LASER PULSE

Long-term Assistance and Services for Research (LASER) Partners for University-Led Solutions Engine (PULSE)

SOUTH SUDAN MULTI-YEAR EMERGENCY (MYE) ACTIVITY IMPACT EVALUATION

Final Report

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ABOUT LASER PULSE

LASER (Long-term Assistance and Services for Research) PULSE (Partners for University-Led Solutions Engine) is a five-year, $70M program funded through USAID's Innovation, Technology, and Research Hub, that delivers research-driven solutions to field-sourced development challenges in USAID partner countries.

A consortium led by Purdue University, with core partners Catholic Relief Services, Indiana University, Makerere University, and the University of Notre Dame, implements the LASER PULSE program through a growing network of 2,700+ researchers and development practitioners in 61 countries.

LASER PULSE collaborates with USAID missions, bureaus, and independent offices, and other local stakeholders to identify research needs for critical development challenges, and funds and strengthens the capacity of researcher-practitioner teams to co-design solutions that translate into policy and practice.

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ACRONYMS

BHA	Bureau for Humanitarian Assistance
CARB	Complementary Action for Resilience Building in South Sudan
DRC	Danish Refugee Council
FAO	Food and Agriculture Organization
FCS	Food Consumption Score
FGD	Focus Group Discussion
GEWLP	Gender Equity and Women's Leadership Program
HHS	Household Hunger Score
IRB	Institutional Review Board
KII	Key Informant Interviews
LASER	Long-term Assistance and Services for Research
MAD	Minimum Acceptable Diet
MIYCN	Maternal, Infant, and Young Child Nutrition
MUAC	Mid-Upper Arm Circumference
MYE	Multi-Year Emergency
NGO	Non-Governmental Organization
NRC	Norwegian Refugee Council
PDRA	Participatory Disaster Risk Assessment
PULSE	Partners for University-Led Solutions Engine
RAN	ResilientAfrica Network
RCT	Randomized Controlled Trials
ToC	Theory of Change
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development
VSLA	Village Savings and Loans Association
WFP	World Food Program
WASH	Water, Sanitation and Hygiene

EXECUTIVE SUMMARY

USAID/Bureau for Humanitarian Assistance (BHA) funded a Multi-Year Emergency (MYE) Activity for the 2021-2023 period with the objectives of mitigating the impact of shocks, preventing the erosion of household assets and livelihoods, and accelerating recovery in South Sudan. The intervention aimed to contribute to the future resilience of affected households and communities. The Complementary Action for Resilience Building in South Sudan (CARB), led by the Norwegian Refugee Council (NRC), was implemented in Western Bahr el Ghazal and Unity states. Some of the major activities under CARB included agriculture training, vocational training, enterprise development activities, saving and lending group support activities, essential nutrition support services, cash/food vouchers, peacebuilding, and health and hygiene activities.

To measure the impact of MYE Activity rigorously, a randomized control trial (RCT)-based impact evaluation was designed in which some villages in CARB program areas were assigned to control (not receiving interventions) and treatment (receiving interventions). However, both the treatment and control villages had access to life-saving emergency relief when it was needed, and the activities that were randomized were the supplemental activities. Baseline data to construct indicators was collected in October-November 2021, and the baseline report was submitted to USAID in March 2022. This report presents the results of the endline survey that was conducted in 2023.

Given the multi-year nature of the Activity, the expected outcome of the MYE is improved food and nutrition security with improved resilience at household and community levels. Particularly, this evaluation answers the following questions:

1. What are the impacts of the Activity on household food and nutrition security?
2. What are the impacts of the Activity on households' abilities to mitigate and recover from conflict or climate-related shocks and stresses?
3. What are the impacts of the Activity on building community resilience?
4. What value does the MYE activity add compared to a typical approximately 12-month activity?
5. What are the added advantages of layering MYE Activity with other USAID emergency, non-emergency, and resilience activities?
6. Is the MYE Activity cost-effective?[1]

The indicators determined for the MYE Activity evaluation were limited to a selection of standard USAID resilience and food security indicators to minimize the time burden on respondents during data collection. The households have limited time to sit for a long interview because of ongoing emergencies in CARB program areas. Requiring households to participate in lengthy interviews is unethical from a

[1] The null impact resulting from the contamination of the RCT hindered our ability to compare treatment and control groups and assess the cost effectiveness of the interventions. Instead, we pivoted to a cost efficiency analysis with best available financial data.

research point of view as it takes time away from their livelihood activities. On average, each survey took approximately 60 minutes to complete. The evaluation team, in consultation with BHA, selected 20 key indicators to measure MYE Activity impacts. The survey included eight modules in addition to demographic variables.

The evaluation team for this study, comprised of the University of Notre Dame, ResilientAfrica Network, and Gender Equity Women's Leadership, with the support of NRC, identified 169 villages to be included in the RCT design from three counties in Mayom, Rubkona, and Wau.

For the baseline, we completed surveys in 150 villages (Mayom: 67, Rubkona: 45, and Wau: 38). In addition, 21 key informant interviews (KIIs) were also completed to capture the general context in evaluation areas. Conflict and flooding precluded the ability of the survey team to survey 19 villages. As a result, these villages were dropped from the sample. The enumerators surveyed a total of 3,442 households— 1,672 control and 1,770 treatment villages. A balance test was conducted to assess the baseline situation in control and treatment villages. The result shows treatment and control villages are similar for the selected covariates. This confirms that our control and treatment villages are statistically comparable. Further, the baseline values for all indicators—food security, nutrition, resilience, peacebuilding, and water, sanitation and hygiene (WASH)—were statistically similar in control and treatment, indicating that the initial status of these aspects was comparable in both groups.

For the endline, we completed surveys in 143 villages (Mayom: 60, Rubkona: 45, and Wau: 38). In addition, 19 KIIs and 18 focus group discussions (FGDs) were also completed to capture the general context and program impacts in evaluation areas. Conflict and flooding precluded the ability of the survey team to survey 7 villages. As a result, these villages were dropped from the sample. The enumerators surveyed a total of 2,442 households—1,219 **in** control and 1,223 **in** treatment villages. A test was conducted to evaluate the balance situation in control and treatment villages.

The researchers conducted an attrition analysis by comparing the dropout rates between the control and treatment groups. The control group had a 27% attrition rate, while the treatment group had a slightly higher rate of 30%. This higher attrition in the treatment group indicates a positive attrition. The overall attrition rate was 29%. The observed levels of overall and differential attrition in our study do not pose a risk of bias due to attrition.

The balance test at the endline shows most of the observables are statistically comparable in control and treatment groups, confirming similarity between the two groups. There were a few key findings based on the endline survey conducted from October through December 2023.

We failed to detect any significant impact of the intervention on food security and nutrition in the treatment group. However, two indicators showed significance: ***the percentage of households participating in group-based savings and lending activities,*** and ***the percentage of households with soap and water at a handwashing station***. However, these results were

significant at the 10% level, not the 5% level, which is the standard threshold for declaring statistical significance in an impact evaluation. More households in the treatment group participated in various group savings and lending activities due to CARB's intervention, which helped to support their livelihoods. Additionally, more households in the treatment group became aware of health and sanitation practices, leading to an increase in the presence of soap at handwashing stations.

While there were improvements in several indicators from baseline, such as a reduction in households with a poor Food Consumption Score (FCS) from 24% to 11% from baseline to endline in the treatment group, these gains did not translate into a substantial advantage over the control group. The control group also had a similar gain between baseline and endline. Several factors likely contributed to this null finding. First, it was impossible to control the activities of other agencies in the control villages due to ethical considerations that prevent restricting aid in emergency contexts. Consequently, the control group also showed improvements in several indicators, likely due to the support provided by development agencies active in the study area. Nearly 40% of households in the control group received some form of support from these implementing agencies. Some of the implementing agencies active in the area include Food and Agriculture Organization (FAO), World Food Program (WFP), CARE, World Concern, DRC, NRC, and Red Cross. Moreover, approximately 50% of households in the control group reported receiving external food support, which likely influenced the improvements in food security-related indicators observed in the control group.

Additionally, the consortium implementing partners reported numerous obstacles in reaching the target population, including flooding and local conflicts, which hindered the full implementation of planned activities in the treatment group. As a result, only about 40% of households in the treatment group received some form of intervention. Moreover, the intervention was less intense than planned, risking diminished effects among the treatment households.[2] This low rate of exposure to the intervention activities is likely due to several factors, including both IP prioritization of services during a fluctuating emergency situation, and our sampling strategy, which aimed to be representative of treatment areas and track the same respondents longitudinally.

Focus groups and KIIs provided additional information and context of how shocks and stresses exacerbated challenges in study areas. Key informants reported that while there were efforts from implementing partners to provide various activities, local level needs overshadowed the implementation. Key informants noted that the demand for various forms of support—such as food assistance, cash transfers, and school feeding—far exceeded what the program could provide, especially as flooding worsened the situation. The implementing partners in treatment villages struggled to operate effectively

[2] Due to the high contamination in control areas, and low take-up in treatment areas, we also present supplemental analysis in Annex 1, which compares households which received the intervention and those that did not. This analysis finds that households which received the intervention activities are better off at endline, across several domains. However, a lack of a causal design limits our ability to interpret those findings in relation to the MYE activity.

under these conditions, complicating the program's execution. Capacity issues also played a role, with partners facing difficulties in financial management and technical implementation.

The community-level initiatives supported by MYE, such as peace committees, early warning systems for floods, and community infrastructure projects, have contributed to improved resilience, though their overall impact is less clear compared to the household level. Food insecurity in the community remains severe due to ongoing floods and other challenges, reducing food rations to about 10% of previous amounts and rendering agricultural land unusable per the key informants. The flood has forced residents to move to unproductive areas and rely on desperate measures like cutting trees for charcoal and foraging for water lilies, amidst health risks. The lack of infrastructure further complicates access to food, exacerbated by the return of people from Sudan, increasing the demand for limited resources. Despite these challenges, there are instances where CARB Activity were reported to have empowered women by providing business skills, leadership training, and promoting peace-building and conflict resolution. These initiatives were noted to improve women's roles in their communities, improve their financial security through group savings programs, and provide agricultural training to boost food security and nutrition, showcasing a holistic approach to empowerment. However, as mentioned earlier, these changes were observed only in certain areas during qualitative data collection and did not generate enough momentum to affect change across all study areas.

