental health conditions

111 villages out of a target of 200 villages developed DRR plans (March, 2015 quarterly report). The plans were used by committee members for mitigating hazards. The remainder of the villages had started the planning process late and were still mobilizing community members at the time of the end-line; once made, the plans will be used in the coming season.

PART C: WATER, SANITATION AND HYGIENE

INTRODUCTION

The Main Objective of the WASH Component is: To enhance community and household management of water resources and sanitation practices

The indicators under this objective were as follows:

- i. Number of people benefiting from solid waste management, drainage and/or vector control activities
- ii. Increase in percentage of households that dispose of solid waste appropriately
- iii. Number of people receiving direct hygiene promotion
- iv. Ninety percent (90%) of target communities' certified open defecation free (ODF)

The summary of activities under this component is outlined as follows:

In the **WASH component**, the approach was similar to the DRR component. The project used the Community Led Total Sanitation (CLTS) approach and trained 26 satellite committees on improved WASH practices. In turn the 200 members of these committees formed and trained village committees. The village committee members then mentored other community members in improving their WASH practices, with the ultimate goal of having their villages meet the standards to be certified as Open Defecation Free (ODF). The project was expected to reach nearly 10,000 individuals directly and over 50,000 indirectly.

Outlined below are the findings of the end-line survey with regard to the WASH:

SOURCE OF DRINKING WATER

The results show that the most common sources of water for drinking in the sample WASH/DRR households in both Choma and Kazungula are boreholes. 75% indicate sourcing their water from boreholes of which 60.5% are in Choma and 90.2% in Kazungula. Boreholes are the predominant source of drinking water in Kazungula with the only other source being river, streams or ponds (9.8%). In Choma however, 21.7% also get their water from protected dug wells while 8.5% and 9.2% get their water from unprotected dug wells and stream and ponds respectively. At needs assessment 34.4% indicated getting their drinking water from boreholes. 32% relied on

unprotected boreholes for their drinking water. There is an increase in the number of people sourcing their water from safer sources such as boreholes in the intervening period. It should be noted that because of the high cost involved, provision of boreholes is a government mandate which is sometimes supplemented by other entities such as NGOs. The survey also found that for most of the time water is always available as attested by 83% of respondents. Table 26 shows the proportions of household indicating their main source of drinking water at Baseline and end line survey.

TABLE 25: SOURCES OF DRINKING WATER AND PROPORTION OF RESPONDENTS USING

Water Source	Needs Assessment			End Line		
	Choma N=303	Kazungula N=122	Total N=425	Choma N=236	Kazungula N=94	Total N=330
Tube well/borehole	42.6	26.2	34.4	60.5	90.2	75.3
Protect dug well	9.6	9.8	9.7	21.7	0	21.7
Unprotected dug well	26.7	37.7	32.2	8.5	0	8.5
River , ponds streams	9.2	5.7	7.4	9.2	9.8	9.5

WATER TREATMENT

Water treatment is a process that removes water contaminants or reduces their concentration so that the water becomes fit for its desired end-use. The project undertook training for WASH Committees about treating water and promoted the use of chlorine or boiling.

NUMBER OF RESPONDENTS TREATING WATER

Findings revealed that about 43% of respondents treat their water before drinking. Only about a third of respondents in Choma (30.9%) treated their water while 54.3% in Kazungula indicated that they treated their water. This is an improvement of almost two-fold from the results got at needs assessment where only 17.1% in Choma and 21.1% in Kazungula respectively treated their water.

REASONS FOR NOT TREATING WATER

When asked why they did not treat their water, respondents gave varying reasons. Sixty eight percentage (68%) in Choma and 31.2% in Kazungula indicated that they did not treat their water because it was considered safe to drink which explains why fewer people treat their water in Choma. This is an increase from the numbers at needs assessment which recorded 59% and 19.4% respectively of people who didn't treat their water because it was safe. 19.0% of respondents in Kazungula and 53% in Choma indicated that it was too expensive to treat their water. At needs assessment those who said it was expensive were 6.0% in Choma and 44.4% in Kazungula. A small number of respondents mentioned that they don't know how to treat their water, Choma (22.7%) and (4.2%) in Kazungula. This proportion is the same between needs assessment and end-line for both districts Table 27 below shows the results of the reasons why respondents don't treat their water and comparison with needs assessment results.

TABLE 26: REASON FOR NOT TREATING WATER

Reason for not treating	Needs Assessment		End Line	
	Choma N=83	Kazungula N= 36	Choma N=163	Kazungula N=48
Water is safe	59.0	19.4	68.3	31.2
It's Expensive	6.0	44.4	52.8	19.0
Don't Know How	27.7	2.8	22.7	4.2
Other	7.2	33.3	19	2.1

WATER TREATMENT METHODS

Respondents who treated their water were asked what treatment methods they were using. The survey found that boiling was the most prevalent method (70%) with chlorination second with 57% using it. Kazungula has a much

bigger proportion of those who add chlorine than Choma with 72% compared to 42%. The table below shows detailed results. Discussion during FGD revealed that they did not treat drinking water before the project intervention and training but they have now adopted the practice of treating their water. In response to the survey question, 83% in Choma and 46% in Kazungula said they never treated their water. Those who said they added chlorine or boiled before training were very few in Choma compared to Kazungula. In Choma only 5% added chlorine while only 9% boiled their water. In Kazungula on the other hand the figures were 22% and 35% for chlorinating and boiling respectively. There is clear indication of improvement in the treatment of water to make it safe for drinking.

TABLE 27: WATER TREATMENT AND PROPORTION USING METHOD

Treatment Method	Needs Assessment			Recall		End line		
	Choma N=48	Kazungula N=22	Total N=70	Choma N=65	Kazungula N=54	Choma N=83	Kazungula N=84	Total N=167
Boiling	54.2	68.2	58.6	9.2	35.2	69.9	70.2	70.0
Adding Chlorine	35.4	31.8	34.3	4.6	22.2	42.5	71.9	57.2
Allowing to Settle	4.2	0	2.9	-	-	1.4	3.5	2.4
Filtering through Cloth	-	-	-	3.1	0	0	1.8	1.8
Other	4.3	0	4.3	-	-	-	-	-
No treatment				83.1	46.3	-	-	-

WATER STORAGE

The manner in which water is stored for consumption is critical for water cleanliness and safety. Poorly stored water is often a source of water borne diseases, including diarrhea, especially among children. The best way to store water especially for drinking is in a container covered with a lid inside the house. The results from the survey show that the majority of respondents (87.7%) keep their water in containers or buckets (large or small) in the house. 46.4% keep their water in a bucket covered with a lid. Table 30 below shows the proportions of respondents using types of water storage facilities. The results show that the majority of respondents (87.1%) keep their water in containers or buckets in the house. 46.4% keep their water in a bucket covered with a lid. The results are an improvement from those at needs assessment when about 76% from both districts indicated that they stored their water in containers or buckets with a lid inside the house. Likewise those who store their water in containers without a lid have reduced from about 14% to 4%. Before training the number of people who said they kept their water in containers with a lid inside their house was 43%. This shows a positive response to the training and sensitization activities of the project. Table 29 below shows the proportions of respondents using types of water storage facilities at end-line.

TABLE 28: PROPORTION OF RESPONDENTS USING TYPES OF WATER STORAGE FACILITIES

Type of Water Storage	Recall		End line	
	Choma N=33	Kazungula N=32	Choma N=209	Kazungula N=90
Container /Bucket inside house with lid	39.5	47.8	88.6	85.7
Container without a lid	21.4	25.4	4.7	4.5
Bucket with a Lid	13.1	4.5	57.2	35.6
Bucket without a lid	26.2	22.4	9.8	4.8

TOILET FACILITIES

One of the pre-requisites for a community attaining ODF status is that each household should have a recommended type of toilet facility. The toilet should have adequate privacy and be cleanable. A concrete floor or sanplat is therefore recommended. Respondents were asked what type of toilet facility they had in their homes. Options provided were flush to water toilet, flush to septic tank, Ventilated Improved Pit latrine, Pit Latrine with slab, Pit latrine, communal toilet, and no toilet at all. The results show that the most common type of toilet facility which the respondents use is the pit latrine without a slab (68%). There has been a 2% increase in the number of pit latrines and those with slabs between needs assessment and end-line survey.

When we compare figures for the recall question of what toilet facility the respondents used before training, we find that there was a positive influence of the training. For example before training, the number of toilets use (with or without slabs) was low. On the average those who used toilets with slabs in both districts were about 6%, while those with toilets with slabs were 37%. The number of those who used the bush was high at 35%. Table 30 below shows the types of toilet facilities being used by the respondents.

TABLE 29: PROPORTION OF HOUSEHOLDS USING TOILET FACILITY

Toilet Facility	Needs Assessment			Recall		End line		
	Choma N=302	Kazungula N=122	Total N=424	Choma N=84	Kazungula N=62	Choma N=236	Kazungula N=105	Total N=341
Flush to pipe Sewer	0.3	0	0.2	-	-	-	-	-
Flush to septic tank	0	0	0	-	-	-	-	-
Pour flush latrine	-	-	-	-	-	0.8	-	0.6
VIP	0.3	0.8	0.5	1.2	0	3.0	7.6	4.4
Pit latrine with slab	19.2	16.4	18.4	28.6	8.1	17.4	31.4	21.7
Pit latrine without slab	66.2	65.6	66.0	-	45.2	75.4	52.4	68.3
Community Toilet	-	-	-	-	-	-	-	-
No Facilities	3.0	4.9	3.5	29.8	1.6	3.4	5.7	4.1
Bucket	-	-	-	-	-	-	-	-
Bush/field	10.9	12.3	11.3	36.9	33.9	0	2.9	0.9

The results of the end line survey show that the majority (89%) of the households dug their own toilets. However, this figure could be as high as 95% as 6% of respondents said that builders built their toilets. The builders could have been tasked to do the jobs for the households. During FGDs respondents indicated that they constantly have to rebuild their toilet facilities because many pit latrines collapse during the rains as a result of unstable soils, and termites that eat through the wooden floor supports. On the average the toilets in Choma are about 3 years old while in Kazungula they are 1 year old. In rural settings where the majority of households only have money on a seasonal basis, the cost of construction of pit latrines with a cement floor may be prohibitive. Thus, the majority constructs toilet facilities with poor and fragile material which are vulnerable to wind and rain while pits often cave in during heavy down pours in the rainy season.

DISTANCE OF TOILET FACILITIES FROM THE HOUSE

Proximity of a toilet facility makes it easy for household members to access it and offers an incentive for using it. Respondents were asked how far their toilet facilities were from their houses. Table 31 shows the estimated distances to the toilets from the house. The toilet facilities of most respondents in (44.3%) in both districts were within 10 meters of the house. 28% had their toilets further (11-20 meters) while about 28% had their toilets further than 20 meters. These results are not very different to those obtained at needs assessment.

TABLE 30: DISTANCE FROM TOILET FROM HOUSE

Distance between House and Toilet	Needs Assessment		End line		
	Choma N=226	Kazungula N=122	Choma N=236	Kazungula N=105	Total N=341
0-10meters	56.5	35.3	44.1	44.8	44.3
11-20meters	33.3	19.1	28.8	26.7	28.2
21-50 meters	6.2	29.4	22.0	11.4	18.8
More than 50 meters	1.1	2.9	1.3	9.5	3.8
Not applicable/no latrine	-	-	3.8	7.6	5.0

WASTE DISPOSAL

In order to obtain general information on households' practical aspects of solid waste and water disposal respondents were asked about the methods they use to dispose their water and solid waste.

DOMESTIC WATER DISPOSAL

The practice of indiscriminate disposal of waste water contaminates the surrounding area as well as causes a bad smell around. In rural settings it is common to find that people are oblivious of environmental hazards associated with irregular disposal of household waste such as waste water. A good practice would be where waste water is used for watering plants, poured onto grass or into gutters where they are available. Respondents were asked how they disposed of their waste water in their homes. Table 32 below shows waste water disposal methods and proportions of households using them. Of the various methods the most commonly practiced is pouring into passages or the courtyard (47%) while pouring water into gutters is also practiced by 28% of the respondents. Those who pour into the grass are 14% and those who pour into the grass are 9%. FGDs, however, revealed that community members are aware of hazards associated with indiscriminate waste water disposal, even though they do not practice sound disposal methods. Many of them indicated mosquito infestation as a possible hazard resulting from this bad method of waste water disposal.

TABLE 31: WASTE WATER DISPOSAL METHODS AND HOUSEHOLDS USING THEM

Disposal of used water	Choma N=236	Kazungula N=105	Total N=341
Pour it into passages/court yard	49.2	42.9	47.2
Pour it into gutters	28.0	29.5	28.4
Pour it into grass	12.7	16.2	13.8
Use it watering plants	9.3	8.6	9.1
Other	0.8	2.9	1.5

SOLID WASTE DISPOSAL

DISPOSAL OF INFANT/BABY'S STOOL

Safe methods for disposing of infant stool help minimize incidences of diarrhea. The best practice of infant stool disposal is to throw it in the toilet. Respondents were asked how they disposed of their infants' stool. Table 33 below shows the methods used to dispose of baby and infant stool by respondents. The results show that the majority (71%) in both districts throw the stool in the toilet. Those who buried it in the yard (Cat method) were 3.8%. Those who threw it outside the yard were 2.3%. These results are an improvement from the needs assessment where 43.3% in Choma and 25.2% in Kazungula indicated the pit latrine as the disposal method for infant stool. Correspondingly there is a decline in the proportion of those who used the 'Cat Method' or buried the stool in the yard; from about 17% to 3.8% for both districts. Respondents were asked whether there was some stool around their households. 78% of the respondents indicated no sign of stool around their households. A transect walk undertaken to verify the disposal of infant disposal showed that they were dry fecal matter at some of the households visited.

In response to the recall question of what method of infant stool disposal they used before training, 70% in Choma and 19% in Kazungula said they used to throw the stool outside the yard. About 7% in Choma and 55% in Kazungula said they used to bury the stool in the ground while those who used to throw it in the toilet were 13% in Choma and 14% in Kazungula. Those who said they used to leave it in the ground are 50% in Kazungula and 5% in Choma. These results at end-line show a positive change in infant stool disposal.

TABLE 32: METHODS OF INFANT STOOL DISPOSAL BY RESPONDENT

Methods of Disposal of Infant Stool	Needs Assessment		Recall		End-line		
	Choma N=300	Kazungula N=119	Choma N=74	Kazungula N=36	Choma N=236	Kazungula N=105	Total N=242

Thrown in Toilet/ Latrine	43.3	25.2	13.5	13.9	69.1	75.2	71.0
Buried in the yard	14.3	19.3	6.8	55.6	3.4	4.8	3.8
Thrown outside the Yard	2.7	2.0	70.3	19.4	3.0	1.0	2.3
Not deposited of Left in the ground	0	0.1	4.6	50.0	-	-	-
No Infants in the Household	18.7	12.6	2.8	0	24.6	17.1	22.3
Other	1.3	0.1	1.9	0	3.0	1.9	0.6

DISPOSAL OF TRASH/DOMESTIC WASTE

Proper solid waste disposal is another hygiene practice that goes into qualifying a community to ODF status. It is a requirement that each household should have a refuse pit to throw their litter in. when this pit is full it is covered and another one dug. The project has therefore been promoting the use of refuse pits for domestic waste disposal. The survey asked the respondents how they disposed of their domestic waste and the results are shown in table 37 below. The results show that only 54% of the respondents use a refuse pit outside the house. Kazungula fared better than Choma with 73% compared to 36% of Choma. About 26% throw the refuse in the bush. 17% in Choma indicated burying and 5% burning with nil reported on those practices in Kazungula.

TABLE 33: DISPOSAL OF TRASH

Disposal of Domestic/Trash waste	Choma N=84	Kazungula N=72	Total N=161
In shared refuse pit outside the house	35.6	73.3	54.4
In the bush	38.1	14.3	26.2
Bury	16.9	0	11.7
Burning	5.5	0	3.8
Other	3.8	12.4	6.5

There was evidence of refuse pits in the villages visited as noticed during transect walks. However, the number of refuse pits seen during the transect walk were filled and in many cases new ones had not been dug. The number of pits is still low and this could be attributed to the inability of members to fully appreciate the practice of digging refuse pits. FGDs indicated that the ground in some areas was too hard for the members of the community to dig pits each time one was filled up. According to the FGDs, some members of the community are just intransigent and take long to get convinced about new practices.

From the March, 2015 Quarterly report the figure for beneficiaries disposing of solid waste appropriately was 56,244.

HAND WASHING

Hand washing behavior and practices were also promoted by the project. Although it is common practice for individuals to wash their hands before and after eating meals, the manner of washing is usually not the most hygienic. It is also common to find that mundane practices such as washing hands after visiting the latrine and after cleaning a baby's bottom are not adhered to strongly. Respondents were asked to indicate on what instances they washed their hands. The results are given in table 38 below. The results show sustained practice of hand washing before and after eating food. The results show that 94% wash their hands after going to the toilet. The proportion of those who indicated they wash their hands before and after eating is 98%. Washing hands before food preparation, before feeding baby, and after cleaning baby's bottom is still low at 68%, 32% and 24% respectively. Compared to the status at needs assessment, this is an improvement.

This improvement can be attributed to the training received. In response to the question of at what instance they washed hands before training, none in Choma washed hands after cleaning baby's bottom while in Kazungula only 8% washed their hands. Before food preparation the number was only 30% for both districts. After toilet the number was 38% for both districts. FGDs indicated that most members of the communities have adopted the practice of washing hands at critical times.

TABLE 34: INSTANCES OF HAND WASHING

Instance of Hand Washing	Needs Assessment		End Line		
	Choma N=188	Kazungula N=103	Choma N=222	Kazungula N=100	Total N=322
After going to the toilet/bush	90.4	47.9	94.1	95.2	94.6
Before/after eating	100	100	96.6	99.0	97.8
Before Food preparation	36.1	21.2	73.7	62.9	68.3
Before feeding children	10.4	18.1	21.6	41.9	31.7
After cleaning baby's bottom	10.4	22.3	10.2	37.1	23.6
Other			3.4	7.6	5.5

Hygienic practices promoted by the project are aimed at reducing incidences of diarrhea so as to enhance food utilization in the body. The sum total of all these practices is corroborated by the results of the survey question of how often the households experienced diarrhea in their homes. It was found that diarrhea was not very common among the community members. The frequency of diarrhea occurrence among the larger proportion of respondents was low, being in the range of once a month to once a year. In Choma this proportion is 39% and in Kazungula it is 52%. About 24% in Choma indicated "Never" experiencing diarrhea while in Kazungula this proportion was 34%.

TECHNIQUES USED TO WASH HANDS

The best cleansing practice or technique for washing is under running water with soap. In the absence of soap ash is used as a cleanser. If there is no facility for running water, water in a basin is used, and it is recommended that it is replenished with each user. Respondents were asked how they typically cleanse their hands. Table 39 shows the various techniques respondents use in washing hands. Results show that those who wash their hands under a running tap with soap is 47.4% in both districts. The results also show a higher usage of soap and ash as opposed to water alone.

Before training about 56% of the respondents said that they washed their hands in a basin with soap. Before training those who said they used running water with soap were 19% in Choma and 25% in Kazungula. This is a positive change of about 25% resulting from training.

TABLE 35: PERCENTAGE OF RESPONDENTS THAT WASH THEIR HANDS USING DIFFERENT TECHNIQUES

Method of Hand washing	Recall		End Line		
	Choma N=123	Kazungula N=52	Choma N=236	Kazungula N=105	Total N=341
Water basin with soap	19.5	25.0	14.8	8.6	11.7
Water basin without soap	8.9	7.7	0.4	2.9	1.6
Running water with soap	1.6	5.8	42.4	52.4	47.4
Running water without soap	1.6	0	7.2	24.8	16.0
Water in a dish with soap	59.3	53.0	24.2	6.7	15.4
Running water with ash	0.8	0	8.9	3.8	6.3
Water in a dish with Ash	-	-	1.7	0	1.7
Other	8.7	7.7	0.4	1.0	0.7

AVAILABILITY OF HAND WASHING FACILITY

The project is promoting the installation of hand washing facilities at latrines for use after visiting the toilet. This facility is usually a vessel which should have water all the time and soap or ash next to it. The tippy tap is the recommended device as it allows for one to decant water using the foot and avoid touching the vessel. The presence of a hand washer and soap is also a requirement for qualification as ODF. The respondents were asked if they had a hand washer. They were also asked if they had a tippy tap.

The results show that 81% of the households in both districts have hand washers. Between Choma and Kazungula the proportions are 80% and 82% respectively. Of those who have hand washers, about 79% indicated having tippy taps. The proportion of those having tippy taps is much higher in Kazungula with 96% while Choma is

61%. Only 1.6% of households had washing facilities attached to the toilets in Choma and 9.3% in Kazungula. On recall, a large proportion of the respondents indicated that they had no hand washers prior to the training by the project. 93% in Choma and 85% in Kazungula said they didn't have hand washers before the training. In this respect this is a very positive change. Table 40 shows the location of the hand washing facility.

TABLE 36: LOCATION OF WASHING FACILITY

Location of Hand Washing Facility	End-line	
	Choma	Kazungula
Inside the house	4.7	1.2
Attached to the house	1.6	9.3
Attached to the toilet	37.9	25.6
Less than 1 meter from toilet	51.1	39.5
1 – 3 meters from the toilet	9.5	25.6
More than 3 meters from the toilet	0	5.8

TYPE OF WASH TRAINING RECEIVED

Training activities were conducted in the project area to establish and develop knowledge in study sites and support the development and implementation of capacity to deliver effective sanitation, hygiene and water and sanitation in surrounding communities. Training topics included water storage, hand washing, water treatment and latrine construction. Other topics included construction of hand washing facilities and WASH action planning.

Information collected shows that significant training activities were conducted by the project through the Village WASH Committees and Satellite Committees in both Choma and Kazungula. Others were conducted by the Government and other NGOs, but these were on a smaller scale. This data was confirmed by WASH and Village Satellite Committee members during FGD discussions. Table 41 below gives the proportions of those who provided training to the respondents.

During FGD, the majority of respondents indicated that they were trained by WASH satellite committees in various health and hygiene topic, which include latrine construction hand washing, rubbish construction and hand washing facility construction. The trainings conducted are given in the table below.

TABLE 37: Training Provided and Organizations Providing the Training

Type of training	Choma					Kazungula				
	PCI/Satellite	V-WASH Committee/Committee members	GRZ	NGO	Other	PCI/Satellite	V-WASH Committee/Committee member	GRZ	NGO	Other
Latrine Construction	27.3	68.0	11.8	21.1		34.9	64.0	5.8	4.7	
Hand Washing Facility Construction	27.7	72.8	11.4	16.3		37.1	65.2	5.6	0	
Waste Management	29.3	73.0	8.8	18.8		29.0	63.4	9.7	5.4	
Deposal of Fecal Matter	28.2	75.7	10.2	18.1		31.0	65.5	9.2	1.1	
Washing Hands	30.6	76.0	12.0	19.7	.7	30.9	62.9	23.7	5.2	.4
Open Defecation	33.0	74.2	13.7	17	.5	33.0	67.0	13.7	0	1.1
Storage f Water	28.6	78.0	12.6	19.8	1.6	27.5	62.6	20.9	1.1	1.1
Water Treatment	27.9	77.3	20.9	16.3	.6	23.2	56.8	31.6	1.1	4.2
WASH Action Planning	34.5	73.8	9.7	9.7	.0	32.9	65.8	1.4	0	1.4
Total	29.68	74.31	12.34	17.42	0.68	31.06	63.69	13.51	2.07	1.64

ODF STATUS

The ultimate outcome of the WASH component as indicated earlier in this section is the achievement of the Open Defecation Free (ODF) status of each of the participating communities according to Community Led Total Sanitation methodology under the Ministry of Local Government and Housing. ODF status is given to a community if; there are no signs of open defecation in the community, when each household in the community has a latrine which they use. The latrine should have a superstructure which provides privacy, has a smooth floor, the floor of the toilet is smooth and cleanable, the toilet hole should have a lid to prevent flies from entering the pit, and each household latrine should be equipped with a hand-washing device with water and soap or ash. All the houses should also have dish racks and refuse pits that are not full. An ODF community is clean of all human and animal feces.

ODF verification is conducted by D-WASHE members and follows an established process which culminates into the declaration of ODF status if the particular community has met all the criteria, or a negative status if the community has not met all the criteria.

During FGDs it was found that in a number of villages fall short in terms of latrine construction. In some villages it was found that not all houses have latrines. In Kazungula district data on the number of households with toilets was collected for a number of villages in Sihumbwa, Kabuyu and Musokotwane camps. In Sihumbwa out of the eight (8) villages which were reported all of them still had to meet the requirement to build toilets for each household. Some villages had only one toilet short to meet this criterion while some villages the shortfall was ten (10) or more. In Kabuyu out of the eight (8) villages reported, four (4) had all toilets for each household. The rest were short as was the case for Sihumbwa. In Musokotwane out of all the eight (8) villages reported only one (1) village had toilets for each household. On this account alone none of the villages would be declared ODF when they were subjected to an inspection.

A list of villages which were claiming to be ODF was given for two camps in Choma (Kabimba and Dundwa) and one camp in Kazungula (Musokotwane) for verification by the survey team. Physical verification was not done due to the challenges which the team encountered in visiting the camps during the data collection exercise. This required the team member to visit each and every village listed. Since this was not done, an attempt was made to visit the CLTS district offices in Choma and Kazungula. Information gathered in Choma at the CLTS offices confirmed the ODF status of four villages in Kabimba out of the seven villages listed and two (2) in Dundwa out of the six (6) listed. The other villages could not be confirmed because they were probably listed in the camps erroneously. It was learnt during the visit with the CLTS District officer that ODF status once certified is not necessarily permanent. The status can revert to non-ODF depending of the hygiene practices in the villages. It is a requirement that once ODF status is given efforts to sustain it is made by the village Sanitation Action Group (SAG).

PROGRESS TOWARDS ACHIEVEMENT OF OBJECTIVES AND INTERMEDIATE RESULTS ON WASH

2.1.1: Number of people benefiting from solid waste management, drainage and/or vector control activities

SHARP facilitated formation of 26 WASH Satellite Committees with representation from each of the target area. The committee was trained in WASH practices and group formation. The committee in turn started training the community members and made follow ups to individual households for implementation of WASH practices; this was revealed during group discussions with the champions and community members. The last quarterly report of 2014 (SHARP) showed that 56, 244 individuals were trained by WASH activities. The number attained is much higher than the figure obtained at mid-term showing an increase in WASH activities in the target community. This led to the attainment of ODF status in some villages in SHARP target areas.

2.1.2: Number of people receiving direct hygiene promotion messages

By end-line survey, the project had trained 9,374 individuals on hygiene; this includes 3,562 achieved at mid-term. The life of project target was 9,871. The indicator is lower than target partly due to slow start up of project activities.

2.1.3: Percentage of households that dispose of solid waste appropriately

Disposing solid waste appropriately was defined as having a formal latrine structure, and disposing of stool of infants and babies either through burying it in the yard or putting it in a latrine. At mid-line, the achieved value was 83.2%. At end-line, the proportion was 94.4%; the project life of activity target was 100%. The achievement was slightly lower than the target.

2.2.1: Number of people receiving direct hygiene promotion

From the end-line survey, the estimated number of people receiving direct hygiene promotion through training directly was 9,374. The March, 2015 report indicated 9,374 individuals the project life of activity target is 9,871. The achievement was lower than the target.

2.2.2: Percent of target communities' certified open defecation free (ODF)

Eight of the 200 villages in SHARP target areas were certified ODF. The local council, however, indicated that all villages were certified ODF (Choma). During group discussions, the beneficiaries indicated that not all were certified. According to discussants, 100% compliance on all WASH practices was slow to attain because it was contra-cultural; others said it was difficulty to fetch water because water sources were not near.

SECTION IV: ASSESSMENT OF OVERALL PROJECT PERFORMANCE

INTRODUCTION

In this section the research team briefly assesses the project status and performance related to the standard evaluation elements: effectiveness, efficiency, impact and sustainability.

RATING SCALE/CRITERIA

The Consultant Team will use (as applicable) in the following assessment the rates below:

Highly satisfactory (HS): Project has delivered all of its planned results and has achieved or exceeded all its major relevant objectives.

Satisfactory (S): Project has delivered satisfactorily most of its planned results with only a few shortcomings, and has achieved most its major relevant objectives.

Marginally satisfactory (MS): Project has achieved some planned results, and has achieved some of its major relevant objectives.

Marginally unsatisfactory (MU): Project has achieved only few of its planned results, and has achieved only a few of its major relevant objectives.

Unsatisfactory (U): Project has not yielded its planned results, and failed to achieve to achieve most its major relevant objectives, and thus has significant shortcomings.

Highly unsatisfactory (HU): Project has not yielded any worthwhile development results, and has failed to achieve any of its major relevant objectives.

Under the terms “planned results” and “objective” above is also understood the compliance with planned time schedules, meaning that e.g. unintended delays could be considered a shortfall.

ASSESSMENT OF OUTPUTS

For an overall performance assessment of the project, it is important to briefly assess the performance and status of each of the objectives and outputs of the project. This section, therefore presents a brief assessment of the status and performance of the outputs under each objective, as far as this has been possible. The ratings given are entirely given based on the subjective overall impression by the Team, and are clearly not based on any structured and objective scientific rating and weighting process. The ratings thus, only give some indications as to the “real” and relative performance and progress of the objectives and outputs, and should clearly not be read and construed as a “final objective verdict” of the project.

REVIEW OF STANDARD EVALUATION ELEMENTS

Below, the Team has attempted to assess the standard evaluation elements that are normally assessed in most evaluations and reviews. The assessment follows mostly from observations in the field and partly through reported progress on the outputs, as well as discussions with project staff, project partners, stakeholders and beneficiaries. It is however difficult to make “weighted” aggregated assessments of the various activities, as they vary in size, characteristics and importance. An attempt has, however, been made on pure subjective judgment from the information that has been made available to the Team, and the Team’s own observations and judgments.

RELEVANCE

The Team concludes that the project is fully conforming to the national food security and climate change and adaptation strategies, policies and programs. This also includes all activities under the project, which are fully aligned with the national development policies, including the Sixth National Development Plan (SNDP). At local community level, the project interventions have responded to the perceived needs with regards to enhancing food security and promoting income generation.

According to various stakeholders, especially those representing government and other stakeholders, the Project approach fits in well with Zambia's National Agricultural Policy (NAP); "NAP's vision for the agricultural sector, which assures food security and increased incomes". The project also fits in very well with the National Health and Sanitation Policy.

The package of project interventions has been structured to address among others climate change adaptation and CF practices. It has also been structured in line with government policy of achieving a healthy and hygienic living environment through CLTS.

The Team rates the Project's Relevance as *Highly Satisfactory*.

EFFECTIVENESS

An assessment of SHARP so far has given an indication that it has achieved some of its objectives. It is apparent that the project has significantly increased awareness among its target beneficiaries on the importance of CF in assisting community adaptation to climate change and adaptation and to enhance food security and nutrition. In addition, whenever there is a sensitization or training exercise or demonstration on farming practices and improved technologies, there are high participation rates from both genders. In general, the Team has ascertained beyond doubt during the field visits to the project sites that the Project has contributed to improved food security and food producing capacity in the Project areas in specific.

SHARP's WASH activities have increased awareness among community members on health, hygiene and sound practices at community and household level. Although the WASH component had its own implementation challenges, a certain degree of improved health and hygiene standards has been achieved. A number of villages have been declared ODF or are near to this status.

SHARP's most effective activity is related to CF, where the good demonstration effect has led to some farmers adopting the techniques in their individual fields. Farmers were trained in CF with 90% participation. One of the expected outcomes of the project is beneficiaries being able to diversify their crop production regime by growing more than one crop in a field. This has been achieved by farmers growing at least two crops on one field and growing more than one field crop. There is a prevalence of production of maize, beans, sorghum and groundnuts in all project areas.

According to the project participants, farmers were not able to receive their seeds in time and in the required quantities most of the time. This affected their capacity to increase production of crops such as maize, beans, sorghum and groundnuts. SHARP's objective of linking farmers to seed sources and other inputs has not been as successful as was anticipated. The overall rating for effectiveness is *Satisfactory*.

EFFICIENCY

SHARP involves the local leadership and also encourages equal participation between men and women. This has resulted in women getting much needed support from both men and the local leadership. The WASH/DRR components of the project involved the local leadership in increasing awareness of its activities, although there were some challenges in the beginning of the project. Satellite committees have been formed in all the villages who in turn

have been conducting training and sensitization activities. These committees are closely linked to the District WASH and DRR structures.

Collaboration with other organizations especially Ministry of Agriculture has contributed to ensuring positive progress of the SHARP, although participation by district staff and to some extent camp extension officers was not strong. The Ministry of Community Development, Local Council and Department of Health at District and Community, on the other hand, participated robustly at all stages of WASH/DRR activities.

SHARP developed linkages with a few organizations and private sector actors, but these are somewhat weak. Linkages with artisans to produce metal silos have also been established and unfortunately this activity came at the tail end of the Project and it is difficult to see if it will be sustained.

The Team can therefore conclude that SHARP implementation thus far has been fairly efficient and is rated *Marginally Satisfactory*.