Although the MYE Activity program did not achieve the desired changes in the study area, we still explored the added value of MYE approach over traditional single-year or sector-specific intervention. Based on the KIIs and desk review of program documents and literature, we can say that MYE has the capacity to contribute to community resilience and empowerment through various climate-adaptive initiatives and livelihood diversification strategies. Implementers highlighted the benefits of MYE activities, particularly in training and knowledge transfer. Initiatives such as farmer gardens and Village Savings and Loans Associations (VSLAs) equipped individuals with essential skills, promoting economic empowerment and social cohesion. FGD participants also agreed, noting their involvement in various MYE-supported activities such as training, gardening, and VSLA. The endline survey result also confirmed the households' participation in VSLAs in treatment groups, resulting in some improvements in livelihoods and well-being.

Layering MYE activities with other USAID emergency, non-emergency, and resilience initiatives offered multiple advantages, addressing the complex and interconnected needs of communities more holistically. This integrated approach ensured comprehensive support by covering various necessities simultaneously, fostering a more robust and sustainable impact. Enhanced local markets and economic structures, including the creation of market infrastructure and farmers' associations, regulated prices, and improved product quality, contributed to economic resilience. Project evaluations from South Sudan, such as those by Tearfund and the combined efforts of ALIMA and Solidarités International, demonstrated the effectiveness of integrated approaches in improving food security, health, and overall community resilience. Despite these gains, frequent and severe shocks like conflict and natural disasters posed

significant challenges, highlighting the need for adaptive strategies and robust contingency plans to sustain positive impacts.

One of the research questions concerned the cost-effectiveness of MYE activities. The null impact resulting from the contamination of the RCT hindered our ability to compare treatment and control groups and assess the cost effectiveness of the interventions. However, we conducted a cost efficiency analysis for four major program areas consisting of 18 different project activities. The overall cost for activities was $1,689,700 with a total beneficiary reach of 99,398 which translates to $17 per beneficiary reach. In terms of the program areas, the resilience program was the least cost efficient while the nutrition program was the most cost efficient overall, however, the cost efficiencies vary considerably across the three counties, four program areas and 18 activities.

Recommendations

- **Selective Evaluation Criteria:** Ensure that emergency programs are thoroughly reviewed for suitability before executing an RCT-based impact evaluation. Consider all foreseeable challenges, such as natural disasters and the involvement of other agencies in program areas, to determine if the program qualifies for rigorous evaluation.
- **Enhancing RCT Integrity through Coordination**: In complex emergency contexts with multiple responders, implementing partners and evaluators should maintain effective communication. Regular assessment and mapping of other agencies' activities at baseline and midline stages is crucial. This practice helps identify RCT contamination risks, enables timely corrective actions, and enhances result interpretation by providing insight into external influences on project outcomes.
- **Comprehensive Implementation and Monitoring**: Iteratively develop an implementation plan that includes full-fledged activities to ensure impact. Establish a robust monitoring plan with strict measures to address delays and other issues promptly, ensuring timely and effective program execution.
- **Field Validation and Midline Survey**: Facilitate field visits for research team members to validate the study design and ensure security considerations are met. Also, it is crucial to implement a midline survey to understand compliance issues in the RCT design.
- **Actively Involve Implementers Beyond the Co-creation of the Evaluation Design**: It is important to actively involve implementers to ensure compliance and timely reporting of issues, clearly defining the roles of field staff in the research process.
- **Co-Creation of Intervention Programs**: Involve community members in designing intervention programs with specific activities and rank activities under different challenges (i.e., conflict, natural disaster) so that MYE activities can rapidly adapt to the emerging context.
- **Process Monitoring**: It is essential to implement an independent monitoring system to ensure that planned activities are effectively executed in the field. This system will help identify and

document any implementation issues, allowing for timely corrections to ensure the project achieves its goals.

- **Data Collection Timing**: It is crucial to plan data collection activities outside of the rainy season. This period can severely disrupt enumerators' travel and displace community members, making it challenging to track and interview them.

INTRODUCTION

In 2020, USAID's Bureau for Humanitarian Assistance (BHA) launched a pilot multi-year emergency (MYE) initiative in South Sudan, based on the premise that longer-term emergency interventions can facilitate the transition from relief assistance to sustainable recovery. The objectives of the MYE Activity were to mitigate the impact of shocks, prevent the erosion of household assets and livelihoods, and accelerate recovery, thereby enhancing the future resilience of affected households and communities. The MYE Activity aims to bridge the gap between humanitarian aid and development programs.

Since gaining independence in 2011, South Sudan has consistently required emergency humanitarian support from the international community. Acute food insecurity in South Sudan remains concerning, with the latest 2023 data showing that 5.83 million people (46.3 percent of the population) are experiencing high levels of acute food insecurity (FAO, 2024). Persistent civil war, communal violence, disease outbreaks, and frequent environmental shocks, such as floods, are likely to escalate the demand for emergency assistance in the coming years. However, continued reliance on humanitarian aid is not a sustainable recovery strategy. According to recent USAID-cited research on resilience, "with sustained investment and the right approach, each dollar invested in resilience and early response can yield nearly three dollars in reduced humanitarian spending and avoided asset losses[3]" (USAID/South Sudan Strategic Framework 2020-2024, p. 3).

Given this evidence, BHA is exploring alternative approaches in South Sudan, aiming to establish a foundation for self-reliance and reduce the unsustainable levels of humanitarian need. To support this shift in funding and programming within the humanitarian context, robust evidence is essential.

To rigorously measure the impact of the MYE intervention, an impact evaluation based on a Randomized Controlled Trial (RCT) was designed. In this evaluation, villages within the MYE Activity areas were randomly assigned to either the control group (not receiving the MYE activities) or the treatment group (receiving the MYE activities). It is important to note that no life-saving components of emergency relief were included in the RCT, as both the treatment and control villages had access to essential emergency relief when needed. The randomized activities targeted different measures, including capacity building through training, cash transfers, extension services, nutrition education, grants for small businesses, seed support to strengthen agricultural outputs, market systems, and WASH initiatives. These activities were directly relevant to food security, nutrition, resilience, and water and sanitation, aligning with the focus of our research questions.

Baseline and endline surveys were conducted to collect panel data for impact assessment. Baseline data were collected from October to November 2021, while endline data were gathered in November 2023. This report presents the findings of the endline data collection.

[3] https://www.resiliencelinks.org/thematic-area/value-money

Review of Prior Studies

Research examining the impact of humanitarian programming on nutrition and food security is limited, with few systematic reviews and experimental/quasi-experimental impact evaluations conducted to date. In a scoping review of impact evaluations in the humanitarian sector, Clarke et al. (2014) found that "most areas in the humanitarian sector suffer from a paucity of evidence." The authors note that studies showing a causal relationship between assistance and changes in target results are notably lacking (Clarke et al., 2014).

One area that has been well studied is health and nutrition. A scoping review of nutrition responses and outcomes for infants and young children during times of crisis found that crisis-related interventions positively affected nutrition-related knowledge and practices (Marshall et al., 2021). Another area that has been well studied is cash transfers. Van Daalen et al. conducted a mixed-methods systematic review of the impact of cash transfers on health outcomes and usage of health services in a humanitarian setting. Of the 34 peer-reviewed articles selected from the global database, 19 reported positive impacts, 11 reported no statistically significant impact, and 4 reported potential negative impacts on health outcomes (van Daalen et al., 2022).

There is qualitative evidence of humanitarian interventions positively impacting nutrition, food security, and resilience. An evaluation of UNHCR's livelihood program in South Sudan from 2016-2018 found "that livelihood projects are favorably perceived by PoC (persons of concern)" and that qualitative interviews provided evidence suggesting these programs have increased income, access to food and non-food items, and access to markets. The report also notes that Village Saving and Loans Associations (VSLAs) have "helped participants diversify their income and build social capital with other participants" (Frankenberger et al., 2019). In other cases, emergency food support programs have been shown to improve food security and dietary diversity among affected populations. For instance, an evaluation of the WFP's emergency food assistance in Yemen reported improvements in FCSs and dietary diversity among beneficiaries (WFP, 2019).

Agricultural support interventions, such as the provision of seeds, tools, and training, have led to increased agricultural productivity and income. An evaluation of FAO's emergency agricultural interventions in South Sudan found that households receiving seeds and tools kits reported higher yields and incomes compared to those that did not (FAO, 2018). Further, a study of FAO's Cash for Work interventions implemented after the 2011 crisis in Somalia yielded similar results. The study found that communities expressed "a positive assessment of cash-based interventions for the freedom of choice they offer" and for "short and long term gains it guarantees." The study reported increased preferred food consumption and the reduction of negative coping strategies affecting household nutrition (FAO, 2013).

A study conducted by Tufts University's Feinstein International Center provides evidence of the impact of humanitarian interventions on household child nutritional status. The study examined a Concern

Worldwide program in Chad which combined nutrition and WASH programming with food, income, and markets programming. controlling for child, household, and settlement characteristics, the study found that both being in the intervention and moving into an intervention receiving area were significantly correlated to better household child nutritional status (Marshak et al., 2016).

There are also some studies that show emergency support programs have helped reduce the reliance on negative coping strategies, such as selling livestock or other productive assets. A study on the impact of emergency food assistance in Ethiopia found a reduction in negative coping mechanisms among beneficiaries (Gilligan et. al, 2009).