IMPACT

SHARP has made successful efforts in improving community participation in agricultural and WASH/DRR activities at large through the mere focus on farmers groups in the participating villages. The project used participatory community development methodologies to support selected activities in the targeted districts aimed at mitigating the effects of climate change and building capacity among farmers to adapt to climate change and build resilience. Through building awareness on the impact of climate change on food security and livelihoods, the participants are given full opportunity to bring their own needs and concerns to the table in planning for their own future. In addition, this activity helped stimulate farmers to take ownership of project activities. Employing community development methodologies has been a standard procedure at the start-up of any activity under the project in all the villages and farmer groups. This approach has been successful and is very much appreciated by the Team as it empowers communities to improve their own situation. The most prevalent intended impact of SHARP is increased food security and improved health in the project areas. The months of food self-sufficiency has increased slightly. Of the “unintended” impacts of SHARP, the Team noted the willingness of other non-beneficiary farmers to grow fodder crops in some communities. A number of villages have become clean and declared ODF while others are close to being declared so. The incidences of diarrhea have also been reduced tremendously, with most community members not recollecting when they last had a diarrhea case in their household.

The overall rating is *Satisfactory*.

SUSTAINABILITY

Technical sustainability

A majority of the beneficiary farmers and Lead Farmers felt that SHARP has not responded adequately to their perceived needs in increasing their access to agricultural inputs. However, SHARP has adequately responded to the need for technical knowledge about CF and crop husbandry training in general. They note that the project contributes to improving their agricultural productivity. They are also satisfied that the implementation of the CF methodology, utilizing the lead farmer and Answer Plot concept has built sustainability into the project activities. As mentioned earlier, the techniques used in the CF seem to be successful. The metal silo technology seems to be very well appreciated and the establishment of artisans to support their provision is seen by the Team to be very good, although the continuation of activities beyond the project remains uncertain. (Satisfactory)

Environmental sustainability

Pressure on forests, water and soil resources due to increase of agricultural activities is inevitable. The problem of deforestation, soil degradation and water pollution is well known but knowledge collection and control mechanisms are still weak, increasing environmental risk to the sustainability of resources. Some activities clearly aim at improving

the environmental conditions through CF. Overall, the project promotion of CF techniques is pertinent for environmental sustainability. (*Satisfactory*)

Institutional sustainability

Assessing SHARP's institutional sustainability is related to capacity building, training and awareness-raising of the Government staff especially at district level, where this seems to have been achieved to some extent. The close working interaction and cooperation in the villages between project and Government staff at various levels has boosted the institutional capacity to sustain efforts post-project. At present, there appears to be ownership of the efforts at district level, in addition to the ownership in the communities of the activities initiated through the village groups. However, since the project staff positions are "*not*" institutionalized within the Government's normal structure, their salaries and backup support will abruptly be discontinued when the project ends. (*Marginally Satisfactory*)

At community level, it is assumed that a limited number of the farmer groups will survive post-project without a large degree of coaching and exposure from outside, notably through the CF activities. The Answer Plot concept is expected to continue as a vehicle for farmer training through the Government extension system. On the other hand WASH activities at District and community level seem to be well coordinated. The extent of expected success is however difficult to assess at this point in time. In spite of these shortcomings, the institutional sustainability is seen as *Satisfactory* by the Team.

Economic/Financial sustainability

SHARP has initiated activities and farmer groups that under normal conditions are being done at lower momentum due to the limitation of Government funding. As such, the momentum given to Project activities is stronger than the "normal" momentum. This has resulted in boosting the activities to an "artificially" high level. However, this modality has also been clear from the very beginning of the Project where the support to promoting conservation practices aimed at achieving increased agricultural productivity and diversifying income generation opportunities of farmers was the overruling intention. Most district Government staff are not able to maintain the activities at the same level once the Project is gone, and may not even manage follow up of all the farmer groups in the villages. The reason is simply the limitation of Government extension staffing and operational funds to sustain frequent visits to the areas at the level of Project operations.

As mentioned, the Team noted some positive signs indicating that some of the activities would hopefully continue with little support from outside the communities. This applies to some of the CF and WASH/DRR activities in the groups where respondents indicated having seen positive benefits including experience and knowledge. The respondents claim they will continue the CF and WASH/DRR activities as well as expand them to other areas. This is evident in the second year where most farmers sourced their own seed with no direct support from SHARP. The linkages created with agro-dealers will enhance economic activities in the areas in perpetuity.

Also, some individual farmers have started CF activities on their own based on input paid with own funds. It is therefore believed that these activities will go on as long as there is shortage of food in the area, but clearly *not* at a pace that could be maintained under the Project. The overall assessment of the Team therefore that the economic/financial sustainability largely is *Marginally Unsatisfactory*

LESSONS LEARNT

Based on the review of project documents, interviews and meetings with key informants, and analysis of the information collected, the Team collated the following lessons learned:

- The success of any intervention is fully dependent on the wholehearted participation of the Government system at local level. This must be secured through involving the highest level of officers from the very beginning and undertake joint planning of project actions with Government and other initiatives in the areas. Ideally, any intervention should be fully integrated into the Government system. Project needs to be set up as

close to, and preferably integrated within the permanent Government offices if possible. Projects implemented outside mainstream Government can still deliver results and pilot new technologies, but they benefit, however from being made part of Government processes if the activities they support and the outputs they produce are to be scaled-up.

- When starting a Project, it is very important to ensure that arrangements for the procurement of goods and services required at the start of the project are made and that these are procured in good time. Ideally the preparation of a procurement plan can greatly enhance and expedite project implementation and avoid delays. Procurement is also dependent on when the contract is actually awarded.
- Management of staff is very key to the implementation of any project. SHARP experienced high turnover in the DRR/WASH component. This slowed down implementation of some DRR/WASH activities thus affecting the resulting impact. New staff required time to learn the concepts and approaches. To enhance impact achievement, it is imperative to minimize loss of staff.
- Awareness raising and capacity building at farmer level is a never-ending undertaking, as pre-set human minds and old habits take long to change. Farmer group exchanges should be encouraged and facilitated by any agricultural project, as “seeing is believing”. Efforts in diversification of crops will definitely benefit from this in the long run.
- Given the nature of the Project and considering the set of expected results, the timeline is inadequate. The consultancy team is, however, cognizant that OFDA funds only emergence project. A project that seeks to implement direct actions with results and impact expected during the lifetime of the project needs a longer implementation period especially where some impact relates to behavioral changes. A 4 year duration minimum should be required for this type of initiative. With a shorter timeframe (less than 4 years) as the case at hand, a project runs the risk of having project deliverables that are not properly institutionalized; limiting the potential for larger impacts in the long.

SECTION V: CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

The study makes the following conclusions and recommendations based on the findings contained herein:

CONCLUSIONS ON AGRICULTURE AND FOOD SECURITY

Overall, the findings show that the project was successful in training the beneficiaries and introducing fodder production for integration with food crops. The AnswerPlot concept used in training was effective in the target communities except for some challenges like failure for some farmers to turn up to provide labor when needed. This affected performance of the AnswerPlot as a teaching aid.

The majority of the participants (79%) are implementing conservation agriculture techniques promoted through the project as compared to 29% at baseline. The distribution of seed in the first season by the project was a booster for continued growing of both food and fodder crops introduced as was seen in the second season when farmers still the crops. The development is expected to be sustained because farmers have started multiplying seed for legumes introduced.

The technologies introduced for agricultural production resulted in efficient use of resources by farmers. Average field sizes for a number of crops dropped significantly as yield increased; maize yield more than doubled from 0.4 tons/ha to 1 ton/ha for example.

The project also successfully promoted the use of food and fodder barns, as 10.5% and 22.7% of the beneficiaries in Choma and Kazungula now have fodder barns, as compared to less than 1% at baseline. Similarly proportion of beneficiaries with metal silos also increased to 4.6% and 11.1% from less than 1% in Choma and Kazungula respectively. Since metal silos are being locally made by local artisans trained by the project; with the increasing the demand for the metal silos, it is expected that the number of these silos will increase significantly in the coming years. At the time of the survey, there 260 orders for the silos made by farmers.

RECOMMENDATIONS ON AFS

1. The project should incorporate incentives in the concept of the AnswerPlots to curb labor shortage. One method is to increase the AnswerPlot field size to an economic level, say 0.5 ha. The proceeds could then go to the host farmer as incentive. In this way the host farmers will be compelled to provide their own labor in the event that member farmers fail to carry out.
2. The response on metal silos by farmers is quite significant. In order to enable many farmers access the facility, SHARP should consider strengthening marketing skills for the artisans through appropriate training and linkages with lead farmers or agro-traders in the community. Similarly, the project should create linkages for fodder marketing for markets beyond the producing districts.

CONCLUSIONS ON WATER, SANITATION AND HYGIENE

The project performance was commendable in promoting hygiene practices as 9,211 beneficiaries were reached directly. The target communities showed improvement in some hygiene practices such treating water for drinking. This was evident in both districts as the proportion of beneficiaries involved in treating water increased from 33% in Choma and 24.8% for Choma and Kazungula respectively at mid-term to 48.5% in Choma and 63.5% in the same order. Another improved practice witness was disposal of solid waste where 94.4% indicated that they were disposing of their solid waste appropriately. Habitual hand washing before meals and after using the toilet were confirmed and most homes hand washing containers near their pit latrine. However, not all practices have constitutently improved

showing resistance to customary practices. Appropriate water storage decreased as seen between mid-term and end-line.

RECOMMENDATIONS ON WASH

1. Future project should consider construction and building capacity in the construction of pit latrines by putting up demonstration pit latrines in strategic places in the community. Further, provision of sanplats by the project, though expensive, could greatly improve waste management in the community in future projects.
2. Improve access to water at household level through construction and capacity building in the construction of rain water harvesting in the target communities.

CONCLUSIONS ON DRR COMPONENT

The formation of the satellite committees and the subsequent establishment of village DRR committees in the target areas showed significant development of systems and skills to mitigate agricultural related hazards. 1,711 beneficiaries were directly trained by the system built. As a result of skills building, 111 of the 200 villages developed DRR plans, a significant step in mitigating natural hazards in agriculture. Stakeholders also showed significant capacities through the joint planning meetings that were successfully held.

The village committee members confirmed having had mapped hazards within their communities, and that based on the same, the DRR plans were developed. However, when it came to implementation of the said plans, there was a general expression that the most aspects within the DRR plan were yet to be implemented as the village committee members were still planning ways to share the plan to other targeted villages. Suffice to mention that one of the most common aspects of the DRR plan so far implemented are the onward village visitations for sharing information on early warning signs and possible measures that households could consider in building their resilience against the shocks and stresses. Most of such measures include the improved agricultural practices and water and sanitation practices that the project areas have been learning and implementing such as toilet construction to reduce open defecation and enhance their environmental health conditions.

The DRR component did not perform as expected due to a number of challenges such as the delayed startup of community mobilization by village committees and limited members of field staff (there were only two field officers to support promote DRR among 10,000 households). Other challenges were associated with the performance of weather points placed at Camp Extension Officers' homes; there were gaps in information captured because sometimes the officers would be out of station. As a result only 30% of the beneficiaries indicated having received early warning message for use in their agricultural activities.

RECOMMENDATIONS ON DRR

1. Replace plastic rain gauges with metal ones for sustainability. Further, it is necessary to focus attention of strengthening the operations of the weather equipment at schools instead of CEO premises since the latter are sometimes out of station for workshops or meetings leading to failure to collect information consistently.
2. Future interventions in promoting weather points should focus primarily on how the points could be linked effectively with the meteorological department. Weather information collected only for a short period of time has little use in helping farmers predict weather patterns. According to the Met. Department of the Republic of Zambia, and climatological information, a minimum of 30 years weather data is required to make meaningful extrapolations to come up with predictions on likely weather events

ANNEX I: SUCCESS STORIES

SUCCESS STORY - I

FARMERS IN SOUTHERN ZAMBIA FIND LASTING SOLUTION FOR GRAIN STORAGE

In Choma, at Makalanguzi market, are two business partners. Their workshop looks a bit clouded with pieces of metal which non-blacksmiths would associate to 'dirty'. But that is the source of the farmers' messiah, the metal silo!

In Zambia small scale farmers experience significant grain losses every agricultural season. According to the PHL Calculator (2014), the loss from a harvest of 2,400 kg of maize harvest (average from the 2012/13 agriculture season), and assuming 50% marketed produce, is about 26%. Such postharvest losses have exacerbated food insecurity for a people already frequently traumatized by climate change effects.

Elias Mupeta is the senior partner in a small scale metal fabrication business in Choma. He is 42, married with two children. He has a humble formal educational background having left school in the seventh grade in 1984 in the heart of the Copperbelt Province. After leaving school, he engaged himself in casual work until 1989 when he moved to Choma for a 'better' livelihood. Elias did something unusual; during this time most people migrated to the Copperbelt Province to work in the mines, but he moved away from the 'copper' to pursue his entrepreneurship drive. In Choma, he set up his small blacksmith factory at the open market. His income averaged around USD 130 in 2011, USD 395 in 2012 and USD 658, in 2013. Elias indicated that sometimes he faced challenges with meeting his household needs.

"Although business is not that bad, sometimes I faced challenges with meeting my food needs at home. I have had to struggle to raise income to finish my housing project, send children to school and meet their medical expenses," said Elias.



Artisans fabricate the metal silo for grain storage - Choma

In 2012, Elias was discovered by Land O'Lakes through the Sustainable Health and Agriculture for Resilient Populations (SHARP) project. With support from USAID, Elias and his business partner were taken for a one-week metal fabrication course. The course focused on fabrication of the metal grain silo. The silo is designed to suffocate pests by depriving them of oxygen when present in the stored grain. In April, Elias had an order of about 32 silos for farmers around; the deal was facilitated through SHARP. Elias indicated that inquiries for the metal silos were increasing hopes to continue fabricating the silos after the SHARP project comes to an end. His estimated monthly income for the coming months was about USD 1,200 as a result of diversification into metal silos. In addition, Elias and his business partner had now become national resource persons in the fabrication of metal silos. In March, 2015, Elias and his business partner were hired by the Ministry of Agriculture and Cooperatives (Choma) to train twelve officers from various provinces in Zambia. Elias and his partner earned an extra USD 355 each from the training.

The metal silos have been well received by farmers in Choma and Kazungula. Farmer Godwin Muleya in Kabimba Agricultural Camp, South West of Choma is already using the metal silo. According to him, he used to experience

not only postharvest losses arising from insect damage, but also from uncontrolled consumption including theft. Farmer Muleya is also an agent selling the metal silo in the area.

“The metal silo is small enough to be fixed in the house yet big enough to hold food for the entire family for a long period. Incidences of misuse and theft, pest damage are literally zero now. This equipment is truly the messiah!” said farmer Muleya.

Another farmer visited in Dundwa Agricultural camp in Mapanza area (Choma West) was Catherine Chitiko. She had procured the metal silo. She was in the process of setting it up. Catherine was optimistic about the effectiveness of the silo. According to her she had heard from a colleague in another area how well the silo worked the previous season. In Kazungula, Siakasipa dam area (Kazungula North), farmer Patricia Pezulu said she had procured a metal silo through an artisan in the neighboring agricultural camp through the SHARP project.

The demand for the metal silo is rising steadily and most small scale farmers look poised to owning one. The equipment was light and may be fixed wherever the farmer chooses.

SHARP indicated that they had received requests for the artisans to manufacture 260 metal silos by April, 2015. Consistent and correct use of the metal silos would earn a farmer up to 312 Kg of maize grain per hectare cultivated assuming average yield of 2,400 kg. This gain goes a long way in improving the farmers’ food security status.



Godwin Muleya with family stands next to metal silos

SUCCESS STORY – 2

CHOMA FARMER ACHIEVES FOOD SECURITY

Catherine Chitiko is a farmer in Dundwa Agricultural Camp about 100 km west of Choma district. She is 46 years, married with 8 children. Her husband is a farmer, too. They depend on natural rains for their farming. However, their area is often affected by dry spells during agricultural seasons which makes agriculture productivity a big challenge whether one used conservation farming or not. According to Catherine, they would run out of household food by August during bad years in which time they would survive on selling assets such as livestock and engage in trading non-agricultural businesses.

In 2013, Catherine was selected among farmers to be engaged in the Sustainable Health and Agriculture for Resilient Populations (SHARP) implemented by Land O'Lakes and Project Concern International (PCI). SHARP was financially supported by the United State Agency for International Development (USAID). SHARP was a 20 months' project in Choma and Kazungula, Southern Zambia an area which has been prone to natural hazards for over two decades. In the SHARP project, Catherine took part in various agriculture oriented production training which included disaster risk reduction, early warning system in agriculture, crop diversification as well as fodder crops. She was also trained in improved water, sanitation and health practices.

In the same year, Catherine received seeds for food and fodder crops. With help from her husband, she planted medium to early maturing varieties of maize, groundnuts, cowpeas, pigeon peas, sunhemp, velvet beans and Rhodes grass. The following harvest, her maize production doubled. She sold part of her produce and procured a metal silo, a grain storage facility she was sure would help her store her maize longer and safely. Catherine was sure the success was due to her use of skills and knowledge gained in the disaster risk reduction training.