Evidence has shown that programs that combine food assistance with agricultural support enhance the resilience and recovery of communities. A mixed-methods evaluation of USAID's Food for Peace program in Niger highlighted that integrating food aid with agricultural training and support improved households' ability to recover from subsequent shocks (USAID, 2017).

This evidence supports the positive impact of humanitarian programming on nutrition and food security outcomes on a case-by-case basis. However, the specific mechanisms of impact are less established. Further, most of these assessments were not done rigorously. To fill this gap, we are rigorously conducting this evaluation in South Sudan.

OBJECTIVES AND RESEARCH QUESTIONS

MYE Evaluation Objectives

Complementary Action for Resilience Building in South Sudan (CARB), led by NRC, implemented various program activities to improve food security and resilience in households and communities in South Sudan (See Theory of Change [ToC] map in Annex). Following were the main CARB activities in the field:

- Development of key nutritional messages (hygiene promotion, guide on breastfeeding practices)
- Facilitation of cooking demonstration/nutrition training
- Establishment of Mid-Upper Arm Circumference (MUAC) screening for under 5 children
- Establishment of mother to mother care groups and training them on Maternal, Infant, and Young Child Nutrition (MIYCN)
- Cooking demonstration training
- Establishment of kitchen gardens
- Farmer field school
- Dry season farming/Drip Irrigation
- Seed multiplication
- Dyke construction/rehabilitation
- Floating garden construction/permagardens construction

- Cash transfer (unconditional cash distribution)
- Participatory Disaster Risk Assessment (PDRA) activities, implementation of different Community Action Plans (example: Community Managed Disaster Risk Reduction centers, rehabilitation/construction of shallow wells, infrastructures, dykes, grain storage, schools, health facilities, etc)
- Establishment of Income Generating Activities (VSLA groups, Small scale business and Medium enterprises)
- Establishment of permagarden practices
- Floating gardens construction
- Permagarden construction
- Intra & inter- community dialogues (conflict resolution, peaceful coexistence)
- WASH behavioral change communication

The Theory of Change (ToC) of CARB Activity states that:

- If households have increased food production and access to livelihood opportunities through resilience design systems, then it helps to restore productive agroecosystems and improve their nutrition and well-being, and
- If they are buffered from extreme events related to climate and weather, and if humanitarian response mechanisms are strengthened, and if social cohesion is improved, and the political, security, and protective environment remain conducive, then the households will be more resilient to shocks and stressors and have improved food and nutrition security.

Specifically, the project aims to address the following goal: Improved food and nutrition security in Western Bahr el Ghazal and Unity States through adding value to existing resource pipelines that are transferred from WFP, FAO, etc.

Given the multi-year nature of the Activity, the expected outcome of the MYE is improved food and nutrition security with improved resilience at household and community levels. Specifically, this evaluation addresses the following questions:

1. What are the impacts of the Activity on household food and nutrition security?
2. What are the impacts of the Activity on households' abilities to mitigate and recover from conflict or climate-related shocks and stresses?
3. What are the impacts of the Activity on building community resilience?
4. What value does the MYE activity add compared to a typical approximately 12-month activity?
5. What are the added advantages of layering MYE activity with other USAID emergency, non-emergency, and resilience activities?

6. Is the MYE Activity cost-effective?

Led by the University of Notre Dame, this evaluation brings experts from Makerere University's ResilientAfrica Network (RAN), and the Gender Empowerment and Women Leadership Program (GEWLP) in South Sudan to develop an impact evaluation plan and implement it. The UND/RAN/GEWLP team coordinated with the USAID South Sudan Mission and the implementing partner to collaboratively plan the data collection process. This included pre-testing and finalizing data collection instruments, and identifying the ideal time for enumerator training and data collection.

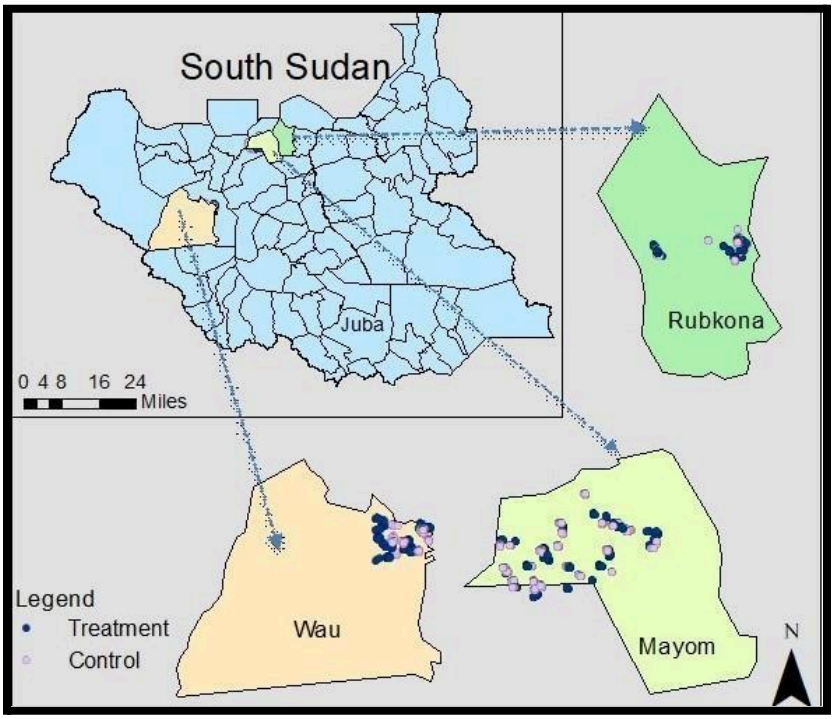


Figure 1: Evaluation Sites in South Sudan

METHODS AND LIMITATIONS

Study Design

The evaluation is based on a rigorous RCT. Consistent with the design of an RCT, the treatment and control villages were randomly assigned by the evaluation team from a list of eligible villages provided by the implementers, the CARB consortium. Approximately 23 households were randomly selected for the survey from each of the randomly chosen control and treatment villages during the baseline (see Baseline report for details).

This impact evaluation focuses on establishing causality and attribution of the MYE Activity. To estimate the impact of a program on outcomes, an impact evaluation must estimate the counterfactual. That is, what the outcome would have been for program participants if they had not participated in the Activity. Random assignment of the treatment is considered the gold standard of impact evaluations as this helps create a counterfactual group (control) that is statistically indistinguishable from the treatment group. It uses randomization to assign who is granted access to the Activity and who is not. Under randomized assignment, every eligible unit (i.e., an individual, household, or community) has the same probability of

being selected for treatment by an Activity.

We also collected qualitative data in this evaluation. The qualitative component of the research was designed to evaluate whether the project has achieved its goals, particularly in terms of enhancing food security and improving access to livelihood opportunities for households. Furthermore, the qualitative research seeks to understand the activity implementation and mechanisms and processes underlying these changes within the participating communities.

Sample Design

Although our original design included 169 villages across three counties, we successfully collected baseline data from 150 villages in 2021. Various issues forced us to drop 19 villages from the study. These issues included inaccessibility due to flooding, displacement of entire villages, and insecurity. Consequently, in the endline, our final sample comprised 143 villages, with 70 designated as control and 73 as treatment. During the baseline survey, we completed interviews with 3,442 households. However, by the time of the endline survey, the survey team was only able to track and re-interview 2,442 households, resulting in an attrition rate of about 29%.

The primary reasons for the high attrition included relocation due to floods, conflicts, and migration due to lack of livelihood opportunities. These factors highlight the challenging and volatile conditions under which the study was conducted. An in-depth analysis of the attrition, including its potential impact on the study findings, is provided in the findings section. This analysis is crucial for understanding the representativeness of the endline data and the reliability of the impact assessment. The high attrition rate poses challenges to the validity of our conclusions, as it may introduce biases that affect the comparability of the control and treatment groups. The following graphic provides details about the sample distribution between baseline and endline and control and treatment groups.

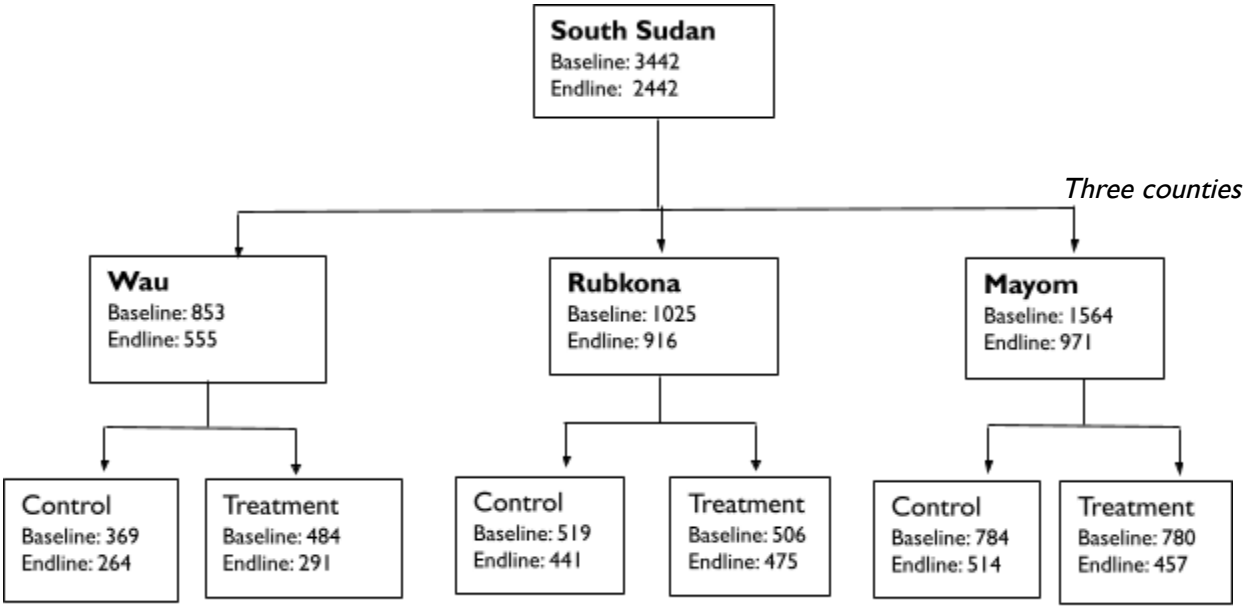


Figure 2: Survey Samples in Baseline and Endline by Control and Treatment

Overview of the Baseline Study

Creating a panel data set was crucial for identifying the specific impacts of the MYE Activity over time. It allows us to track the same households across different time points, providing a more accurate and dynamic picture of the intervention's effectiveness. This longitudinal approach also enhanced the statistical power of our analysis, enabling us to detect more subtle changes and trends that might not be apparent in a cross-sectional study. The comprehensive data collected in 2021 served as the foundation for a rigorous impact evaluation, aimed at providing actionable insights and guiding future program improvements in South Sudan.

The baseline study captured pre-treatment values for various indicators, which were used to measure the impacts of MYE Activity in South Sudan, which ended in 2023. During the preparation of the research design, the research team worked with the implementing partners, led by the Norwegian Refugee Council (NRC). Together, the teams confirmed the precise geography and interventions for the evaluation and defined the treatment and control groups.

A balance test was conducted to compare baseline conditions in control and treatment villages. The results show that the treatment and control villages are statistically similar for the selected covariates, confirming their comparability. Additionally, baseline values for all indicators—food security, nutrition, resilience, peacebuilding, and WASH—were statistically similar between the two groups, indicating a comparable initial status across these aspects.

Overview of the Endline Study

The endline study captured endline values for various indicators, which were used to measure the impacts of MYE Activity in South Sudan. All the questions included in the baseline were repeated in the endline. In addition, we collected rich qualitative data from FGDs and KIIs.

Questionnaire Design

We used the same question sets from the baseline data collection in the endline (Annex). These questions were adapted from the Food for Peace Indicators Handbook (supplement to Part 1). In addition to this, we included additional questions for peace and security. Questions and response options were adapted to the local context, such as those involved in providing particular activities for improved crop and livestock production.

The UND-led research team finalized the questionnaire in consultation with the USAID/BHA team. The questionnaire contains seven modules, including demographic characteristics of sampled households (See Annex).

- Household Food Access and Nutrition: This module assesses the current food security situation of households and the nutritional status of children. This information is used to construct the indicators for FCSs, household hunger scale, minimum acceptable diet for children 6-24 months, and prevalence of breastfeeding children under six months of age.



Photo credit: GEWLP

Figure 3: A Focus Group Discussion

- Agriculture: This module assesses households' access to crop seed and the use of various improved agricultural technologies and practices for crop and animal production.
- Resilience: This module assesses households' ability to recover from shocks and stresses, absorptive, adaptive, and transformative capacities, including safety nets and livelihood diversification.
- Social activities: This module considers the ways households are participating in saving and credit lending activities at the community level. This module also assesses if households are members of any community groups in their villages.
- Gender: This module considers how women are involved in the decision-making process at the household level. Particularly, it assesses women's participation in making decisions on the use of self-earned cash and a spouse's earned cash, and whether or not to seek credit (loans).
- Peace and security: This module assesses the household's willingness to interact with others in the community.
- Water and Sanitation: This module includes questions about the presence/absence of a handwashing facility and its use by households.

In addition, we also prepared qualitative guidelines to conduct FGDs and KIIs, to understand local

context, program activities, and impacts. The qualitative guidelines are included in the Annex.

Similarly, for the cost-effectiveness analysis, we secured cost data from the implementing partners from all three counties.

Ethical Clearance

All the survey protocols were reviewed by the University of Notre Dame's Institutional Review Board (IRB).The Notre Dame IRB approved the study protocol (Protocol ID: 21-02-6436). Additionally, to proceed with the field work, we received permission from relevant authorities in each county.

Field Procedures

Survey Team, Training, and Fieldwork

With the support of RAN, our partner organization, GEWLP, was responsible for executing the survey implementation. To carry out this task, GEWLP assembled a dedicated team of 21 field researchers, comprising 17 males and 4 females, who were tasked with conducting the survey across the target areas. Additionally, GEWLP mobilized a team of 4 researchers, evenly split between males and females, specifically for qualitative data collection. These field researchers were strategically selected from the three counties involved in the study to ensure local knowledge and context understanding.

To ensure the team was adequately prepared, experts from RAN traveled from Uganda to South Sudan to provide comprehensive training. This training took place in Juba from October 30th to November 3rd, 2023. The training sessions were designed to equip the researchers with the necessary skills and knowledge to effectively gather accurate and reliable data, and covered all essential aspects of the survey process, from data collection techniques to ethical considerations.

As part of the preparation, a pilot survey was conducted on November 2nd in a nearby community in Juba. This pilot exercise was crucial for testing the survey instruments and procedures, allowing the team to identify and address any potential issues before the full-scale implementation. The insights gained from this piloting phase ensured that the field researchers were well-prepared and that the survey tools were refined for optimal data collection.

The thorough planning and preparation by GEWLP and RAN ensured that the survey implementation was carried out efficiently and effectively, with a strong emphasis on training, local expertise, and thorough piloting to achieve high-quality data collection.

Fieldwork

The endline survey commenced on November 4th, 2023, and continued until December 13th, 2023. Prior to initiating the survey, the team secured the necessary approvals from local authorities in all three counties, ensuring compliance and cooperation from the communities involved. The data collection team also worked with implementing partners, NRC and DRC, for field and logistical support. Utilizing the household list generated from the baseline survey, the team visited the villages to conduct the survey.

Despite these efforts, nearly 30% of the baseline households could not be located.



Photo credit: GEWLP

Figure 4: Floating Gardens in a Flooded Village

To address this, the team was instructed to find replacement households if the original households were untraceable. These replacement households were selected to match the socio-economic characteristics of the attrited households and had been residing in the same villages for at least one year. The replacement households were not part of the original RCT design but served as a contingency plan for conducting a new analysis with cross-sectional data if significant household loss occurred at endline, potentially affecting the study's power. Fortunately, the panel data retained sufficient power, so we did not use the replacement households data in our analysis.

Some households from the baseline could not be tracked at the endline. The primary reasons for this attrition included:

- Baseline households left the area due to various shocks such as flooding, conflicts, unemployment, and starvation.
- Some areas were inaccessible due to flooding.
- In some cases, housing structures remained, but no adult members were present as they were away for work.

The survey team made concerted efforts to locate the same household heads for interviews, which lasted approximately one hour each. Throughout the survey period, the RAN team and UND researchers closely monitored the quality of the data collection. They did this by regularly reviewing the submitted surveys on the server. Any identified issues were promptly reported back to the data collection team for immediate correction, ensuring high data integrity.

Qualitative data collection, including FGDs and KIIs, began on November 11th, 2023, and concluded on

January 16th, 2024. The qualitative team consisted of four researchers who gathered in-depth insights to complement the quantitative data. The RAN team thoroughly reviewed all transcripts to ensure their quality and reliability.

We conducted 18 focus group discussions (6 from each county) and 17 key informant interviews (KIIs). The focus group discussions involved program participants, while the KIIs were conducted with program implementers, a USAID mission representative, and village leaders.

Data Analysis

The RAN team led the data quality control and cleaning. The UND team developed a protocol for data cleaning and coding, and the RAN team led the data cleaning and coding process. To estimate the indicators, we followed the indicator calculation guide that was prepared during the baseline.

To guide the analysis, we prepared an Analysis Plan (Annex 4). Mean values of the variables (i.e. indicators) were calculated and presented by control and treatment assignment with robust standard errors; the associated p-values were also presented to see if the differences are statistically significant. We used the linear probability model to estimate the impact that also accounts for the baseline values for each case.

Because of an absence of village-level population data, the calculation of weights matching the desired population distribution was not possible. The only statistical tool available is sample correction weighting, which adjusts for variation in the number of surveyed households by village. The survey target for each village was 23 households[4]. Still, in many villages, it was lower than 23, because of attrition. To address this, we created population weights, so that each sampled village is represented equally in the analysis. The estimated probability weights were then used to calculate and compare weighted averages of the key variables, which are recorded in this report, for both the treatment and control groups. Our analysis also considers the survey design, both at the level of strata (county) and cluster (village).

The qualitative data analysis process for evaluating the MYE involved several key steps. Initially, all FGDs and KIIs were recorded and transcribed. In communities where the local language predominated, interviewers provided free translations. Transcribers then translated and transcribed the interviews into English, adhering to predefined naming conventions for efficient organization of audio files, field notes, and transcripts. Subsequently, the transcripts underwent a rigorous data-cleaning process to address partial sentences, abbreviations, and typos, ensuring clarity and consistency. Following cleaning, UND utilized a specific codebook for the coding process. The codebook was created to guide qualitative data analysis and was developed during the data analysis process. This codebook helped categorize data into hierarchical concepts and themes, with codes manually assigned using Atlas.ti software. The analysis

[4] For details on how the village-level sample was determined, please refer to the Research Design document in the Annex.

focused on identifying patterns in code summaries, emphasizing content, context, and narratives that provided insight into respondents' perspectives on programming effects.

Evaluation Risks and Limitations

Fieldwork in South Sudan presents numerous challenges due to the region's dynamic environment and conflict situation. Despite efforts to avoid the monsoon season, persistent flooding significantly impacted data collection activities. Accessing households, particularly in Wau villages, proved problematic as many had relocated to remote areas in search of arable land. The extensive trekking required to reach respondents in such distant locations posed logistical challenges for researchers.