Catherine said: "I strongly feel that the increase in maize production was due to the application of knowledge gained from DRR training. I also planted all seeds I accessed; I was able to intercrop and with early and medium maturing maize varieties which gave us good yields"

Catherine plans to multiply the seeds for sunhemp and velvet beans so that she could expand cultivated land under intercrops. She was optimistic, with application of DRR knowledge and integration of leguminous fodder crops, challenges with household food will be a thing of the past.



Catherine Chitiko stands in her sunhemp field meant for seed multiplication

ANNEX II: INDICATOR TRACKING TABLE

Project									
Sustainable Health and Agriculture for Resilient Populations									
Start Date	1-Aug-13								
End Date	30-Jun-15								
#	Indicator Name	Unit	Disaggregation	Baseline		Status at Midterm		Life of Project	
				Year	Value	Target	Actual	Target	Actual
Agriculture and Food Security Objective: To improve and protect household food security and livelihoods									
Intermediate Result 1.1: Productivity of food and fodder crops increased in vulnerable households									
IR 1.1.1	Projected increase in number of months of food self-sufficiency due	Sex	Total	2013	0	0.5	-0.4	1.4	0.6
			Male	2013	0	0.5	-0.4	1.4	0.6
			Female	2013	0	0.5	-0.4	1.4	0.6
IR 1.1.2	Number of people benefiting from seed systems/ agricultural	Sex	Total	2013	0	1000	996	1000	1000
			Male	2013	0	400	486	400	410
			Female	2013	0	600	510	600	590
IR 1.1.3	Percentage of households whose wealth asset index has	Sex	Total	2013	0	30%	18.6%	70%	57%
			Male	2013	0	30%	25.0%	70%	60%
			Female	2013	0	30%	14.1%	70%	54%
IR 1.1.4	Number of hectares (ha) under integrated food and fodder crop	Sex	Total	2013	0	500	1,038.7	500	1,767
			Male	2013	0	200	504.2	200	843.8
			Female	2013	0	300	534.5	300	923.2
IR 1.1.5	Number of individuals applying new technologies or	Sex	Total	2013	0	1000	742	1000	1000
			Male	2013	0	400	382	400	410
			Female	2013	0	600	360	600	590
IR 1.1.6	Number of individuals who have received trainings on food and	Sex	Total	2013	0	2000	1,153	3000	3000
			Male	2013	0	800	492	1200	1200
			Female	2013	0	1200	661	1800	1800
IR 1.1.7	Number of food and fodder crop storage facilities built and used	Sex	Total	2013	0	400	0	500	449
			Male	2013	0	160	0	200	230
			Female	2013	0	240	0	300	219
Intermediate Result 1.2: Food security and livelihoods improved among households selling in purchasing food or fodder									
IR 1.2.1	Number of producers linked to fodder market outlets to sell their	Sex	Total	2013	0	500	0	1000	63
			Male	2013	0	200	0	400	26
			Female	2013		300	0	600	37
IR 1.2.2	Number of firms/ agrodealers linked to livestock producers and providing new business services			2013	0	5	3	5	5

WASH Objective: To enhance community and household management of water resources and sanitation practices									
Intermediate Result 2.1: Communities and local institutions strengthened to manage solid waste, improve drainage and improv									
IR 2.1.1	Number of people benefiting from solid waste management,	Sex	Total	2013	0	35,537	21,375	59,228	56,244
			Male	2013	0	17,520	10,925	28,281	26,997
			Female	2013	0	18,017	10,682	30,947	29,247
IR 2.1.2	with DRR action plans developed that address priority environmental	District	Total	2013	0	200	200	200	111
			Choma	2013	0	120	119	120	71
			Kazungula	2013	0	80	81	80	40
IR 2.1.3	Percent of households that dispose of solid waste appropriately	Sex	Total	2013	56.8%	86.8%	83.2%	100%	94%
			Male	2013	56.8%	86.8%	83.6%	100%	97%
			Female	2013	56.8%	86.8%	82.9%	100%	91%
Intermediate Result 2.2: Household hygiene practices improved									
IR 2.2.1	Number of people receiving direct hygiene promotion (excluding	Sex	Total	2013	0	6,614	3,562	9,871	9,374
			Male	2013	0	2,646	1,911	3,948	3,999
			Female	2013	0	3,968	1,651	5,923	5,375
IR 2.2.2	Percent of target communities certified open defecation free	District	Total	2013	0	60%	0	80%	4%
			Choma	2013	0	60%	0	80%	3%
			Kazungula	2013	0	60%	0	80%	5%
Risk Management Objective: To strengthen community resilience and capacity to cope with shocks and stresses									
Intermediate Result 3.1: Communities mobilized to prepare, mitigate and respond to shocks and stresses									
IR 3.1.1	Number of people participating in training on disaster	Sex	Total	2013	0	1,349	1,309	2,013	1,711
			Male	2013	0	540	736	805	918
			Female	2013	0	809	573	1,208	793
IR 3.1.2	Percentage of people who retain skills and knowledge after two	Sex	Total	2013	0	60%	0	70%	77%
			Male	2013	0	60%	0	70%	77%
			Female	2013	0	60%	0	70%	77%
IR 3.1.3	Percentage of attendees at joint planning meetings who are from	Sex	Total	2013	0	85%	0	85%	76%
			Male	2013	0	85%	0	85%	48%
			Female	2013	0	85%	0	85%	28%
Intermediate Result 3.2: Capacity of local communities, organization and government to respond to disasters strengthened									
IR 3.2.1	Early warning system in targeted community is in place for all major hazards with appropriate outreach to community	Yes/No							
			2013	No	Yes	No	Yes	No	
IR 3.2.2	Percentage of community members who received at least one early warning	Sex	Total	2013	0	55%	0	70%	30%
			Male	2013	0	55%	0	70%	32%
			Female	2013	0	55%	0	70%	28%
IR 3.2.3	Number of DRR plans created through D-Risk mapping process	District	Total	2013	0	120	0	200	111
			Choma	2013	0	72	0	120	67
			Kazungula	2013	0	48	0	80	44

ANNEX III: SCOPE OF WORK FOR THE EVALUATION

Fixed Price Contract

Scope of Work

Sustainable Health and Agriculture for Resilient Populations (SHARP) Final Evaluation
April XX, 2015

Background and Justification

Land O'Lakes, in partnership with Project Concern International (PCI), is implementing a 20-month livelihood project in 10 camps in the Kazungula and Choma Districts of southern Zambia called Sustainable Health and Agriculture for Resilient Populations (SHARP). Funded by the United States Agency for International Development, Office of Foreign Disaster Assistance (USAID/OFDA), SHARP's goal is to strengthen the resiliency of communities in southern Zambia to create sustainable livelihoods beyond the life of the project through activities in: 1) **Agriculture and Food Security**; 2) **Water, Sanitation and Hygiene (WASH)**, and 3) **Disaster Risk Reduction (DRR)**. Specifically, SHARP aims to meet the following objectives:

- Improve and protect household food security and livelihoods;
- Enhance community and household management of water resources and sanitation practices; and
- Strengthen community resilience and capacity to cope with shocks and stresses.

This contract is to hire an external firm to conduct a final evaluation of the Zambia SHARP program that will validate the results of the program and provide recommendations for future programs. An external final evaluation report is required in Land O'Lakes funding contract with USAID/OFDA.

Objectives of the Evaluation

The final evaluation will assess the appropriateness, effectiveness, efficiency, and sustainability of SHARP's approach and implementation. Specifically, the final evaluation will meet the following objectives:

- Assess the appropriateness of the strategies employed by Land O'Lakes in the program given the goal and beneficiaries' needs;
- Assess the degree to which the project has met its projected goals, objectives, outcomes and targets and explain deviations;
- Provide an objective description of the overall effectiveness and sustainability of the program and its various activities;
- Identify key strengths and weaknesses of the program;
- Identify key lessons learned and recommendations which should be adopted by Land O'Lakes for similar programs in Zambia or elsewhere.

Within these objectives, the final evaluation conducted by the contractor will answer the following:

Evaluation criteria	Illustrative Program Evaluation Questions
Relevance / Appropriateness	<ul style="list-style-type: none"> • Were the planned program activities appropriate for the local Zambian context? • How well aligned was the program strategy and activities with the Government of Zambia's policy, strategy and structure? • Did the program design and implementation meet the needs of the beneficiaries? • What improvements could have been made to the design and/or implementation to improve appropriateness (e.g. for the targeted population, the location and timing of the project implementation period vis-à-vis the agricultural season)? • Are the established targets realistic given the Zambian context?
Effectiveness/ Impact	<ul style="list-style-type: none"> • How have the intended target beneficiaries (<i>i.e. farmers, WASH committee members, DRR committee members, and communities</i>) participated in program activities? <ul style="list-style-type: none"> ○ To what extent have the program output targets been reached? If not reached, why not? • What impact did the program activities have on the specific program participants? <ul style="list-style-type: none"> ○ To what extent have the program outcome targets been reached? If not reached, why not?

	<ul style="list-style-type: none"> ▪ How have the farmer training done at the AnswerPlot® sites led to application of improved techniques and improved productivity for the food and fodder crops? ▪ How have farmer trainings and improved productivity led to an increase in the number of months of food self-sufficiency and an increase in asset base for the farmers or increase sale/use of food or fodder crops? ▪ How have the WASH trainings led to improved WASH practices and communities becoming open defecation free? ▪ How have the DRR trainings led to communities having a plan in place and receiving early warning messages for potential disasters? ○ What internal and external factors (selection criteria, participation of women, location/province) have influenced the ability of the program to meet the projected targets and outcomes? ○ What other unexpected benefits have the program participants realized to date? ○ Were there any expected or unexpected negative consequences or impacts resulting from the program and/or its activities? If “yes,” please describe them and any remedial actions that the program staff either took or could have taken to overcome or to mitigate unintended negative impacts. ○ What are the updated values for the Land O’Lakes’ Division-Wide Performance Indicators (DWPI)? • What improvements could have been made to the program’s design or implementation that would have improved the results?
Efficiency	<ul style="list-style-type: none"> • Were the activities carried out in a timely manner? • What were the challenges/successes in efficiently carrying out the activities?
Sustainability	<ul style="list-style-type: none"> • Carefully analyze key project activities, diagnose which ones could be sustainable after the project ends. This will include, but not be limited to: <ul style="list-style-type: none"> ○ What entities worked with the project to support farmers and communities in the implementation of the project such as training, input supply, extension services, weather monitoring, etc.? ○ How will farmers and communities continue working with these entities? ○ Will any entity or individual be able to take on responsibility for the program-funded AnswerPlot™ sites? ○ Will farmers continue to use improved farming techniques? ○ Will weather monitoring points continue to be used? Who will be responsible for collecting, analyzing and communicating findings to farmers? ○ Will farmers continue to purchase and use metal silos as storage facilities for food? ○ Will farmers continue to produce fodder for their own animal consumption or for sale? ○ Will WASH and DRR committees continue with any of their activities? If so, which ones? ○ Will households continue to implement improved WASH practices? ○ Will communities continue to seek ODF certification? Why or why not? • What are the major factors influencing the achievement or non-achievement of the sustainability of the program and/or its activities? • Has the SHARP project developed the capacity of farmer groups, WASH and DRR committees to be sustainable? If not, how could the design and implementation be altered to improve beneficiaries’ chances for sustainable success? • Is there a well-developed exit strategy and sustainability plan? If so, has the program staff initiated all or some aspects of the strategy? If not, how could it be designed and implemented more effectively?
Gender Equality and Equity	<ul style="list-style-type: none"> • How did the SHARP project address the unique constraints faced by women in farming, WASH and DRR activities? What did the program do well? What could the program have done better?

	<ul style="list-style-type: none"> • How well did SHARP staff and partners understand issues around gender equity, particularly constraints for women farmers, and what did the project do (or should have done) to increase their understanding? • Did the SHARP project's approach to gender equality and gender equity ensure balanced involvement of women and men in all program activities? • Have the outcomes of the project differed between men and women? How or in what manner? If so, what could the project have done differently to ensure that equal benefits accrued to both women and men? • How did the project address the involvement of youth in project funded activities? Were youth successfully involved or not? Explain and analyze the extent of the involvement of youth in project activities for all 3 sectors.
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Scope of Work

The contractor will conduct the final evaluation for the Zambia SHARP Project, including the design, data collection, analysis and interpretation of data with consultation and input from Land O'Lakes project staff. The contractor will report to the project Chief of Party or other Land O'Lakes' project staff as decided by the Chief of Party.

Detailed Requirements

The specific activities of this contract are detailed below:

Review of Documents: Undertake review of the SHARP program documents and other relevant documents including, but not limited to, the following:

- Project agreement
- Performance Monitoring Plan (PMP)
- Crop Establishment and Harvest tools and data and other monitoring tools and data
- Baseline report, data collection tools, and data
- Mid-term report, data collection tools, and data
- Quarterly and Annual reports to USAID/OFDA
- Any other program documents which will enable the final evaluation team to get acquainted with the program
- Relevant Government of Zambia reports and documents for background information and establishing the socio-economic and political context in which the project took place

Refinement of methodology and data collection tools: Based on the methodology and survey instruments from the baseline and mid-term, and relevant monitoring tools, the firm will collaborate with Land O'Lakes M&E team to:

- Attend an inception meeting with Land O'Lakes staff to discuss methodology, data collection tools, and community introductions and contacts.
- Based upon a reading of the program documents, propose any additional topics or issues for analysis in the final evaluation.
- Develop an appropriate study methodology for the final evaluation, including a sampling frame, sampling technique and sample sizes for both quantitative and qualitative data collections, and write an inception report
- Revise the data collection tools and create any new tools necessary to answer the evaluation questions, including
 - Household surveys
 - Focus group discussion guides
 - Key informant interview guides
 - ODF verification tool

Field Data Collection

- Plan and coordinate the necessary logistics to collect the data in accordance with the selected methodology
- Pre-test, edit, translate (if needed), finalize and reproduce the data collection tools
- Train and orient field interviewers and enumerators
- Carry out the fieldwork using own transportation
 - Quantitative household interviews with at least 278 agriculture beneficiary households, 370 WASH beneficiary households, and 194 control households
 - 20 – 30 focus group discussions with beneficiaries
 - Sufficient number of key informant interview with key beneficiaries, stakeholders, Land O'Lakes Staff, etc.
 - 10 transect walks
 - 30-40 verifications of ODF status of qualified villages
 - At least 5 success stories
- Apply strong quality control practices for field data collection

Data entry, analysis and reporting

- Enter, clean, synthesize, analyze, and interpret data from both the quantitative surveys and the qualitative studies using approved statistical packages
- Prepare a draft final evaluation report addressing the objectives and questions of this evaluation outlined above and recommendations for potential similar projects for review and feedback by Land O'Lakes staff and stakeholders.
- Develop a Power Point presentation of evaluation findings, present and submit to Land O'Lakes and stakeholders.
- Based on the feedback from project participants, stakeholders, Land O'Lakes program staff and technical advisory staff based in the USA, prepare a final evaluation report that includes revisions required to meet the comments and suggestions provided during the feedback process.
- Prepare at least five (5) success stories to be annexed to the final evaluation report.

Deliverables

The contractor is responsible for submitting the following deliverables:

- Inception Report that describes the following:
 - Understanding of the project based on project documents and literature review
 - Finalized methodology, including detailed sampling plan and field procedures
 - Quality control measures
 - Communication protocol
 - Finalized timeline (activities, responsible party, outputs, and timing)
- Electronic copies of all clean and final English-version of data collection tools;
- Clean and final English versions of quantitative data sets in agreed upon format and qualitative notes in MS-Word document
- At least five (5) success stories with photos, testimonial, and supporting quantitative data;
- Draft final evaluation report in English addressing all of the evaluation objectives and questions in the scope of work
- Two (2) bound copies of the Final evaluation report in English with an electronic copy that includes, but is not limited to the following sections:

- a. Acknowledgements
 - b. List of Acronyms and abbreviations
 - c. Table of Contents
 - d. Executive Summary
 - e. Background (Program description and purpose of evaluation)
 - f. Methodology and Implementation
 - g. Results and Findings (in accordance with the objectives)
 - h. Recommendations (for future similar project)
 - i. Annex: Table of key program indicators with baseline, midline, and final values
 - j. Annex: Success Stories
 - k. Annex: Scope of Work for the evaluation
 - l. Annex: Survey Instruments: questionnaire(s), interview guides(s)
- 15-20 high-quality pictures of the project beneficiaries and activities.
 - Power point presentation used by the Final Evaluation Team for the Dissemination Workshop.