- Securing permission for community entry and data collection was a hurdle, especially in areas like Ngisa and Ngoku in Wau County, where obtaining authorization was arduous. Compounding the difficulty was the lack of communication networks in many regions, hindering coordination among survey teams and permission acquisition.
- The ongoing conflict in Sudan further complicated fieldwork, with many individuals returning to their villages, and localized conflicts in areas like Wau North, Wau South, and Mayom impeding survey efforts. Particularly challenging was accessing Kuerleel village in Mayom following fatal conflicts, which rendered household interviews and village access perilous. To mitigate these issues, we used enumerators from those areas who have contextual knowledge on how to navigate through the administrative and security clearances at village/community and household levels, which helped to ensure that the interviews were conducted as planned.
- Additionally, community members expressed survey fatigue, lamenting the repeated solicitation of information by development organizations and survey firms without tangible improvements in their circumstances.
- There was also an issue of recall bias. For example, inquiring about all types of food given to a child in the past seven days may be subject to recall bias. While the survey questionnaire underwent pre-testing and piloting, and enumerators received comprehensive training, biases related to recall and self-reporting remained unavoidable. Non-sampling biases, including response bias, were anticipated to be consistent across treatment and control groups.
- Qualitative data, while valuable, comes with limitations in generalizability and susceptibility to bias. Small sample sizes and purposive sampling strategies restrict the extent to which findings can be extrapolated to the broader beneficiary population. In this study, social desirability bias, where respondents may tailor responses to appear favorable, and recall bias were identified as potential sources of distortion in qualitative data.

FINDINGS

Summary Statistics and Balance Tables

Characteristics of the study population

During the endline survey, we conducted assessments across 143 villages spanning three counties: Mayom (60 villages), Rubkona (45 villages), and Wau (38 villages). The total number of households surveyed was 2,442, distributed as follows: 555 in Wau, 916 in Rubkona, and 971 in Mayom. During the baseline, we had completed surveys from 3,442 households, indicating nearly 29% attrition.

Out of the total completed surveys (2,442), 1,223 were from treatment villages and 1,219 from control villages, yielding an average of 17.19 households surveyed per village.

Regarding household demographics, male-headed households comprised 64%, while female-headed households made up 35%. The average age of household heads was 44 years, and nearly 70% of households identified themselves as Catholic. Additionally, 70% of surveyed household heads reported having no formal schooling. The average household size was 9.6 members. 44% of households had at least one child below 2 years of age present (Table 1).

To ensure comparability between control and treatment villages, we conducted a balance test using key socioeconomic variables.

Table 1: Balance Test Table

Parameters	**Overall** (full sample)	**Control Villages** ***Mean coefficient***	**Treatment Villages** ***Mean coefficient***	**p-value**
Percent female HH (Household) head	35.50%	0.34 (0.024)	0.35 (0.025)	0.77
The average age of household head, years	43.12 years	44.75 (0.79)	45.02 (0.50)	0.79
Percent currently married household heads	90.24%	0.89 (0.01)	0.90 (0.01)	0.62
Average household size	9.66 persons	9.73 (0.22)	9.14 (0.27)	0.11
Percent male HH heads who married to more than one woman	65.50%	0.66* (0.03)	0.54 (0.04)	0.03
Percent household heads	70.11%	0.67	0.68	0.82

with no schooling		(0.02)	(0.02)	
Percent households with children below 2 years	44.00%	0.45 (0.02)	0.44 (0.02)	0.89
Percent with catholic religion	84.52%	0.85 (0.01)	0.86 (0.01)	0.68
Percent HH received food support	53%	0.50 (0.03)	0.52 (0.03)	0.73

* p-value < 0.05; Standard errors displayed in brackets

The balance test at the endline shows that most observable characteristics are statistically similar in both control and treatment groups, except for the percentage of male heads of households with multiple marriages, which is higher in the control group.

Attrition Bias Analysis

The researchers conducted an attrition analysis by comparing the dropout rates between the control and treatment groups. As previously mentioned, we observed an overall attrition rate of approximately 29% at the endline, with some variation between the control and treatment groups. The control group exhibited a 27% attrition rate, while the treatment group had a slightly higher rate of 30%. This higher attrition in the treatment group indicates a positive attrition.

In our sample, we found a differential attrition of 3 percentage points. According to the What Works Clearinghouse guidelines for evaluating results from cluster randomized control trials, both overall attrition and differential attrition are critical in assessing the risk of bias (What Works Clearinghouse, 2017, Page 13). With an overall attrition rate of 29%, the differential attrition must remain under 4 percentage points to be within the acceptable range. Therefore, the observed levels of overall and differential attrition in our study do not pose a risk of bias due to attrition.

Table 2: Baseline and Endline Sample with Sample Loss

	Sample		County					
	Total		Wau		Rubkona		Mayom	
Data	control	treatment	control	treatment	control	treatment	control	treatment
Baseline	1672	1770	369	484	519	506	784	780
Endline	1219	1223	264	291	441	475	514	457
Lost sample	453	547	105	193	78	31	270	323
% retained	72.90	69.09	71.54	60.12	84.97	93.87	65.56	58.58

Endline Indicators Estimation to Measure the Impact

We present the indicator estimates by treatment group status and test for the differences. Since the baseline values for all the indicators were statistically similar, we present the endline difference to measure the impact of the intervention. The difference is tested using the t-test.

As seen in the results below, our analysis did not find the impact of MYE activities for most of the indicators in the endline using simple difference tests, as treatment households are not statistically different from the control. To address this limitation, we employed a regression model that accounts for baseline values to detect any significant differences between the baseline and endline periods, as well as between control and treatment groups. As mentioned earlier, the baseline values for all indicators were recorded in 2021, providing a robust foundation for measuring impact at the endline. The use of panel data, which includes repeated measurements over time, enhances the statistical power of the study and allows for more accurate estimation of the program's effects. For both the t-test and regression analysis, we used the same samples.

By integrating baseline data into our regression analysis (linear probability model), we control for initial conditions, thereby isolating the impact of the MYE activities. This approach helps to account for any pre-existing differences between the control and treatment groups, offering a clearer picture of the program's efficacy. Additionally, the panel data structure facilitates a more comprehensive analysis by leveraging the longitudinal aspect of our data collection, which captures changes over time and provides insights into the program's impact trajectory. All the baseline values of panel data are in the Annex.

Given the contamination in the control group, and low exposure to interventions in the treatment group, we also present a supplemental analysis in Annex 1, which tests for differences between households which were able to access intervention activities and those that did not, regardless of treatment status. At endline, we can see that these households demonstrate better outcomes across a range of indicators, including food security, resilience, social activity participation, gender and WASH. However, this analysis fails to detect effects on agriculture, peacebuilding and child nutrition outcomes. This analysis indicates that access to such interventions could lead to improved outcomes; however, due to the lack of causal design in this analysis, we cannot be sure if such positive outcomes can be attributed to the MYE activities themselves. Therefore, the remainder of this report focuses on the comparison between treatment and control groups, in keeping with the original causal design of this study.

The results of difference tests and regression are provided below for each module and indicator.

Household Food Access and Nutrition

We include four indicators to measure the impact of household food access and nutrition activities. FCS is a measure to understand the food security situation in households. FCS is a composite score that captures dietary diversity, food frequency, and relative nutritional importance of different food groups consumed by the households in a given area. Based on weighted scores and using World Food Program

thresholds, households are categorized into three groups: *poor*, *borderline*, or *acceptable* food consumption. The Household Hunger Score (HHS) measures the percentage of households experiencing hunger in surveyed households. The three main characteristics for measuring the presence of hunger in the households include: *the frequent occurrence of no food in the households*, *going to bed hungry*, and *going all day and night without eating* (at least once) in the last four weeks. We estimated the minimum acceptable diet (MAD) for 6-24 months of children, and the prevalence of exclusive breastfeeding of children below six months.

Table 3: Food Access and Nutrition Indicators for Survey Households

	Test of difference				Regression		
Indicators	Overall	Control	Treat	p-value	Coeff	t-value	p-value
Percent of households with *poor* FCS	13.14%	0.14 (0.02)	0.11 (0.01)	0.41	-0.028 (0.032)	-0.86	0.393
Percent of households with *borderline* FCS	17.08%	0.17 (0.02)	0.19 (0.02)	0.47	0.022 (0.032)	0.70	0.487
Percent of households with *acceptable* FCS	69.78%	0.68 (0.03)	0.68 (0.02)	0.94	0.006 (0.044)	0.15	0.882
Total Sample				*2442*			2442
Prevalence of households with *moderate* HHS score	85.42%	0.85 (0.02)	0.85 (0.01)	0.98	0.000 (0.027)	0.01	0.996
Prevalence of households with *severe* HHS score	14.58%	0.14 (0.02)	0.14 (0.01)	0.98	0.000 (0.027)	-0.01	0.996
Total Sample				*2442*			2442
Percent of children 6–23 months receiving a minimum acceptable diet (MAD)	2.15%	0.02 (0.01)	0.05 (0.02)	0.18	0.032 (0.022)	1.43	0.154
Total Sample				*834*			*557*
Prevalence of exclusive breastfeeding of children under six months	84.96%	0.79 (0.03)	0.84 (0.03)	0.26	0.018 (0.053)	0.35	0.726
Total Sample				*701*			557

* p-value < 0.05; Standard errors displayed in brackets

We failed to detect any significant impact across all four indicators. The treatment groups did not show greater improvements compared to the control group. Although endline values for most indicators improved from baseline, this was true for both groups. For instance, the percentage of households with a poor FCS in the treatment group decreased from 24% at baseline to 11% at endline. However, the control group exhibited a similar improvement. Likewise, the percentage of households experiencing severe hunger in the treatment group decreased from 42% to 14%, but the control group also saw comparable gains. Despite the inability to attribute these improvements to CARB interventions, overall

household food security has increased. It is important to note that for ethical concerns, the control group also received any needed life saving food packages, so these packages could have contributed to the overall improvements in food security indicators. However, notably, one indicator that declined in both groups from baseline to endline was the percentage of children aged 6-23 months receiving a minimum acceptable diet, indicating ongoing issues with access to nutrient-rich foods for children.