Timeline

Activity	Responsibility	Timeline/Date
Review of relevant documents to prepare for inception meeting	Evaluation Team	April 13 th , 2015
Inception meeting with Land O'Lakes to discuss protocol, methodology, sampling, tools and timeline	Evaluation Team and Land O'Lakes	April 14 th , 2015
Develop an inception report and all data collection tools	Evaluation Team	April 13 th – 21 st , 2015
Inception report and tools due	Evaluation Team	April 21 st , 2015
<i>Land O'Lakes reviews report and tools and provides feedback</i>	<i>Land O'Lakes</i>	<i>April 22nd & 23rd, 2015</i>
Prepare for field work	Evaluation Team	April 22 nd & 23 rd , 2015
Finalize tools	Evaluation Team	April 24 th , 2015
Enumerator training, pretesting, and data collection	Evaluation Team	April 27 th – May 8 th , 2015
Data entry and cleaning	Evaluation Team	May 11 th -15 th , 2015
Data analysis and report writing	Evaluation Team	May 18 th – 29 th , 2015
Draft report is submitted to Land O'Lakes	Evaluation Team	May 29 th , 2015
<i>Land O'Lakes reviews draft final report and provides feedback</i>	<i>Land O'Lakes</i>	<i>June 1st-4th, 2015</i>
Dissemination Workshop preparation	Evaluation Team	June 1 st – 4 th , 2015
Final Report and accompanying deliverables due. Give presentation at Dissemination Workshop.	Evaluation Team	June 8 th , 2015

Payment Schedule

The contractor will be paid 30% on commencement, 60% on delivery of the draft report, and final 10% on delivery of the final deliverables.

ANNEX IV: SURVEY INSTRUMENTS:
QUESTIONNAIRE(S), INTERVIEW GUIDES(S)

001 Questionnaire Identification Number |__|__|__|

002 District: _____

003 Agricultural Camp: _____

004 Village Name: _____

005 Name of Respondent: _____

006 Sex of Respondent (circle): Male Female

007 Full name of Household Head: _____

008 Sex of Household Head (circle): Male Female

009 Type of Respondent (circle): Treatment Control

010 [**TREATMENT**] Name of Producer Group: _____

011 Interviewer Name: _____

012 Date of Interview: __/__/____

CHECKED BY SUPERVISOR:

Name: _____

Signature: _____

Date: __/__/____

Instructions: When you go into the selected household, **IF TREATMENT:** ask for the person that is participating in the SHARP/Land O'Lakes Project. **IF CONTROL:** ask for the household head or someone who lives there that is knowledgeable about the agriculture practices and finances of the household.

Introduction: Hello, my name is _____. I am working with Frontline Consultancy, a Zambian company.

- [**FOR TREATMENT**] You are involved in a crop and fodder project with Land O'Lakes, called SHARP. I am here to understand the benefits and challenges in participating in the project.
- [**FOR CONTROL**] I am here to discuss your household's agricultural practices and food security. This information will help to improve agriculture interventions in the area.

You have been selected completely by chance to participate, and we hope to talk to about 300 other people like you. Your participation is voluntary, and there is no penalty for not taking part or refusing to answer specific questions.

The survey should take about 1 ½ hours. There is no other cost or risk involved in the study. If you agree to participate, we would like to ask you some questions about yourself, your household, your agricultural practices, and food security. We are not connected to any government office, tax collector, or the police. All of your personal information will be kept confidential and secret.

Do you have any questions?

If you think of any questions during the interview, please feel free to ask me.

We now invite you to participate in the study. Would you agree to participate?
IF RESPONDENT ORALLY AGREES, THANK THEM AND CONTINUE
IF RESPONDENT DOES NOT AGREE, THANK THEM AND LEAVE

I have informed the respondent about:
<ul style="list-style-type: none">• Who I am• Where I'm from• The purpose of the study• Secrecy• Writing responses• Benefits of the study• Time Cost• Questions

SECTION I: HOUSEHOLD DEMOGRAPHICS

First I want to ask a little background information about you.

No.	Questions and filters	Coding categories/ Response		Skip Pattern
QI01	What is your age?	Years Don't Know	[_ _] 99	
QI02	What is your marital status?	Single Married Separated Divorced Widowed	1 2 3 4 5	If 'Married' Skip to QI03, otherwise, skip to QI04
QI03	What kind of marriage are you in?	Monogamous Polygamous	1 2	
QI04	What is your occupation?	Working paid employment Small scale trading agriculture Small scale trading in non-agriculture Farmer Other (specify):_____	1 2 3 4 5	
QI05	What is the highest level of school you attended?	Did not attend formal school Primary Secondary Tertiary	1 2 3 4	

Now I want to ask you a few questions about the head of your household

No.	Questions and filters	Coding categories/ Response		Skip Pattern
QI06	What is your relationship to the head of household?	Self Spouse Child Sibling Parent Other family member Other non-relation	1 2 3 4 5 6 7	If 'self', skip to QI10 If "spouse" skip to QI08
QI07	What is the marital status of the Head of Household?	Single Married Separated Divorced Widowed	1 2 3 4 5	
QI08	What is the occupation of Head of Household?	Working paid employment Small scale trading in non-agriculture Small scale trading in agriculture Farmer Other (specify):_____	1 2 3 4 5	
QI09	What is the highest level of education attained of the Head of Household?	Did not attend formal school Primary Secondary Tertiary	1 2 3 4	

Now I want to talk to you about your household in general

No.	Questions and filters	Coding categories/ Response		Skip Pattern
QII0	How long has your household lived here in this community?	Number of years	[_ _]	
QIII	How many people live in this household?	Total number of people	[_ _]	

Q112	<p><i>Now I want to be a bit more specific about the sex and ages of the people that live in your household.</i></p> <p>How many males between X and X age live in this household?</p> <p>How many females between X and X age live in this household</p> <p><i>(MAKE SURE Q12 SUMS TO Q111)</i></p>	Age	M	F
		a. 0 to 4		
		b. 5 to 15		
		c. 16 to 25		
		d. 26 to 55		
		e. 56 to 65		
		f. Above 65		

SECTION 2: DWELLING CHARACTERISTICS

Now I want to talk to you about your home.

No.	Questions and filters	Coding categories/ Response	Skip Pattern
Q201	What is the roof top material of the main structure of your house made of? (<i>select only main one</i>)	Iron sheet/Corrugated metal/asbestos Grass thatch/vegetable matter/sticks Plastic sheeting Other (specify):_____	1 2 3 4
Q202	What is the floor material of the main structure of your house made of? (<i>select only main one</i>)	Earth/mud Concrete/cement Tile/bricks Wood/planks Other (specify):_____	1 2 3 4 5
Q203	How many structures does your household have? (excluding toilets and kitchen)	Number of Structures	[__ __]
Q203	How many rooms are there in the main structure of your household (excluding toilets and kitchen)?	Number of rooms	[__ __]
Q204	What is the main type of toilet your household uses? (<i>select main one</i>)	VIP Pit latrine Community toilet Bucket No toilet Other (specify):_____	1 2 3 4 5 6
Q205	What is the main source of drinking water for your household? (<i>select main one</i>)	Tube well/borehole Protected dug well Unprotected dug well River/ponds/streams Other (specify):_____	1 2 3 4 5

SECTION 3: INCOME & ASSETS OWNED

Now I want to talk about your income and the assets you own

Q301a. What were the main sources of income for your household during the last 12 months? <i>(Choose all that apply)</i> SPONTANEOUS		Q301b. Estimate how much money did you make from this in the last 12 months (for "A", in the last agricultural season – 2013/2014) (ZMW) 98 – Don't Know		Skip Pattern
a. Sale of own field crop production (crop/fodder) – ASK Q302	1		[_][_][_][_][_]	If "a" is yes, ASK Q302 If "d" or "e" is yes, ASK Q303 Otherwise, skip to Q304
b. Sale of garden crops	2		[_][_][_][_][_]	
c. Sale of chicken	3		[_][_][_][_][_]	
d. Sale of goats – ASK Q303	4		[_][_][_][_][_]	
e. Sale of cattle – ASK Q303	5		[_][_][_][_][_]	
f. Sale of other animals	6		[_][_][_][_][_]	
g. Milk Sales	7		[_][_][_][_][_]	
h. Sale of forest foods	8		[_][_][_][_][_]	
i. Brewing	9		[_][_][_][_][_]	
j. Carpentry	10		[_][_][_][_][_]	
k. Stone crushing	11		[_][_][_][_][_]	
l. Charcoal burning and selling	12		[_][_][_][_][_]	
m. Grinding/hammer milling	13		[_][_][_][_][_]	
n. Selling handicrafts	14		[_][_][_][_][_]	
o. Fishing/fish mongering	15		[_][_][_][_][_]	
p. Trading in food, groceries, cloth	16		[_][_][_][_][_]	
q. Casual/piece work (agriculture)	17		[_][_][_][_][_]	
r. Casual/piece work (non-agriculture)	18		[_][_][_][_][_]	
s. Formal Employment	19		[_][_][_][_][_]	
t. Saving groups	20		[_][_][_][_][_]	
u. Loans (from microfinance/individuals)	21		[_][_][_][_][_]	
v. Remittances/gifts	22		[_][_][_][_][_]	
w. Other (specify): _____	23		[_][_][_][_][_]	

No.	Questions and filters	Coding categories/Response		Skip Pattern
Q302	IF HAVE CROP INCOME: How has your income from sale of food and fodder	Increased	1	
		Decreased	2	

	crops last year changed from the year before? <i>(prompt with choices)</i>	Stayed the same	3	
Q303	IF SOLD GOATS/ CATTLE: How has your income from the sales of livestock last year changed from the year before? <i>(prompt with choices)</i>	Increased Decreased Stayed the same	1 2 3	
Q304	Are you a member of any savings and credit groups in this community?	Yes No	1 2	If 'no', skip to Q307
Q305	How much have you saved through the saving or credit groups in the last 12 month?	Amount Saved (ZMW)	[_][_][_][_][_]	
Q306	Have you borrowed finances through the savings groups in the last 12 months?	Yes No	1 2	
Q307	Have you borrowed finances (including chilimba) or accessed a loan in the past 12 months?	Yes No	1 2	If both Q306 and Q307 is 'no' skip to Q309 if Q306 or Q307 is "yes" proceed
Q308	How did you use the loan? <i>(Choose all that apply)</i>	a. Invest in farming	1	
		b. Invest in small business	2	
		c. Purchased food	3	
		d. Paid school fees	4	
		e. Paid medical fees	5	
		f. Other, Specify: _____	6	
309a. What assets does the household possess? <i>(prompt with list)</i>	309b. How many of these does your household own?	309c. How many of these were acquired in the <u>last 1</u> year?	309d. What is the approximate value for ALL of this type of asset? (ZMW)	Skip Pattern
a. Houses	1		[_][_][_][_]	IF have food barn, continue to Q310, IF have fodder barn, skip to Q311, otherwise skip to Q312
b. Metal Silo (food barn)	2		[_][_][_][_]	
c. Cement & wire food barn	3		[_][_][_][_]	
d. Brick and cement food barn	4		[_][_][_][_]	
e. Mud plated basket (food barn)	5		[_][_][_][_]	
f. Fodder barns	6		[_][_][_][_]	
g. Beds	7		[_][_][_][_]	
h. Television sets	8		[_][_][_][_]	
i. Radios	9		[_][_][_][_]	
j. Chairs	10		[_][_][_][_]	
k. Sofas	11		[_][_][_][_]	
l. Scotch carts	12		[_][_][_][_]	
m. Ploughs	13		[_][_][_][_]	
n. Axes	14		[_][_][_][_]	
o. Shovels	15		[_][_][_][_]	
p. Cell phones	16		[_][_][_][_]	
q. Cattle	17		[_][_][_][_]	
r. Treadle pumps	19		[_][_][_][_]	

s. Other (specify):	20			[_ _ _ _ _]	
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No.	Questions and filters	Coding categories/Response		Skip Pattern
Q310	If you have a food barn, do you use it to store crop?	Yes No	1 2	
Q311	If you have a fodder barn, do you use it to store fodder?	Yes No	1 2	
Q312	What type of ownership does the household have over the land on which it lives and carries out its farming activities? (select the one for the majority of their land)	Traditional Leasehold Rented Other (specify): _____	1 2 3 4	
Q313	Who in the household owns the land?	Household Head Spouse Joint husband and wife together Family Children Other (specify): _____	1 2 3 4 5 6	

SECTION 4: AGRICULTURE AND FOOD SECURITY

Now I want to talk to you about your farming and livestock

No.	Questions and filters	Coding categories/Response		Skip Pattern
Q401	Are you a member of a farmers or producers group?	Yes No	1 2	
Q402	What is the total amount of land that you grow food and fodder crops?	Total amount of farm land		[_ _ _ _]
		Units	Hectare Lima Meters squared 'Folo' Acre Yards ² Other: _____ Don't know	1 2 3 4 5 6 7 98

Of this land, what is the total amount of land that you grow:							
Q403a. Field crops only?		Q403b. Garden crops only?		403c. Fodder crops only?		403d. Mix of fodder & food crops?	
[_ _ _ _]		[_ _ _ _]		[_ _ _ _]		[_ _ _ _]	
Hectare	1	Hectare	1	Hectare	1	Hectare	1
Lima	2	Lima	2	Lima	2	Lima	2
Meters squared	3	Meters squared	3	Meters squared	3	Meters squared	3
'Folo'	4	'Folo'	4	'Folo'	4	'Folo'	4
Acre	5	Acre	5	Acre	5	Acre	5
Yards ²	6	Yards ²	6	Yards ²	6	Yards ²	6
Other: _____	7	Other: _____	7	Other: _____	7	Other: _____	7
Don't Know	98	Don't Know	98	Don't Know	98	Don't Know	98

The next set of questions will ask about specific food and fodder crops that you grew in the last 12 months

[NOTE: IF MENTION COWPEAS, TELL THEM YOU WILL ASK ABOUT THEM IN A LATER SECTION]

In the Last Full Agricultural Season (2013/14).....								For the current Agricultural Season (2014/15)...				
Type of Food Crop	404a. Which food crops did you grow in the last agricultural season (2013/14)? (choose all that apply)	404b. Where did you get your seeds for this crop? (all that apply) CODE BELOW	404c. Estimate the total amount of land you planted this crop? UNITS CODE BELOW	404d. How many other crops did you grow on this same land with this crop? (inter-cropping)	404e. Estimate the amount of this food crop you harvested UNITS CODE BELOW	404f. Estimate the total amount of SEED for this crop you harvested. UNITS CODE BELOW	404g. Was this crop sold, consumed or both sold and consumed? 1 Sold 2 Consumed/stored 3 Sold and consumed/stored	404h. [IF ANY SALES] About how much money did you receive for the sale of this crop? (ZMW)	404i. Which food crops did you grow in the current season (2014/15)? (choose all that apply)	404j. Where did you get your seeds for this crop? (all that apply) CODE BELOW	404k. Estimate the total amount of land you planted this crop? UNITS CODE BELOW	404l. How many other crops did you grow on this same land with this crop? (inter-cropping)
1. Maize	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No		[] [] [] [] Units:		[] [] [] [] Units:	[] [] [] [] Units:	[]		1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units:	[] [] [] [] Units:	
2. Beans	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No		[] [] [] [] Units:		[] [] [] [] Units:	[] [] [] [] Units:	[]		1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units:	[] [] [] [] Units:	
3. Sorghum	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No		[] [] [] [] Units:		[] [] [] [] Units:	[] [] [] [] Units:	[]		1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units:	[] [] [] [] Units:	
4. Ground-nuts	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No		[] [] [] [] Units:		[] [] [] [] Units:	[] [] [] [] Units:	[]		1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units:	[] [] [] [] Units:	

Places Buy Seed	Units for amount planted	Units for amount crop/seed harvested
1. Own production	1. Hectare	1. Kilogram
2. Land O'Lakes	2. Lima	2. Buckets/Tin
3. Eliezer Agro Enterprises (Choma)	3. Meters squared	3. Ox carts
4. Technical Sprayer Services (Kazungula)	4. "Folo"	4. Crates
5. Other agro dealers	5. Acre	5. Gallons/Meda
	6. Yards ²	
	7. Other (specify)	
	98 Don't Know	6. Cups
		7. Plate
		8. Bushel
		9. Other (specify)
		98 Don't Know

In the last full agriculture season (2013/14)	Coding categories/Response	For the current agriculture season (2014/15).....	Coding categories/Response
404a. Which food crops did you grow in the last agricultural season (2013/14)? (CHOOSE ALL THAT APPLY)		404e. Which food crops did you grow in the current season (2014/15)? (CHOOSE ALL THAT APPLY)	
1. Cassava	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	1. Cassava	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No
2. Bulruh Millet	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	2. Bulrush Millet	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No
3. Sweet potatoes	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	3. Sweet potatoes	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No
4. Sunflower	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	4. Sunflower	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No
5. Soybeans	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	5. Soybeans	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No
6. Bambara nuts	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	6. Bambara nuts	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No
7. Sugar cane	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	7. Sugar cane	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No
8. Cotton	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	8. Cotton	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No
9. Other :	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	9. Other :	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No

Places Buy Seed		Units for amount land planted		Units for amount crop/seed planted/harvested	
1. Own production	6. Local stores	1. Hectare	5. Acre	1. Kilogram	6. Cup
2. Land O'Lakes	7. Government	2. Lima	6. Other (specify)	2. Buckets/Tin	7. Plate
3. Eliezer Agro Enterprises (Choma)	8. Community/village seed banks	3. Meters squared	98 Don't Know	3. Oxcarts	8. Bushel
4. Technical Sprayer Services (Kazungula)	9. Fellow farmers	4. "Folo"		4. Crates	9. Other (specify)
5. Other agro dealers	10. Other (specify)			5. Gallons/Meda	98 Don't Know

GARDEN CROPS

405a. Which <u>garden</u> crops did you grow in the last 12 months? <i>(choose all that apply)</i>		405b. Was this crop sold, consumed or both sold and consumed? 1. Sold 2. Consumed/stored 3. Sold and consumed/stored	405c. Estimate the amount of this <u>garden</u> crop you harvested in the last 12 months. Units Code: 1. Kilogram 2. Buckets/Tins 3. Ox carts 4. Crates 5. Gallons/Meda 6. Cup 7. Plate 8. Bushel 9. Other (specify) 98 Don't Know
1. Tomatoes	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[]	[_ _ _] Units: []
2. Rape	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[]	[_ _ _] Units: []
3. Impwa (Local Eggplant)	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[]	[_ _ _] Units: []
4. Cabbage	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[]	[_ _ _] Units: []
5. Onion	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[]	[_ _ _] Units: []
6. Pumpkin 7. (may be a field crop, but still ask these questions)	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[]	[_ _ _] Units: []
8. Chinese cabbage	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[]	[_ _ _] Units: []
9. None	[]	[]	[]
10. Other: _____	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[]	[_ _ _] Units: []

FODDER CROPS

No.	Questions and filters	Coding categories/Response								Skip Pattern
Q406	Did you grow any fodder crops in the last agricultural season (2013/14) or the current season (2014/15)?	Yes 1 No 2								If "no", skip to Q413
In the Last Full Agricultural Season (2013/14).....						For the current Agricultural Season (2014/15)...				
407a.	Which fodder crops did you grow in the last agricultural season (2013/14)? (<i>CHOOSE ALL THAT APPLY</i>)	407b.	407c.	407d.	407e.	407f.	407g.	404h.	404i.	404j.
	Where did you get your seeds for this fodder crop? (<i>all that apply</i>) CODE BELOW	Estimate the total amount of land you planted this fodder crops? UNITS CODE BELOW	How many other crops did you grow on this same land with this fodder crop? (inter-cropping)	Estimate the total amount of this fodder crop you harvested as forage in the last 12 months. UNITS CODE BELOW	Estimate the total amount of SEED for this fodder crop you harvested in the last 12 months. UNITS CODE BELOW	Which fodder crops did you grow in the current season (2014/15)?	Where did you get your seeds for this fodder crop? (<i>all that apply</i>) CODE BELOW	Estimate the total amount of land you planted this fodder crop? UNITS CODE BELOW	How many other crops did you grow on this same land with this crop? (inter-cropping)	
1. Rhodes Grass	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	
2. Cow peas	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	
3. Pigeon Peas	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	
4. Sun hemp	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	
5. Velvet Beans	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	
6. Other:	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	1. <input type="checkbox"/> Yes 2. <input type="checkbox"/> No	[] [] [] [] Units: []	[] [] [] [] Units: []	[] [] [] [] Units: []	

Places Buy Seed	Units for amount land planted	Units for amount crop/seed planted/harvested
1. Own production	6. Local stores	1. Hectare
		5. Acre
		1. Kilogram
		6. Cups

2. Land O'Lakes	7. Government	2. Lima	6. Other	2. Buckets/Tin	7. Plate
3. Eliezer Agro Enterprises (Choma)	8. Community/village seed banks	3. Meters squared	(specify)	3. Ox carts	8. Bushel
4. Technical Sprayer Services (Kazungula)	9. Fellow farmers	4. "Folo"	98 Don't Know	4. Crates	9. Other (specify)
5. Other agro dealers	10. Other (specify)			5. Gallons/Meda	98 Don't Know

No.	Questions and filters	Coding categories/Response		Skip Pattern
Q408	A. Which fodder crop performed the best in the last agricultural season (2013/14)?	B. In the current agricultural season (2014/15)?		
	1. Rhodes grass	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	
	2. Cowpeas	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	
	3. Pigeon peas	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	
	4. Sun hemp	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	
	5. Velvet beans	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	
	6. None performed well	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	
	7. Other (specify):	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No	
Q409	Have you sold any of your fodder in the last 12 months?	1.[<input type="checkbox"/>] Yes 2.[<input type="checkbox"/>] No		If 'no', skip to Q413
Q410	Who do you sell your fodder to? (choose all that apply)	1.Follow farmers in community	1	
		2. Farmers outside community	2	
		3.Established fodder markets	3	
		4.Other (specify): _____	4	
Q411	About how much fodder did you sell from your harvest in the last 12 months?	Amount sold in any unit		[_ _ _]
		Unit	Kilogram 1 Buckets/Tins 2 Ox carts 3 Crates 4 Gallon/Meda 5 Cup 6 Plate 7 Bushel 8 Other: _____ 9 Don't Know 10	
Q412	About how much money did you make from selling fodder from your yield in the last 12 months?	Amount of money made from fodder sales in ZMW		[_ _ _ _]
Q413	Do you plan to grow fodder in the next agricultural season?	Yes	1	If "no", skip to Q415
		No	2	

No.	Questions and filters	Coding categories/Response	Skip Pattern		
Q414	Where do you plan to get your <u>fodder</u> seeds in the next agricultural season (2015/16)? <i>(choose all that apply)</i> DO NOT PROMPT	a. Own production	I		
		b. Land O'Lakes	2		
		c. Eliezer Agro Enterprises (Choma)	3		
		d. Technical Sprayer Services (Kazungula)	4		
		e. Other local agro dealer	5		
		f. Local Stores	6		
		g. Government/FISP	7		
		h. Community/village seed banks	8		
		i. Fellow farmers	9		
		j. Use seeds given by Land O'Lakes last season	10		
		k. Don't plan to plant fodder	11		
		l. Other (specify):	12		
Q415	Where do you plan to get your <u>food crop</u> seeds in the next agricultural season (2015/16)? <i>(choose all that apply)</i> DO NOT PROMPT	a. Own production	1		
		b. Land O'Lakes	2		
		c. Eliezer Agro Enterprises (Choma)	3		
		d. Technical Sprayer Services (Kazungula)	4		
		e. Other local agro dealer	5		
		f. Local Stores	6		
		g. Government/FISP	7		
		h. Community/village seed stores	8		
		i. Fellow farmers	9		
		j. Other (specify):	10		
		Q416	Where did you get your other farm inputs (for example, fertilizer and chemicals) in the current agricultural season 2014/15? <i>(choose all that apply)</i> DO NOT PROMPT	a. Eliezer Agro Enterprises (Choma)	1
				b. Technical Sprayer Services (Kazungula)	2
c. Other local agro dealer	3				
d. Local store	4				
e. Government/FISP	5				
f. Community/village bank	6				
g. Fellow farmers	7				
h. Don't use other farm inputs	8				
i. Others (specify):	9				
Q417	Where do you plan to get your other farm inputs (for example, fertilizer and chemicals) in the next agricultural season 2015/16? <i>(choose all that apply)</i> DO NOT PROMPT			a. Eliezer Agro Enterprises (Choma)	1
				b. Technical Sprayer Services (Kazungula)	2
				c. Other local agro dealer	3
		d. Other local store	4		
		e. Government/FISP	5		
		f. Community/village bank	6		
		g. Fellow farmers	7		
		h. Don't use other farm inputs	8		
		i. Others (specify):	9		
		No.	Questions and filters	Coding categories/Response	Skip Pattern
		Q418	Do you practice any Conservation farming (CF) in your farming?	Yes	1
				No	2
			If 'No' skip to Q420		

Q419a. What Conservation farming Practices have you used in the last 12 months? [<u>Prompt</u> with list]			Q419b. Of the land that you cultivated in the last 12 months how much of it used this technique? (Probe was it all of the land; less than ¼, half of the land?)		Q419c TREATMENT ONLY Did you start using this technique after learning from the project?	
<i>(CHOOSE ALL THAT APPLY)</i>			Yes	No	1. None	
					2. ¼	Yes
					3. ½	No
					4. ¾	
					5. All	
1. Ripping	I	2				I 2
2. Basins & potholes	I	2				I 2
3. Crop rotation	I	2				I 2
4. Intercropping	I	2				I 2
5. Cover catch crops	I	2				I 2
6. Green manure	I	2				I 2
7. Animal manure	I	2				I 2
8. Farm forestry/agro forestry	I	2				I 2
9. Weed killers	I	2				I 2
10. Other, specify: _____	I	2				I 2

Q420a. What types of livestock do you own? <i>(choose all that apply)</i>			Q420b. How many of each type do you own?	Q420c. How many of this livestock did you acquire in the <u>last 12 months</u> ?	Q420e. How many of this type of livestock did you feed fodder in the <u>last 12 months</u> ?
Types of livestock	Yes	No			
1. Traditional Cattle	I	2	[][][][]	[][][][]	[][][][]
2. Dairy Cattle	I	2	[][][][]	[][][][]	[][][][]
3. Oxen	I	2	[][][][]	[][][][]	[][][][]
4. Goats	I	2	[][][][]	[][][][]	[][][][]
5. Sheep	I	2	[][][][]	[][][][]	[][][][]
6. Donkeys	I	2	[][][][]	[][][][]	[][][][]
7. Pigs	I	2	[][][][]	[][][][]	[][][][]
8. Chickens	I	2	[][][][]	[][][][][]	[][][][]
9. Other	I	2	[][][][]	[][][][][]	[][][][]
10. None	9				

Now I want to talk you about times when you don't have enough food for you or your family.

No.	Questions and filters	Coding categories/Response	Skip Pattern
Q421	In the past 4 weeks / 30 days, was there ever a time where you had no food to eat of any kind in your house?	Yes No	1 2 If 'No' skip to Q423
Q422	How many times did this happen in the past 4 weeks/30 days?	Rarely (1 – 2 times) Sometimes (3 – 10 times) Often (more than 10 times)	1 2 3

Q423	In the past 4 weeks / 30 days did you or any member of your household go to sleep at night hungry because there was not enough food?	Yes No	1 2	If 'No' skip to Q425
Q424	How often did this happen in the past 4 weeks / 30 days?	Rarely (1 – 2 times) Sometimes (3 – 10 times) Often (more than 10 times)	1 2 3	
Q425	In the past 4 weeks / 30 days did you or any member of your household go a whole day and night without eating anything at all because there was not enough food?	Yes No	1 2	If No skip to Q427
Q426	How often did this happen in the past 4 weeks / 30 days?	Rarely (1 – 2 times) Sometimes (3 – 10 times) Often (more than 10 times)	1 2 3	

Now I would like to ask you about your household's food supply during different months of the year. When responding to these questions, please think back over the last 12 months, from now to the same time last year.

No.	Questions and filters	Coding categories/Response	Skip Pattern
Q427	Were there months, in the past 12 months, in which you did not have enough food to meet your family's needs?	Yes No	1 2 If No Skip to Q430
Q428	Which were the months in the past 12 months during which you did not have enough food to meet your family's needs? <i>Explain: This includes any kind of food from any source, such as own production, purchase or exchange, food aid, or borrowing.</i> [Do not read the list of months aloud Probe to make sure the respondent has thought about the entire past 12 months] (Choose all that apply)	This month (May), 2015 April, 2015 March, 2015 February, 2015 January, 2015 December, 2014 November, 2014 October, 2014 September, 2014 August, 2014 July, 2014 June, 2014 Don't know	1 2 3 4 5 6 7 8 9 10 11 12 0
Q429	Which month in the past 12 months was most severe in terms of food shortages? (<i>Indicate code as given in Q428</i>)		

Now I would like to ask you about the types of foods that you or anyone else in your household ate yesterday during the day and at night

Q430	What did you have for breakfast, lunch, dinner, tea, snack?	Yes	No	Skip Pattern
a.	Any nshima, bread, rice noodles, biscuits, or any other foods made from millet, sorghum, maize, rice, wheat, or any other locally available grain?	1	2	
b.	Any potatoes, Livingstone potatoes, cassava or any other foods made from roots or tubers?	1	2	
c.	Any vegetables?	1	2	
d.	Any fruits?	1	2	
e.	Any beef, pork, lamb, goat, rabbit wild game, chicken, duck, or other birds, liver, kidney, heart, offals or other organ meats?	1	2	
f.	Any eggs?	1	2	
g.	Any fresh or dried fish or shellfish?	1	2	
h.	Any foods made from beans, peas, lentils, or nuts?	1	2	
i.	Any cheese, yogurt, milk or other milk products?	1	2	
j.	Any foods made with oil, fat, or butter?	1	2	
k.	Any sugar or honey?	1	2	
l.	Any other foods, such as condiments, coffee, tea?	1	2	

Now I want to talk to you about skills training you have received in the last 12 months

<p>Q43Ia. Did you receive any of the following types of skills training in the <u>last 12 months</u>?</p> <p style="text-align: center;"><i>(PROMPT WITH LIST)</i> <i>(Choose all that apply)</i></p> <p style="text-align: center;"><i>PLEASE ASK ABOUT EACH TYPE OF TRAINING ONE AT A TIME!</i></p>		<p>Q43Ib. Who did you receive the training from?</p> <ol style="list-style-type: none"> 1. Government 2. Land O'Lakes/SHARP 3. Lead Farmers through project 4. Other NGO 5. Other (specify) 	
Type of skills	Yes	No	<i>(choose all that apply)</i>
a. Crop husbandry	I	2	
b. Conservation farming	I	2	
c. Human Nutrition	I	2	
d. Fodder production	I	2	
e. Business (agribusiness, financial management, book keeping)	I	2	
f. Savings	I	2	
g. Group governance	I	2	
h. Gender issues	I	2	
i. Disaster Risk Reduction	I	2	
j. Early Warning	I	2	
k. Weather monitoring	I	2	
l. Natural Resources Management	I	2	
m. HIV & AIDS	I	2	
Type of skills	Yes	No	<i>(choose all that apply)</i>
n. Environmental health	I	2	
o. Hygiene and Sanitation	I	2	
p. Others, specify: _____	I	2	

[TREATMENT ONLY] I want to ask you just a few questions about your participation in the Land O'Lakes/ SHARP Project

No.	Questions and filters	Coding categories/Response	Skip Pattern
Q432	TREATMENT ONLY: About how many trainings given by Land O'Lakes/SHARP project or your lead farmer (in your producer) did you attend?	Number of training activities with Land O'Lakes	[_ _]
Q434	TREATMENT ONLY Have you been trained by Land O'Lakes or your lead farmer at the Answer Plot™ or Mini Answer Plot™ sites?	1 Yes 2 No	[_] If "No" SKIP TO Q437
Q435	TREATMENT ONLY About how much training have you attended at the Answer Plot™ sites or Mini Answer Plot™ sites?	Number of training	[_ _]
Q436	TREATMENT ONLY How have you benefited from these Answer Plot™ sites?	_____ _____ _____ _____	

Now I want to ask you about weather information that you may receive

No.	Questions and filters	Coding categories/Response		Skip Pattern
Q437	TREATMENT ONLY Do you receive weather data from the SHARP project (Land O'Lakes or your lead farmer)?	1 Yes 2 No	[]	If "No" SKIP to Q444
Q438	TREATMENT ONLY If YES, how often do you receive this weather data?	Daily Weekly Monthly Every three months Annually	1 2 3 4 5	
Q439	TREATMENT ONLY How do you receive this weather data?	Text Phone Call Lead Farmer Meeting Other	1 2 3 4 5	
Q440	TREATMENT ONLY In your opinion, do you think the weather data is provided in a timely manner to enable you make useful decisions?	Yes No	1 2	
Q441	TREATMENT ONLY Do you use the weather data provided to inform your agricultural decisions?	Yes No	1 2	If 'NO' SKIP to Q444
Q442	TREATMENT ONLY How have you used this weather data?	Decide on what crops to grow Decide on the timing of agricultural activities Make food storage/stocking decisions Make marketing decisions Other	1 2 3 4 5	
Q443	TREATMENT ONLY Are you likely to continue using the weather information even after SHARP project?	Yes No	1 2	

Now I want to ask you about your storage of harvested crop				
Q444	TREATMENT ONLY Do you own a metal silo? <i>(choose all that apply)</i>	Yes No	1 2	If do not use metal silos skip to Q448
Q445	TREATMENT ONLY If have metal silo, for how long have you had the metal silos?	Years	[_____]	Put I if less than one year
Q446	TREATMENT ONLY Where did you obtain the metal silo/s?	SHARP project/Land O'Lakes Open market Other project Other	1 2 3 4	
Q448	TREATMENT ONLY Have you heard about metal silo for crop storage ?	Yes No	1 2	If 'NO' SKIP to END
Q449	TREATMENT ONLY If YES, from whom did you hear about them?	Family/Friends SHARP project/Land O'Lakes Others	1 2 3	
Q450	TREATMENT ONLY Why do you not have a metal silo?	Too expensive Not effective Not available Waiting for it to be built Other specify: _____	1 2 3 4 5	

End of Interview!