Agriculture

Two indicators were constructed and estimated for tracking progress in agriculture and livestock in the survey. The first one was related to access to sufficient seeds at the time of planting, and the second one was about the application of improved management practices for crop farming and livestock.

Table 4: Agriculture Indicators for Survey Households

	Test of difference				Regression		
Indicators	Overall	Control	Treat	p-value	Coeff	t-value	p-value
Percentage households with access to sufficient seed to plant	39.00%	0.36 (0.03)	0.39 (0.03)	0.56	0.036 (0.056)	0.65	0.515
Total Sample				*2296*			*2053*
Percent household applied improved management practices in crop	31.56%	0.3 (0.03)	0.31 (0.03)	0.81	0.009 (0.056)	0.17	0.862
Total Sample				*2031*			*1688*
Percent household applied improved management practices in livestock	32.68%	0.34 (0.03)	0.3 (0.02)	0.42	-0.035 (0.04)	-0.87	0.384
Total Sample				*2341*			*2032*

* p-value < 0.05; Standard errors displayed in brackets

We did not detect any significant impact across all three indicators, with the treatment groups faring no better than the control groups. We observed improvements in access to seeds in both groups between baseline and endline, but we failed to definitively attribute this gain to CARB activity. Access to improved seeds increased from 31% to 39% overall in the treatment group, but similar gains were seen in the control group. There was an improvement in the application of improved crop management practices; however, the livestock sector experienced a decline in the use of improved management practices in

both groups, suggesting possible access issues to various services and inputs because of various shocks. Specifically, 56% of households in the treatment group used improved livestock management practices at baseline, but this dropped to below 30% at the endline, with a similar reduction observed in the control group.

Resilience

Four indicators were constructed and estimated to track the progress of resilience building at the household level in MYE communities. These indicators look at diversified sources of income at the household level, household ability to recover from various shocks and stressors, social capital formation, and their belief in government.

Table 5: Resilience Indicators for Survey Households

	Test of difference				Regression		
Indicators	Overall	Control	Treat	p-value	Coeff	t-value	p-value
Avg. # of sources of income in households	1.82	1.9 (0.10)	1.82 (0.05)	0.51	-0.078 (0.115)	-0.68	0.495
Total Sample				*2442*			*2442*
Ability to recover from shocks and stresses index	3.42	3.39 (0.09)	3.47 (0.11)	0.60	0.167 (0.171)	0.97	0.333
Total Sample				*2206*			*1776*
Index of *bridging* social capital	1.71	1.73 (0.03)	1.7 (0.03)	0.55	-0.042 (0.050)	-0.840	0.400
Index of *linking* social capital	1.02	1.07 (0.11)	1.04 (0.10)	0.85	-0.022 (0.152)	-0.150	0.882
Total Sample				*2442*			*2442*
Percent of households that believe the local government will respond effectively to future shocks	20.00%	0.19 (0.02)	0.18 (0.02)	0.91	-0.003 (0.037)	-0.090	0.926
Total Sample				*2442*			*2442*

* p-value < 0.05; Standard errors displayed in brackets

We did not detect any impact across all four indicators, with the treatment groups performing no better than the control groups. While there were some observed gains in diversifying income sources between baseline and endline in the treatment group, these gains were not significant. Household resilience to

shocks and stresses has not improved; in fact, the ability to recover from shocks declined from 4.6 at baseline to 3.4 at endline in the treatment group, with a similar decline in the control group. This decline highlights the ongoing disasters in the communities and the need for more capacity-building activities in South Sudan communities.

Furthermore, the index for bridging social capital dropped, whereas the index for linking social capital slightly increased in the treatment group compared to baseline, though similar changes were observed in the control group. There was also a slight increase in household confidence in the local government's ability to respond effectively to future shocks, rising from 12% to 18% in the treatment group, but again, similar gains were observed in the control group, so it was also not significant. These findings underscore the need for more targeted interventions to build community capacity and resilience.

Social activities

Three indicators were constructed and estimated to track the progress of social activities of the people at household and community levels. The indicator measuring participation in group-based savings, microfinance, or lending programs includes both formal and informal groups such as saving and lending groups, credit unions, and other formal and informal group-based finance or lending groups.

Table 6: Social Activity Indicators for Survey Households

		Test of difference			Regression		
Indicators	Overall	Control	Treat	p-value	Coeff	t-value	p-value
Percent of households participating in group-based savings, microfinance or lending programs	11.79%	0.09 (0.01)	0.15 (0.02)	0.07	0.059 (0.032)	1.83	0.07
Total Sample				*2442*			*2442*
Percent farmers who used financial services in the past 12 months	23.91%	0.23 (0.02)	0.24 (0.02)	0.77	0.013 (0.034)	0.38	0.705
Total Sample				*2442*			*2442*
Percent men who are members of a community group	18.92%	0.18 (0.02)	0.18 (0.01)	0.97	0.001 (0.029)	0.03	0.978
Percent women who are members of a community group	7.90%	0.07 (0.01)	0.07 (0.01)	0.99	-0.004 (0.018)	-0.2	0.841
Total Sample				*2442*			*2442*

* p-value < 0.05; Standard errors displayed in brackets

Our findings indicate that more households in the treatment group are participating in group-based savings compared to the control group, suggesting that the CARB Activity has successfully facilitated the organization of local saving and lending groups. This difference is significant, but only at the 10% significance level. Group-based savings and lending programs in rural areas have the capacity to enhance resilience by providing communities with financial resources to cope with shocks and stresses. These activities also foster social cohesion and collective action, enabling participants to pool resources and support each other during times of need. There is also an increase in household participation in financial services from baseline to endline in both groups. However, this gain is similar for the control group as well. During the baseline, only about 10% of households had access to various forms of financial services. By the endline, this number had jumped to nearly 24% for the treatment group, but the control group saw a similar increase. This parity suggests that other factors beyond the CARB Activity might be influencing these gains.

Additionally, there is a gender disparity in community group participation, with more males than females involved. This indicates a need for targeted efforts to organize and encourage women's participation in community groups, thereby involving them more in social activities. Such initiatives could enhance the overall impact and inclusivity of the program.

Gender

Four indicators were constructed and estimated to measure the impact of MYE activities on gender, which include the percent of women making decisions about the use of self-earned and spouse/partner's earned cash and their access to and decisions about credit use.

Table 7: Gender Indicators for Survey Households

		Test of difference			Regression		
Indicators	Overall	Control	Treat	p-value	Coeff	t-value	p-value
Percent of women earning cash who report participation in decisions about the use of self-earned cash	5.37%	0.05 (0.01)	0.05 (0.01)	0.94	-0.016 (0.023)	-0.7	0.487
Total Sample				*876*			*231*
Percent of women earning cash who report participation in decision the use of spouse/partner's self-earned cash	2.05%	0.02 (0.01)	0.01 (0.01)	0.53	-0.012 0.018	-0.69	0.49
Total Sample				*876*			*231*
Percent of *men* with access to credit	0.32%	0.001 (0)	0.003 (0)	0.5	N/A		
Percent of *women* with access to credit	2.97%	0.03 (0)	0.02 (0)	0.68			
Total Sample				*876*			
Percent of *men* who make decision about credit	0.32%	0.001 (0)	0.003 (0)	0.5	N/A		
Percent of *women* who make decision about credit	2.97%	0.03 (0)	0.02 (0)	0.68			
Total Sample				*876*			

* p-value < 0.05; Standard errors displayed in brackets,
N/A- not available

We failed to detect any impact on all four indicators, with treatment households not faring better than the control group. Regarding cash earnings and decision-making about its use, only a minuscule

percentage of households were involved, with negligible differences between men and women. Similarly, access to credit from formal or informal sources remained extremely low across both groups. These findings highlight significant gaps in women's financial empowerment and access within the community.

Peacebuilding

Two indicators were constructed and estimated to track the progress of peace and security in the communities. Our survey questions captured if the respondents had interacted with people from another ethnic group and their neighbors within the last week.

Table 8: Peacebuilding Indicators

	Test of difference				Regression		
Indicators	Overall	Control	Treat	p-value	Coeff	t-value	p-value
Percent respondents who interacted with people from different ethnic groups last week	50.57%	0.54 (0.02)	0.45 (0.02)	0.038*	-0.080 (0.037)	-2.15	0.034*
Percent respondents who interacted with their neighbor last week	77.00%	0.78 (0.02)	0.73 (0.02)	0.21	-0.042 (0.039)	-1.06	0.291
Total Sample				*2442*		*2442*	

* p-value < 0.05; Standard errors displayed in brackets

More people in control villages interacted with people from different ethnic groups compared to those in treatment villages. Some of the peacebuilding activities were targeted at control villages, also as reported by the implementer, which might be the reason for this result.

Water and Sanitation

Only one indicator was constructed to track the progress of water and sanitation at the household level.

Table 9: Water and Sanitation Indicator

	Test of difference				Regression		
Indicators	Overall	Control	Treat	p-value	Coeff	t-value	p-value
Percent of households with soap and water at a handwashing station on premises	16.87%	0.13 (0)	0.20 (0)	0.061	0.071 (0.037)	1.92	0.056
Total Sample				*2442*			*2442*

* p-value < 0.05; Standard errors displayed in brackets

The treatment households have shown improvements in the water and sanitation sector compared to both the control group and their baseline status. There has been an increase in the percentage of households with soap and water available at handwashing stations. For instance, at baseline, only about 4% of treatment households had access to soap and water for handwashing. This figure has now risen to 20% at endline, indicating a substantial improvement. While the control group also experienced some progress, the treatment group is clearly performing better in this area. These results suggest that the interventions implemented have been effective in enhancing water and sanitation practices among the treatment households.

Results by Research Questions

Based on the findings presented above, we answer each research question separately below.

Research Question 1: What are the impacts of the Activity on household food and nutrition security?

We hypothesized that the program activities would have a positive impact on the food security and nutritional status of participating households. To assess this potential improvement, we utilized the Household Food Security Score (FCS) as a key indicator. Our analysis involved comparing the endline results between control and treatment villages to estimate the difference. However, our findings indicate no significant impact on improving household food security when comparing the treatment group to the control group.