THANK YOU!

ANNEX IVG: WATER SANITATION AND HEALTH (WASH) AND DISASTER RISK REDUCTION (DRR) HOUSEHOLD QUESTIONNAIRE

001 Questionnaire Identification Number |__|__|__|

002 District: _____,

003 Agricultural Camp: _____

004 Village Name: _____

005 Name of Respondent: _____

006 Sex of Respondent (circle): Male Female

007 Full name of Household Head: _____

008 Sex of Household Head (circle): Male Female

009 Type of Respondent (circle): TREATMENT CONTROL

010 **TREATMENT ONLY:** Was anyone in your household a member of a WASH or DRR committee that was trained by the SHARP project/ Project Concern International? YES NO011 **TREATMENT ONLY:** If yes, was it a WASH or DRR committee? WASH DRR

012 Interviewer Name: _____

013 Date of Interview: __/__/____

CHECKED BY SUPERVISOR:

Name: _____

Signature: _____

Date: __/__/____

Instructions: Please interview the household head. If the household head is not available, ask for another household member that is knowledgeable about the households' practices that is 18 years or older and interview him/her.

Introduction:

Hello, my name is _____. I am working with Frontline Consultancy a Zambian Company, Your community has been involved in a project to promote water sanitation and health and disaster risk reduction that was led by Land O'Lakes and Project Concern International. I am here to talk to you about current water, sanitation, health and Disaster Risk Reduction practices in your household and community. .

You have been selected completely by chance to participate, and we hope to talk to about 400 other people like you. Your participation is voluntary, and there is no penalty for not taking part or refusing to answer specific questions.

The survey should take about 45 minutes. There is no other cost or risk involved in the study. If you agree to participate, we would like to ask you some questions about yourself, your household, your water, sanitation and health practices, and about hazards and disasters in your community. We are not connected to any government office, or the police. Therefore all your personal information will be kept confidential and secret.

Do you have any questions?

If you think of any questions during the interview, please feel free to ask me.

We now invite you to participate in the study. Would you agree to participate?

IF RESPONDENT ORALLY AGREES, THANK THEM AND CONTINUE

IF RESPONDENT DOES NOT AGREE, THANK THEM AND LEAVE

I have informed the respondent about:
• Who I am
• Where I'm from
• The purpose of the study
• Secrecy
• Writing responses
• Benefits of the study
• Time Cost
• Questions

PART A: WASH

SECTION I:

HOUSEHOLD DEMOGRAPHICS

No.	Questions and filters	Coding categories/ Response	Skip Pattern
QI01	What is your age?	Years [__ __] Don't Know 99	
QI02	What is your marital status?	Single 1 Married 2 Separated 3 Divorced 4 Widowed 5	If 'Married' answer QI03, otherwise, skip to QI04
QI03	What kind of marriage are you in?	Monogamous 1 Polygamous 2	
QI04	What is your occupation?	Working paid employment 1 Small scale trading agriculture 2 Small scale trading in non-agriculture 3 Farmer 4 Other (specify):_____ 5	
QI05	What is the highest level of school you attended?	Did not attend formal school 1 Primary 2 Secondary 3 Tertiary 4	

Now I want to ask you a few questions about the head of your household

No.	Questions and filters	Coding categories/ Response	Skip Pattern
QI06	What is your relationship to the head of household?	Self 1 Spouse 2 Child 3 Sibling 4 Parent 5 Other family member 6 Other non-relation 7	If 'self', skip to QI09

No.	Questions and filters	Coding categories/ Response	Skip Pattern
QI07	What is the occupation of Head of Household?	Working paid employment 1 Small scale trading agriculture 2 Small scale trading in non-agriculture 3 Farmer 4 Other (specify):_____ 5	
QI08	What is the highest level of education of the Head of Household?	Did not attend formal school 1 Primary 2 Secondary 3 Tertiary 4	

Now I want to ask you a bit about your home

No.	Questions and filters	Coding categories/ Response	Skip Pattern
QI09	How long have you lived here in this community?	Number of years [__ __]	
QII0	How many people live in your household?	Total number of people [__ __]	
QIII	<i>Now I want to be a bit more specific about the sex and ages of the people that live in your household.</i> How many males between X and X age live in this household? How many females between X and X age live in this household (MAKE SURE QIII SUMS TO QII0)	Age	M F
		a. 0 to 4	
		b. 5 to 15	
		c. 16 to 25	
		d. 26 to 55	
		e. 56 to 65	
QII2	What is the roof top material of the main structure of your house made of? (select only main one)	Iron sheet/corrugated metal/asbestos 1 Grass thatch/vegetable matter/sticks 2 Plastic sheeting 3 Other:_____ 4	

No.	Questions and filters	Coding categories/ Response	Skip Pattern
QII3	What material is the floor of the main structure of your house made of? (select only main one)	Earth/mud 1 Concrete/cement 2 Tile/bricks 3 Wood/planks 4 Other:_____ 5	
QII4	How many structures does your house have? (excluding toilets and kitchen)	Number of structures [__ __]	
QII5	How many rooms are there in the main structure of your house (excluding toilets and kitchen)?	Number of rooms [__ __]	

SECTION 2: WATER, SANITATION AND HYGIENE

Now I want to ask you about water in your household

No.	Questions and filters	Coding categories/ Response		Skip Pattern
Q201	Where do you currently get your water for _____? 1. Piped water into dwelling 2. Piped water to yard/plot 3. Piped water to public tap/ standpipe 4. Borehole/ hand pump 5. Piped water from mechanized borehole 6. Protected dug well/spring 7. Unprotected dug well 8. Unprotected spring 9. Surface water (river, dam, lake, pond, stream) 10. Rain water collection 11. Other	<i>Type of activity</i>	<i>Code</i>	
		a. Drinking		
		b. Cooking		
		c. Washing dishes		
		d. Washing clothes		
		e. Bathing		
Q203	Do you either pay for the water you use or pay for operation and maintenance costs of the water facility?	Yes No	1 2	
Q204	Is the <u>drinking</u> water always available?	Yes No	1 2	If YES – SKIP TO Q206

No.	Questions and filters	Coding categories/ Response		Skip Pattern
Q205	If yes, where do you get <u>DRINKING water</u> when this happens?	Piped water into dwelling Piped water to yard/plot Piped water to public tap/standpipe Borehole/hand pump Piped water from mechanized borehole Protected dug well/spring Unprotected dub well Unprotected spring Surface water (river, dam, lake, pond, stream) Rain water collection Other	1 2 3 4 5 6 7 8 9 10 11	
Q206	What kind of vessels does your household use to fetch and carry <u>drinking water</u> ? (Choose all that apply)	a. Container with a lid	1	
		b. Container without a lid	2	
		c. Bucket with a lid	3	
		d. Bucket without a lid	4	
		e. Wash basin	5	
		f. Other: _____	6	
Q207	How do you keep/store <u>drinking water</u> for household consumption? (choose all that apply)	a. Container/bucket inside house with lid	1	
		b. Container/bucket inside house without lid	2	

		c. Container/bucket outside the house with lid	3	
		d. Container/bucket outside the house without lid	4	
		e. Other: _____	5	
Q208	Is drinking water stored separately from other water in your house hold?	Yes No	1 2	
No.	Questions and filters	Coding categories/ Response		Skip Pattern
Q209	Do you treat your drinking water in any way to make it safer to drink?	Yes No	1 2	If "No" Skip to Q211
Q210	How do you treat water before drinking? (Choose all that apply)	<i>Treatment</i>	<i>Code</i>	Skip to Q212
		a. Boiling	1	
		b. Adding Chlorine	2	
		c. Filtering through cloth	3	
		d. Allowing to settle	4	
		e. Pouring ash & allowing to settle	5	
		f. Other: _____	6	
Q211	Why don't you treat your water before drinking? (Choose most important one)	Water is safe Too expensive Don't know how Other: _____	1 2 3 4	
Q212	How does your household dispose of used water? (Choose all that apply)	a. Pour it onto the passages/ courtyard b. Pour it into gutters/ drains c. Pour it onto the grass d. Use it for watering plants e. Other: _____	1 2 3 4 5	

Now I want to talk to you about the toilet you use.

No.	Questions and filters	Coding categories/ Response		Skip Pattern
Q213	What kind of toilet facility does your household use?	Flush to piped sewer system Flush to septic tank Pour flush latrine Ventilated improved pit latrine Pit latrine with slab Pit latrine without slab/open pit Bush or field No facilities Other: _____	1 2 3 4 5 6 7 8 9	If "bush/field" or "no facility", skip to Q219
No.	Questions and filters	Coding categories/ Response		Skip Pattern
Q214	Do you share this facility with other households	Yes No	1 2	If "no" skip to Q216
Q215	How many other households share this toilet?	Number of other households	[__ __]	
Q216	Who built/dug the toilet?	Household	1	

		Neighbor Community NGO staff Headman/Royal Council Other: _____	2 3 4 5 6	
Q217	How long ago was the toilet built/dug?	Number of years Number of months	[_ _] [_ _]	
Q218	How often do you clean your toilet?	Once a week or more Less than once a week to once a month Less than once a month to once a year Less than once a year Never	1 2 3 4 5	
Q219	How do you dispose of the stool of infants and babies?	Thrown in toilet, latrine Buried in yard Thrown outside in yard Not disposed of/left on ground Other: _____ No infants/babies in household	1 2 3 4 5 99	
Q220	How do you dispose of domestic waste /trash?	Refuse bin/pit for your house Shared refuse bin/pit outside the house Burying Burning Other: _____	1 2 3 4 5	

Can I please take a look at your latrine?

No.	Questions and filters	Coding categories/ Response	Skip Pattern
Q221	Observation: How far is the latrine from the house?	Attached to house 0-10 meters 11-20 meters 21-50 meters More than 50 meters Not Applicable/no latrine	1 2 3 4 5 99
Q222	Observation: Does the latrine have a sanplat (concrete slab)?	Yes No Not Applicable/ no latrine	1 2 99
Q223	Observation: Is there any sign of animal/human defecation in the courtyard?	Yes No	1 2

Now I want to talk ask you about your hand washing practices

No.	Questions and filters	Coding categories/ Response	Skip Pattern
Q224	At what instances do you normally wash your hands? (do not read the responses to the respondent) (choose all that apply)	<i>Event</i> a. After going to the toilet/bush b. Before/after eating c. Before food preparation d. Before feeding children e. After cleaning baby's bottom f. No washing g. Other: _____	<i>Code</i> 1 2 3 4 5 6 7

No.	Questions and filters	Coding categories/ Response	Skip Pattern
Q225	Describe the method you typically use to wash your hands? <i>(ask to be shown soap/ash if applicable)</i>	Water basin with soap Water basin without soap Running water with soap Running water without soap Water in a dish Running water with ash Still water with Ash Other (specify): _____	1 2 3 4 5 6 7 8
Q226	Do you have a hand washing facility? <i>(ask to be shown the facility)</i>	Yes No	1 2
Q227	Do you have a tippy-tap washing facility?	Yes No	1 2
Q228	How many hand washing facilities do you have?	Number of facilities	[__ __]
Q229	Where are the hand washing facilities located? <i>(Choose all that apply)</i>	a. Inside the house b. Attached to the house c. Attached to the toilet d. Less than 1 meter from the toilet e. 1-3 meters from the toilet f. More than 3 meters from the toilet g. Other: _____	1 2 3 4 5 6 7
Q230	How long ago did you start using a hand washing facility?	Years Months	[__ __] [__ __]

Now I want to ask you about health conditions in your household

No.	Questions and filters	Coding categories/ Response	Skip Pattern
Q231	How often do members of your households have diarrhea?	Every day More than once a week to once a week Less than once a week to once a month Less than once a month to once a year Never Don't Know	1 2 3 4 5 98
Q232	What do you think causes diarrhea? <i>(choose all that they say)</i> DO NOT PROMPT	a. Eating spoiled food b. Eating food sold by street vendors c. Eating food that is dirty d. Drinking dirty water f. Using dirty toilets g. Defecating in the open h. Take vaccines	1 2 3 4 5 6 7

		i. Other: _____	8	
		j. Don't know	98	
Q233	How do you usually treat Diarrhea? (write down what they do most commonly) DO NOT PROMPT	Take Oral Dehydration Fluid (ORS) Use traditional medicine at home Visit the clinic No action: it will go away on its own Other: _____ Don't Know	1 2 3 4 5 98	

SECTION 3: TRAINING ON WATER, SANITATION, AND HEALTH

Now, I want to talk to you about any training that you have received about water, sanitation and health.

	Topic types	30Ia. Have you received training on the following topics?		30Ib. Who provided this training? 1. PCI/training from satellite committee 2. Village WASH committee/ Community members 3. Government 4. Other NGO 5. Other (specify) (Choose all that apply)
		Yes	No	
a.	Latrine Construction	1	2	
b.	Hand washing facility construction	1	2	
c.	Waste management	1	2	
d.	Disposal of fecal matter	1	2	
e.	Open defecation	1	2	
f.	Washing hands	1	2	
g.	Storage of water	1	2	
h.	Treatment of water	1	2	
i.	WASH Action Planning	1	2	
j.	Other: _____	1	2	

Now, I want to talk to you specifically about trainings that you received from WASH committee members/ community members in your village.

No.	Questions and filters	Coding categories/ Response		Skip Pattern
Q302	In the last 12 months, did you or anyone in your household receive training on water, sanitation and health (WASH) from a WASH committee in your village or community members instructed by a project? <i>(If they say "no" please probe to be sure they understand what you are asking)</i>	Yes No	1 2	If "NO", skip to PART B

No.	Questions and filters	Coding categories/ Response		Skip Pattern
Q303	After the trainings from the WASH committee or community members, did you change any of your water treatment, water storage, fecal matter	Yes No	1 2	If "NO" skip to PART B

	disposal, trash disposal, or hand washing practices?			
Q304	What practices did you change? (<u>Prompt</u> with type of practice) (Choose all that apply)	a. Drinking water storage	1	Complete appropriate boxes below
		b. Water treatment	2	
		c. Toilet facility	3	
		d. Toilet cleaning	4	
		e. Infant fecal matter disposal	5	
		f. Hand washing practices	6	
		g. Trash disposal	7	
Q305	<i>If changed drinking water storage practices</i> , How did you store your drinking water prior to the trainings from the WASH committee or community members?	a. Container/bucket inside house with lid	1	
		b. Container/bucket inside house without lid	2	
		c. Container/bucket outside the house with lid	3	
		d. Container/bucket outside the house without lid	4	
		e. Other: _____	5	
Q306	<i>If changed water treatment</i> , How did you treat your water prior to the trainings from the WASH committee or community members? (Choose all that apply)	a. Boiling	1	
		b. Adding Chlorine	2	
		c. Filtering through cloth	3	
		d. Allowing to settle	4	
		e. Pouring ash/allowing to settle	5	
		f. Other: _____	6	
		g. No treatment	7	

No.	Questions and filters	Coding categories/ Response	Skip Pattern
Q307	<i>If changed toilet facility</i> , What type of toilet facility did you have prior to the trainings from the WASH committee or community members?	Flush to piped sewer system 1 Flush to septic tank 2 Pour flush latrine 3 Ventilated improved pit latrine 4 Pit latrine with slab 5 Pit latrine without slab/open pit 6 Bush or field 7 No facilities 8 Other: _____ 9	
Q308	<i>If changed toilet cleaning</i> , how many times were you cleaning your toilet prior to training from the WASH committee or community members?	Once a week or more 1 Less than once a week to once a month 2 Less than once a month to once a year 3 More than once a year 4 Never 5	

Q309	<i>If changed disposal of infant fecal matter.</i> How did you typically dispose of infant fecal matter prior to the trainings from the WASH committee or community members?	Thrown in toilet, latrine Buried in yard Thrown outside in yard Not disposed of/left on ground Other: _____ No infants/babies in household	1 2 3 4 5 99	
Q310	<i>If changed hand washing practices.</i> When did you typically wash your hand prior to the trainings from the WASH committee or community members? (Choose all that apply)	a. After going to the toilet/bush b. Before/after eating c. Before food preparation d. Before feeding children e. After cleaning baby's bottom f. No washing g. Other: _____	1 2 3 4 5 6 7	

No.	Questions and filters	Coding categories/ Response	Skip Pattern	
Q311	<i>If changed hand washing practices.</i> Did you have a hand washing facility prior to the trainings from the WASH committee or community members?	Yes No	1 2	
Q312	<i>If changed hand washing practices.</i> What method did you typically use to wash your hands prior to the trainings from the WASH committee or community members?	Water basin with soap Water basin without soap Running water with soap Running water without soap Water in a dish Running water with ash Still water with ash Other: _____	1 2 3 4 5 6 7 8	
Q313	<i>If changed trash disposal</i> How were you disposing of household waste/trash prior to the trainings from the WASH committee or community members?	Refuse bin/pit for your house Shared refuse bin/pit outside the house Burying Burning Other: _____	1 2 3 4 5	