Further, we conducted a regression analysis that accounted for baseline values of these indicators to estimate the program's impact more precisely. Even after controlling for these baseline values, the regression analysis did not reveal any significant effect of the intervention on food security and nutrition. These results suggest that the program activities failed to achieve the anticipated improvements in these areas. Improving household food security in an emergency context seems challenging. FAO's 2024 endline report on South Sudan highlights this difficulty, noting that after four years of programming, both control and treatment households had similar FCSs at the end. This finding underscores the complexity

of achieving significant food security improvements amidst ongoing crises and underscores the need for more effective or innovative interventions to make a tangible difference.

While there was an improvement in FCS and HHS indicators at the household level in the treatment group compared to the baseline, similar levels of improvement were observed in the control group at endline. This suggests that the changes might not be attributable to the MYE activities. Two child-related nutrition indicators also failed to demonstrate impacts. As mentioned earlier, both control and treatment groups had similar levels of changes at the endline.

In our analysis, we found an equal number of households in the control group accessed different types of program activities implemented by various agencies, which likely contributed to the changes observed in the control group. Additionally, only about 40% of households in the treatment group benefited from at least one of the program activities, indicating that the activities might not be sufficient to manifest any significant changes in the treatment group. In the face of needs, as mentioned by many key informants and FGD participants, the implementation was very light and, in many cases, delayed, which might cause the null findings.

Given the lack of evidence that the MYE program improved food access and nutritional outcomes, we turned to qualitative data to gain further insights.

While our FGDs were conducted in the treatment areas only, these discussions provided mixed messages about the program and its impact. Despite the limitations, the qualitative data highlights the complexity of the program's influence and underscores the need for a more nuanced understanding of the factors affecting food security in the studied areas. While food insecurity remains a critical problem for many FGD participants, who reported going without food for extended periods, experiencing starvation, skipping meals, and witnessing their children suffer, there are also signs of improvement as a result of the MYE Activity.

Despite the major challenges of scarcity of work, shocks and stressors (floods, droughts, conflicts), and difficulties accessing food due to price increases and production issues, a few participants noted positive changes. Participants reported having more diverse food options available that were not possible before, including cereals, vegetables, fish, and meat, thanks to the MYE Activity as it provided things like training to farmers, seed distribution, food distribution, post-harvest technologies, and fisheries support. Some participants mentioned the program reduced malnutrition and improved their understanding of the impacts of malnutrition, with some also sharing what they learned with others in their community.

> "For me, I benefitted when I started planting Sukuma wiki. Sometimes I harvest and take to the market to get money and sometimes if there is no food at home, I harvest and we cook for the children. So this program of NRC has helped me really a lot." (FGD Hai Ingaz Male Wau)

However, the number of participants reporting positive impact were few in the FGDs.

Key informants provided crucial insights into the program, its beneficiaries, and the challenges faced. They reported that, despite high demand, the programming was insufficient. Continuous flooding devastated the area, wiping out crops and killing most of the livestock due to the inundation of grazing lands. A key informant from the treatment community in Mayom highlighted:

> "The community faces significant challenges: (1) Flooding, as all the farming areas are underwater, (2) The complete loss of livestock because the grazing grounds are submerged."

Given these severe challenges, achieving food security remains elusive despite the implementing partner's efforts to bring about change in these communities.

Research Question 2: *What are the impacts of the Activity on households' ability to mitigate and recover from conflict or climate-related shocks and stresses?*

Our quantitative analysis failed to detect a measurable impact of the MYE activities on households' ability to mitigate and recover from conflict or climate-related shocks and stresses. Households lacked diversified sources of income to serve as coping mechanisms in the event of shocks. There was no significant improvement in their ability to recover from these stresses, nor was there an enhancement in bridging or linking social capital when compared to the control group. The opportunities for getting credit, either for doing business or dealing with household needs, were severely restricted. These findings suggest that the program failed to effect significant changes in the lives of the participants. Again, this could be the result of a very light-touch type of program activities in the treatment areas amid ongoing crisis.

To gain further insight into these outcomes, we turned to qualitative data to understand the context and qualitative impacts of the program. However, the qualitative data also presents a mixed picture of the program's impact. While some participants noted positive aspects of the program, these were not consistent or widespread enough to indicate a clear overall benefit. This underscores the need for a deeper and more comprehensive evaluation, including implementing qualitative data collection in the control, to fully understand the nuanced effects of the program.

While participants reported a wide range of shocks and other challenges, flooding, starvation, and health-related challenges were the most commonly reported. These were followed by conflict and insecurity, which also caused significant displacement and disruption. At the household level, FGD participants reported that some MYE activities like agricultural training, seed distribution, and construction of dykes helped their households mitigate flood risk and recover from shocks by diversifying income and increasing food production.

Key informants acknowledged that the support provided by the CARB Activity was not sufficient to build household-level resilience. They noted that, given the wide range of shocks faced by communities, the efforts are minimal and unlikely to bring significant change in resilience capacity building or mitigate impacts effectively. The persistent flood appears to be detrimental for the people, as one local leader in Rubkona said:

> "The flood has covered all the area. There have spread a lot of diseases as I have mentioned earlier. Now those who go searching for Yiel (water lily seeds, lily rhizome/tuber) in the river are sinking, and we need some water boats for crossing, DRC sometimes help. We used to have good and big farms, but all now is under the water." (KII village leader in Rubkona)

In such a situation, one can not expect many improvements. One key informant emphasized that CARB is intended for complementary action rather than providing comprehensive support, highlighting gaps between needs and supply. This sentiment was echoed by a staff member from an implementing partner, who stated:

> "… as you know, this project is just complementing a couple of [activities] and that's why it's called CARB– complementary action for resilience building. So we are just complementing other projects…."

This statement indicates the limited scope of CARB's contributions and the ongoing need for more comprehensive support to strengthen household resilience.

Research Question 3: *What are the impacts of the Activity on building community resilience?*

At the community level, participants mentioned MYE-supported activities such as peace committees, early warning systems for floods, and construction of community infrastructure as contributing to improved resilience. However, the overall impact on community resilience was less clear compared to the household level.

The food insecurity situation in the affected community is dire, primarily due to ongoing and severe flooding. Key informants report that the reduction in food rations has significantly impacted the community, leaving them with only about 10% of what they used to receive. As reported earlier, the persistent floods have rendered most agricultural lands unusable, forcing people to move to higher, unproductive, and dry areas. The limited arable land has made farming nearly impossible, and the loss of livestock due to the flooded grazing grounds has further exacerbated food shortages. Communities have resorted to desperate measures such as cutting trees for charcoal to earn money, and many have turned to foraging for Yiel (water lilies), despite the various risks and health issues associated with it. This situation highlights the urgent need for increased food aid and support to improve resilience against such natural disasters.

The challenges are compounded by the community's inability to cultivate crops or access other food sources. The lack of roads and infrastructure means that even those who might want to seek food elsewhere cannot do so easily. Additionally, the influx of people returning from Sudan due to conflict has increased the demand for food, further straining the already limited resources. The community's reliance on Yiel and minimal fishing opportunities indicates the urgent need for comprehensive support, including improved food distribution, infrastructure development, and agricultural rehabilitation to address the widespread hunger and prevent further deterioration of the situation.

Some key informants revealed that MYE projects had impacted women's empowerment in the program areas through various initiatives. For example, women received training in forming cooperatives and starting small businesses such as tailoring, baking, and restaurant management. These skills enabled them to generate income and support their families. Additionally, group savings programs provided financial security and independence, allowing women to manage household expenses and invest in their children's education. However, the impact was not universally felt.

When FGD participants were asked about who they turned to when they needed help, many reported having no one to rely on, as adversity often affects the entire community simultaneously. This is consistent with survey data that shows very few people had access to financial services. However, some participants mentioned being able to turn to neighbors, relatives, and friends within their community for limited assistance. Despite these challenges, a bright spot emerges in the form of savings groups and other associations formed through the MYE program. While not always mentioned as the primary source of help, these groups serve as a crucial source of loans, assistance, and social support for many participants. The savings and lending activities of these groups, though modest in nature, seem to play a significant role in creating a social safety net and fostering a spirit of mutual assistance within the community.

> "Well right now, there is no one who can lend you money, not the traders, not anyone, but if it is the VSLA or the farming group. You go to the VSLA to borrow money, or you go to the farmers to borrow a sack of sorghum. But just like that, outside of these groups, there is nobody who will lend you money." (FGD Women Nazareth Wau)

The program's emphasis on peace-building and conflict resolution played a role in fostering a more harmonious community environment. The implementers, NRC and DRC, have conducted various peacebuilding activities (e.g., community level peace talks, conflict resolution training) in the communities. Many FGD participants reported that such activities have led to a reduction in conflicts and violence within the community. Issues like fights between women and children, domestic violence, and criminal activities have decreased. Training on conflict resolution, for instance, equipped community members with skills to mediate disputes and foster dialogue, rather than resorting to violence. According to participants, these programs have promoted a culture of forgiveness, respect, and peaceful coexistence.

> "One of the impacts we had learnt about is dialogue instead of fighting each other so that we can come to an agreement. Through that we have experienced peaceful co-existence." (FGD Male Blipham Wau)

The CARB Activity also addressed the WASH (Water, Sanitation, and Hygiene) sector to enhance community resilience by reducing health issues through improved sanitation. The activities included digging wells, constructing boreholes and toilets, providing clean drinking water, and raising awareness about hygiene and sanitation practices. The program actively engaged communities by supplying materials while community members contributed labor. Additionally, hygiene promoters from within the communities were selected and trained to raise awareness and promote effective hygiene practices. Participants reported improved sanitation as a result of these efforts.