PART B: DISASTER RISK REDUCTION (DRR)

Now I want to ask you questions pertaining to the matters of Disaster Risk Reduction (DRR)

SECTION I: HISTORY

First I want to ask you about discussions that you might have had on DRR in your community

No.	Questions and filters	Coding categories/ Response	Skip Pattern	
Q401	In the last 12 months, were you or anyone in your household involved in community discussions about reducing the risk of disasters in your village?	Yes No	1 2	If "NO" Skip to Q404
Q402	If yes, what topics did you discuss? (choose all that apply)	Types of hazards Mapping hazards in community	1 2	

		Early warning signs for disasters	3	
		How to avoid disasters	4	
		How to mitigate against disasters	5	
		How to respond to disasters	6	
		Other: _____	7	
Q403	Who led these meetings? <i>(Choose all that apply)</i>	a. PCI/DRR Satellite Committee	1	
		b. DRR village committee	2	
		c. Government	3	
		d. Other NGO	4	
		e. Other: _____	5	

SECTION 2: HAZARDS

Now I want to talk to you about **HAZARDS/DISASTERS** that can happen in your community

Q404a. What are the common hazards/ disasters that exist in your community? 1. Flood 2. Droughts 3. Livestock disease 4. Human disease 5. Crop pest 6. Scarcity of water 7. Other: _____ 8. None 9. Don't know (DO NOT PROMPT)	Q404b. How often does this type of hazard/disaster occur? 1. More than once a year 2. About once a year 3. About once every 2 years 4. About once every 3 years 5. Less than once every 3 years	Q404c. How quickly do these hazards/ disasters happen? 1. Slow 2. Quick	Q404d. How long do these hazards/ disasters last? 1. Less than 1 month 2. About 1 month 3. About 2 months 4. About 3 months 5. More than 3 months	Q404e. What warning signs are there for this hazard/disaster? 1. Late onset of rain 2. Flowering of certain plants 3. Strong wind blowing from east to west 4. Abundance of ticks on crops/grass 5. River water having a unique smell 6. Ants moving their eggs and crabs to higher ground 7. Birds being active on nesting 8. Outbreak of rodents prior to planting time 9. Others (specify)	Q404f. If you learn that this hazard/ disaster is coming, what would you do to prepare or mitigate the disaster? 1. Crop planning 2. Food Preservation 3. Reinforcement of houses and food barns 4. Use of improved agric methods 5. Collection of wild fruits and edible tubers/vegetables 6. Transfer movable assets to safer ground 7. Evacuate the danger zones 8. Water preservation and rationing 9. Others (specify)
A					
B					
C					
D					
E					

Now I want to talk to you about **DISASTERS** that happened in your community in the last 12 months

Q405a. What disasters occurred in your community in the last 12 months? 1. Flood 2. Droughts 3. Livestock disease 4. Human disease 5. Crop pest 6. Scarcity of water 7. Other (specify) 8. None 9. Don't Know (DO NOT PROMPT)	Q405b. When did this disaster occur? I. April 2015 2. March 2015 3. Feb 2015 4. Jan 2015 5. Dec 2014 6. Nov 2014 7. Oct 2014 8. Sep 2014 9. Aug 2014 10. July 2014 11. Jun 2014 12. May 2014
A	
B	
C	
D	
E	

No.	Questions and filters	Coding categories/ Response	Skip Pattern
Q406	When the disasters occurred in the last 12 months, did you receive any early warning information that indicated that the disaster was coming?	Yes No	1 2 If "NO" Skip to END
Q407	If yes, how did you receive the early warning information? (CHOOSE ALL THAT APPLY)	DRR Committee Member/community member Village Leader Radio Neighbor NGO Other: _____	1 2 3 4 5 6
Q408	What did you do with the early warning information?	Adjusted agricultural practices Changed crop type Incorporated other livestock type Put in place evacuation plan Improved on Hygiene practices Started food and water rationing Other _____	1 2 3 4 5 6 7

THANK YOU!

FGD Guide

VILLAGE COMMITTEE MEMBERS**Location Data**

<i>District Name</i>		<i>Camp Name</i>	
<i>Facilitator</i>		<i>Note Taker</i>	
<i>Date</i>		<i>Time Start</i>	<i>Time End</i>

Record down names of participants

<i>Participant Name</i>	<i>Sex</i>	<i>Age</i>	<i>Marital Status</i>	<i>Occupation</i>
1				
2				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Instructions: As participants arrive, thank them for coming, welcome them, and engage in a friendly conversation. During the discussion, listen carefully to each response, and try to have a “natural” conversation with the group rather than following the guide line by line. Try to ensure that all participants feel comfortable in the group setting, and are given the chance to speak.

Introduce yourself and the note-taker

- Describe why you are convening the discussion.
- Ask participants to introduce themselves
- Agree on the norms and confidentiality of the discussion:
 - Session is in the form of a discussion, where everyone shares their own ideas and opinions
 - One person speaks at a time
 - Feel free to speak openly, there are no right or wrong answers
 - When responding to questions, leave enough time for other group members to also share their thoughts
 - All members of the group should treat one another with respect, no matter if you agree with their opinion or not
 - All information shared in the discussion is confidential, and no one should share any information they hear today with anyone outside the group.
 - Please turn off or silence your cell phones during the discussion
- Affirm (with a show of hands) that all participants are there voluntarily and know that they can withdraw from the group if they want to. Assure participants that the recording, and any notes taken from it will be confidential.

DISCUSSION QUESTIONS

Today I want to talk to you about participation in the Village WASH committees.

WASH Committee Formation

- How you were initially identified to be a part of the WASH committee?
- Why did you want to be a member of this committee? Are there incentives given?
- How were the members selected?
- How often does the WASH Committee Meet? Are all members still in the committee? If no why?

- When was the last meeting in the past 1 month?
- Do all members attend meetings?
- Are there any power struggles or conflicts amongst committee members? Explain?
- Do you keep a record of minutes Collect (*ask for copies of minutes for the past three months?*)
- Does the Committee meet with the community? How often in the past 3 months

Water Sanitation and Hygiene Training

- What training did you receive in readiness for project activities
- How many Committee members were trained?
- Who conducted the training and for how long was the training?
- What WASH practices did you learn
- Was the training beneficial? If yes what new practices (if any) did you learn?
- What areas of training were particularly challenging
- What WASH problems did you identify in your communities?
- Are they still active if not why?
- What other support have you received?

WASH committee Functions

- What are the functions of your committee
- What WASH activities has your Committee carried out (probe any activity eh meeting with communities)
- How are you engaging the community members in your community?
- What strategy are you using to spread the WASH information
- What has been the response from community members
- What has been the challenges of this strategy
- Thus far what would you say are your accomplishments?
- How do you think the WASH activities have affected Wash practices in the community

WASH Practices

What problems around WASH did you identify in your communities?

- What challenges are you facing implementing WASH activities in your community?
- Are there internal or external forces that are constraining your work? Explain
- Can these constraints overcome? Suggest
- What is the current attitude towards improving water, sanitation and hygiene in your communities?
- Have the intended targets been reached have you been able to reach your intended targets if not why not
- Have the project activities improved or led improved hygiene behavior in the households in your community? Explain what practices?
- (*Probe* with the following topics:
- **Storage of drinking water,**
- **Treatment of drinking water,**
- **Disposal of stool,**
- **Hand washing practices).**
- How do you do that? What data do you collect? How often? (**Collect figures of HH with pit latrines**
- What suggestions do you have on how to improve the work of the WASH Village Committee in future?
- How else can the Satellite committees help your committees to improve the water, sanitation and hygiene practices in your communities

Sustainability

- Will you continue with WASH activities once the external support is terminated?
- Why do you want to continue doing this work?
- How will you do that?
- What areas will be challenging to sustain once the projects is terminated?
- Do have suggestions of how this can be improved?

WASH Satellite Committee

Key Informant Guide

Respondent Name:.....
 Sex:.....
 Satellite Committee District:.....
 Satellite Committee Camp:.....
 Date:.....
 Interviewer Name:.....

Instructions: Use the questions only as a guide, and probe further where necessary. Request external information (reports, data, etc), if applicable.

Introduction:

- My name is -----I am currently participating in a project led by Land O'Lakes and Project Concern International, called the SHARP Project. I am here to discuss the benefits and challenges of participating in the project, so that the organizations can improve the project in the future).
- All information you provide is confidential, and will not be connected with their name in any reports. They are there voluntarily and can refuse to answer any questions, or leave at any time.

QUESTIONS

I. SATELLITE COMMITTEE

(Formation and training)

I want to talk about the formation/rejuvenation of your committee and the training you received

- How were members of your satellite committee identified?
- What type of training did you receive from the project (PCI)?
- What topics/concepts were new to you and other members of your committee?
- What topics/concepts were challenging?
- How long was the training
- Comment on the benefits of the training you participated in?
- Are there any concerns in the way training was conducted? If yes what improvements should be done on the training was provided?

2. Training /Capacity Building of VILLAGE COMMITTEES

Now I want to talk about your committee's training of the village committee

- How did you identify (criteria) the members of the village committees?
- Describe how you trained the village committees (what topics, what methods and duration of the training?)
- What has been the feedback from trained Village Committees
- What aspects of the training have worked well?
- What challenges did you face in training the village committees?
 - What topics/concepts were challenging for the village committee members?

Overseeing WASH

Next I want to talk about the role/purpose of your satellite committee

- What are the functions and role(s)/purpose of the satellite committee?
- Is your Committee active? How often do you meet as a satellite committee?
- How often do you meet and what types of topics do you discuss at your meetings?
- How have you been overseeing the village committees, as they promote improved water, sanitation and hygiene and disaster risk reduction practices in their communities?
 - What information/data have you been collecting about the villages?
- What has been your experience in promoting WASH in the village committees?
- Have you achieved that you wanted to achieve? If Yes What WASH practices?
- Have you achieved what you set out to achieve?

- What internal or external factors have contributed to your achievements?
- What are the main challenges in communities adopting health practices, washing of hands after use of toilet and before eating?
- If you were given a chance to redesign, which things would you could emphasize on?
- Which things you could avoid repeating?

Sustainability

Lastly, I want to talk about your committee in the future

- Will your satellite committee continue to function after the project ends?
- How will you do that?
- Why do want to do that?
- What challenges do you expect to face to sustain the function of your satellite committee in the future?
- What more could have been done to make the project sustainable?

**SUSTAINABLE HEALTH AND AGRICULTURE FOR RESILIENT POPULATIONS (SHARP)
END OF PROJECT EVALUATION**

KEY INFORMANT INTERVIEW GUIDE: ANSWER PLOT FARMER

Please record the following details before the interview:

- (i) District Name
 - (ii) Person Interviewed
 - (iii) Position
 - (iv) Contact Details and,
 - (v) Date of Interview.
1. How were you selected to host the Answer Plot?
 2. What is the size of the Answer Plot?
 3. What crops do you have in the Answer Plot?
 4. How did the crops performance?
 5. How was the Answer Plot used in the project?
 6. What were the objectives of the Answer Plot?
 7. How did the community benefit from the Answer Plot?
 8. What challenges did you face with the Answer Plot?
 - a. Technical challenges
 - b. Community challenges
 - c. Other challenges
 9. In your opinion, do you think the Answer Plots achieved the intended purpose?
 10. How can the Answer Plot concept be improved in future?

THANK YOU FOR YOUR TIME AND COOPERATION

FGD COMMUNITY MEMBERS

WASH

Demographics of Participants

Participant #	Sex	Age	Marital Status	Occupation
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Introduction [When the group is complete]

- Introduce yourself and the note-taker
- Describe why you are convening the discussion. For example: *You are all participating in a project led by Land O'Lakes and Project Concern International, called the SHARP Project. We are here to discuss the benefits and challenges of participating in the project, so that the organizations can improve the project in the future. The discussion should take about 1 1/2 hours.*
- Ask participants to introduce themselves
- Agree on the norms and confidentiality of the discussion:
 - Session is in the form of a discussion, where everyone shares their own ideas and opinions
 - One person speaks at a time
 - Feel free to speak openly, there are no right or wrong answers
 - When responding to questions, leave enough time for other group members to also share their thoughts
 - All members of the group should treat one another with respect, no matter if you agree with their opinion or not
 - All information shared in the discussion is confidential, and no one should share any information they hear today with anyone outside the group.
 - Please turn off or silence your cell phones during the discussion
- Affirm (with a show of hands) that all participants are there voluntarily and know that they can withdraw from the group if they want to.
- **[IF TAPE RECORDING]** Affirm (with show of hands) that participants agree to have the session recorded. Assure participants that the recording, and any notes taken from it will be confidential.

Discussion Questions

Tell me about thee WASH activities being addressed by the PCI project

What WASH practices that you learned about water, sanitation

Who conducted the dissemination?

What strategy was used in disseminating the information?

What practices that you learned about water, sanitation and hygiene you have adopted in your households? (*Probe* with the following topics: (*how are you doing it? why?*))

- Storage of drinking water,
- Treatment of drinking water,
- Disposal of stool,

- Hand washing practices
- What were your health and Hygiene behavior before the project?

Water and Hygiene Practice

- What is the current attitude towards improving water, sanitation and hygiene in your community
- How many households are involved in the project?
- How has the project changed your health and hygiene behavior in your household probe (hand washing practices, refuse disposal)?
- Why have you changed?
- What parts of the project activities have you benefited from
- Social benefits?
- Psychological benefits?
- Do you know of any households that have constructed latrines on their own/ dug rubbish pits on their own? Why?
- What problems or challenges do you expect to face in improving water, sanitation and hygiene practices in your communities?

Sustainability

- How do you expect the activities under the project to be sustained beyond the project?
- What parts of the project activities or benefits do you expect to sustain by the beneficiaries after the project?
- Are satisfied with the project If not why not?
- Suggest what else should have been done more to improve the project?

SHARP FINAL EVALUATION
 DRR FGD Guide: VILLAGE COMMITTEE MEMBERS

Location Data

<i>District Name</i>		<i>Camp Name</i>	
<i>Facilitator</i>		<i>Note Taker</i>	
<i>Date</i>		<i>Time Start</i>	<i>Time End</i>

Demographics of Participants

<i>Participant #</i>	<i>Sex</i>	<i>Age</i>	<i>Marital Status</i>	<i>Occupation</i>
1				
2				
3				
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12				

Instructions: As participants arrive, thank them for coming, welcome them, and engage in a friendly conversation. During the discussion, listen carefully to each response, and try to have a “natural” conversation with the group rather than following the guide line by line. Try to ensure that all participants feel comfortable in the group setting, and are given the chance to speak.

Introduction [When the group is complete]

- Introduce yourself and the note-taker

- Describe why you are convening the discussion. For example: *You are all participating in a project led by Land O'Lakes and Project Concern International, called the SHARP Project. We are here to discuss the benefits and challenges of participating in the project, so that the organizations can improve future projects. The discussion should take about 1-2 hours.*

- Ask participants to introduce themselves

- Agree on the norms and confidentiality of the discussion:
 - Session is in the form of a discussion, where everyone shares their own ideas and opinions
 - One person speaks at a time
 - Feel free to speak openly, there are no right or wrong answers
 - When responding to questions, leave enough time for other group members to also share their thoughts
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- Affirm (with a show of hands) that all participants are there voluntarily and know that they can withdraw from the group if they want to.

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DISCUSSION QUESTIONS – DRR

Today I want to talk to you about participation in the Village DRR committees.

Q1. How were you initially identified to be a part of the village committee?

- What proportion of the members of your committee are women?

Q2. What training on disaster risk reduction has your committee received?

- What new ideas did you learn?
- What topics did you find beneficial from the training?
- What topics/concepts were challenging?
- How can the training be improved?

Q3. How did your committee go about developing a DRR plan for your community? (**Probe:** Who was involved? What different things did you talk about?)

- How did the committee involve the community in the development of this plan?
 - What were the benefits of involving the community?
 - What were the challenges of involving the community?
- What major hazards did you identify in your communities?
 - What traditional early warning signs did you identify for these hazards?
 - What ways have you identified to mitigate or prepare for these hazards?
 - What types of early warning systems has your committee prepared for these hazards?
- What has your committee done to spread information, skills and knowledge on disaster mitigation and response to other community members?

Q5. What disaster risk reductions have you implemented in your community so far?

Q6. What disasters have occurred in your community in the last 12 months?

- Was type of early warning system(s) was used for the disaster(s), if any? Explain
 - How did the early warning system(s) function?
- What did the community do to prepare for or mitigate the disaster(s)?
- How did the activities help to reduce the severity of the disaster?
- What ways can your DRR activities be improved for similar disasters in the future?
- What benefits have you seen in having a DRR village committee as opposed to the way the situation was before the project intervention?

Q7. What challenges have you faced in promoting DRR in your community?

- How have you dealt with these challenges?

Q8. Do you expect your village committee to continue to function after the project ends?

- If yes, what activities will the village committee continue to do?
- If no, why not?

Q9. How else could the satellite committees or the project help your committees to reduce the effect of disasters in your communities?