The CARB's holistic approach, which integrates various sectors such as agriculture, social activities, peacebuilding, gender, and WASH, aims to develop community resilience to cope with ongoing crises. While there are indications of positive changes in the community, these changes are not uniformly distributed, highlighting the need for further work to ensure broader and more inclusive impacts.

Research Question 4: *What value does the multi-year emergency activity add compared to a typical approximately 12-month activity?*

We used a literature review and information derived from the KIIs to answer this research question. We reviewed several project documents from South Sudan that present evidence of multi-year activity's added values in an emergency situation. For example, The Food and Nutrition Security Resilience Program, implemented by FAO, was a four-year program aimed at building resilience and food security in South Sudan. The endline report (FAO, 2024) found increased resilience capacity index, diversification in income sources, and improved capacity and training in natural resource management and production, which is hard to get from the short-term project. This indicates that the long-term emergency project has added value over the short-term projects.

The key informants of the CARB consortium stated that the MYE program has added value to vulnerable communities. The program introduced climate adaptive initiatives, enhancing community resilience through knowledge transfer and training in various livelihood diversification strategies such as farmer gardens and fishing. These activities were possible because of the multi-year nature of the project that empowered individuals with valuable skills, ideas, and enhanced social cohesion within the community. Through activities like VSLAs, economic empowerment was possible, fostering financial independence and social connections among community members.

Highlighting the value of the MYE, an implementer in Rubkona said:

"Yes, it adds significant value. Over the past three years, during our implementation of the resilience program, we introduced climate adaptive initiatives that were previously absent in the community. We successfully transferred this knowledge to the community, particularly through the establishment of farmer gardens and the introduction of sustainable practices. As a result of the training provided by this project, community members have been able to diversify their livelihoods effectively."

Furthermore, the program contributed to building community resilience by training individuals in early warning systems, enabling prompt response to potential shocks which resulted in improvements in livelihoods and overall well-being. Overall, these activities demonstrate the value addition the program brought to the community through effective collaboration and targeted interventions.

Research Question 5: *What are the added advantages of layering MYE Activity with other USAID emergency, non-emergency, and resilience activities?*

Layering MYE (Multi-Year Emergency) activities with other USAID emergency, non-emergency, and resilience initiatives offers several advantages. The key informants shared some advantages which we can group into two parts. *First*, it addresses the multifaceted needs of communities more holistically. Key informants highlighted that individual projects often focus on specific gaps, such as food, water, or health, but human needs are interconnected and complex. By combining various projects, it becomes possible to cover a wider range of necessities, ensuring that gaps not addressed by one program can be covered by another. For instance, while one project might focus on food security, another might address water needs or health services, creating a comprehensive support system for the community. This layered approach helps in creating a more robust and sustainable impact, as it caters to multiple dimensions of well-being simultaneously.

Second, it enhances the local markets and economic structures. Integrated programs help in building market infrastructure and farmers' associations, which play a crucial role in regulating prices and improving the quality of local products. These efforts foster economic resilience by empowering local farmers and traders, and by ensuring that market operations are more organized and efficient. Additionally, resilience training provided through these programs equips communities with the skills to cope with shocks and stresses, thus improving their adaptive capacities. By supporting both immediate and long-term needs, layered interventions create a more stable and resilient community environment, better prepared to handle future challenges.

We also examined various project evaluation reports from South Sudan that successfully layered multiple sectors into a single initiative for better development outcomes. One such project was implemented by Tearfund from July 2020 to July 2021, and integrated health, nutrition, agriculture, and WASH sectors. This comprehensive approach proved effective in improving the food security and health of the participating communities. Another successful example is a project in Bahr el Ghazal state, executed by

ALIMA and Solidarités International, which also combined emergency health, nutrition, and WASH activities, demonstrating substantial positive impacts.

These examples emphasize the advantages of layering MYE activities with other sectoral interventions. However, it is important to note that despite these advantages, the frequent and severe shocks in the field, such as conflict and natural disasters, often overshadow these gains. Moreover, the demand for food and other livelihood support is so great that it is hardly met by the supply. These persistent challenges can erode the benefits of the interventions, highlighting the need for ongoing adaptive strategies and robust contingency plans to sustain the positive impacts in such volatile environments.

Research Question 6: *Is the MYE Activity cost-effective?* [5]

Due to the contamination of the control group, we failed to detect any significant impact of the MYE activity in South Sudan when comparing outcome indicator values between the treatment and control groups. As a result, we conducted a ***cost efficiency*** instead of cost effectiveness analysis. This approach allows us to assess the cost of delivering outputs through different programs and activities, providing valuable insights that can inform future USAID responses in complex humanitarian emergencies.

While the total obligated amount for the whole project was $30 million (per the agreement document), our analysis focuses on four major program areas for which the CARB consortium implementing partners provided cost data. These programmatic areas, covering 18 implemented activities, are as follows:

- **Nutrition Program Area**: Activities aiming to address household-level hunger
- **Agriculture Program Area**: Activities aiming to promote the use and adoption of improved management practices or technologies for crop farming
- **Resilience Program Area**: Activities aiming to improve the ability to recover from shocks and stresses
- **Peacebuilding Program Area**: Activities aiming to improve peace and social cohesion

For the calculation of the cost efficiency we use the following formula:

$$Cost\ per\ Beneficiary\ Reach = \frac{Total\ Cost\ of\ Project}{Total\ Number\ of\ Project\ Beneficiaries}$$

[5] The null impact resulting from the contamination of the RCT hindered our ability to compare treatment and control groups and assess the cost-effectiveness of the interventions as originally planned. Following advice from USAID/BHA, we instead conducted a cost-efficiency analysis.

Our analysis considers the cost and reach (number of beneficiaries) of project activities in four program areas described above, focusing only on the treatment group due to lack of cost and beneficiary reach information for the control group. We focus on the cost of beneficiary reach without discussing the outcome indicator values at the base-line and end-line. We present the cost efficiency at the overall level and compare across three counties, four program areas, and eighteen activities that were implemented across the four programmatic areas, with the number of activities ranging from a maximum of nine in the nutrition program to a minimum of two in the peacebuilding program. The agriculture program included seven activities, while the resilience program had five. Out of the 18 activities, 15 were implemented across all counties. Although we lack specific information on the frequency of these activities, the varying shares of cost and beneficiary reach suggest that program priorities likely differed across counties. Below, we present the main findings from our cost efficiency analysis.

- The overall cost for activities was **$1,689,700** with a total beneficiary reach of **99,398** which translates to **$17** per beneficiary reach.
- The share of total cost was highest in Wau County (38%), followed by Rubkona (36%) and Mayom (26%). However, the share of beneficiaries was highest for Rubkona (78%) while that of the other two counties ranged from 10-12%. This suggests a considerable difference in cost per beneficiary reached across counties, ranging from $8 in Rubkona to as high as $53 in Wau County (Table 1).
- The low cost per beneficiary reach for Rubkona may suggest economies of scale due to the large number of beneficiaries the project served. However, the significantly lower cost per beneficiary in Rubkona, compared to the other two counties, may also be attributed to the specific humanitarian context and beneficiary needs - which influenced the type and frequency of project activities implemented across counties. This may reflect the lower cost per beneficiary in the Participatory Disaster Risk Assessment (PDRA) activities within the resiliency program, the least cost efficient among the 18 activities analyzed (Table 10). Additionally, Rubkona County achieves better cost efficiency in some nutrition program activities like cooking demonstration facilitation, cooking training, and farmers' field schools.

Table 10: Overall and County Level Cost, Beneficiary Size and Cost per Beneficiary

Cost of beneficiary reach	Cost ($)	Number of beneficiaries	Cost per beneficiary reach ($)
Overall	1,689,700	99,695	17
Wau County	649,885 (38%)	12,267 (12%)	53
Mayom County	433,228 (26%)	9,911 (10%)	44
Rubkona County	606,587 (36%)	77,517 (78%)	8

Note: Figures in the parentheses are percentages of the total cost (Total cost: $1,689,700) and total beneficiary reach (Total beneficiaries: 99,695) of all activities across programs and counties.

- Overall, the nutrition program was more cost efficient with $5 per beneficiary while the resilience program was the least cost efficient ($132 per beneficiary). The agriculture program costs $11 and the peacebuilding program costs $26 per beneficiary (Table 11).

Table 11: Cost and Beneficiary Reach Across Four Program Areas

		Program Areas			
Cost and Reach	Aggregate	Nutrition	Agriculture	Resilience	Peacebuilding
Number of Activities	18	9	7	5	2
Total Cost	$1,689,700	$227,498	$414,972	$920,609	$126,621
Total Reach	99,695	48,259	39,542	6,970	4,924
Cost per Reach	17	5	11	132	26

- The cost per beneficiary varied across counties in all four program areas (Table 12). Activities in the resilience program accounted for more than half (54%) of the total cost but reached only 7% of the beneficiaries at an aggregate level. In contrast, the nutrition program was significantly more cost-efficient, reaching nearly half (49%) of the beneficiaries while comprising just 13% of the total cost. The peacebuilding program had the lowest share of total cost (7%) and beneficiary reach (5%). The agriculture program, utilizing 25% of the total cost, reached 39% of the total beneficiaries.

Table 12: Share of Total Cost and Cost per Beneficiary Across Counties and Program Areas

Activity costs and beneficiary reach	Wau	Mayom	Rubkona	Aggregate
Total Cost (Nutrition)	$70,863 (4%)	$85,700 (5%)	$70,935 (4%)	$227,498 (13%)
Total Reach (Nutrition)	7,341 (7%)	3,744 (4%)	37,174 (37%)	48,259 (49%)
Cost per beneficiary ($)	**10**	**23**	**2**	**5**
Total cost (Agriculture)	$139,192 (8%)	$130,100 (8%)	$145,680 (9%)	$414,972 (25%)
Total Reach (Agriculture)	1,725 (2%)	2,800 (3%)	35,017 (35%)	39,245 (39%)
Cost per beneficiary ($)	**97**	**46**	**12**	**11**
Total cost (Resilience)	$371,588 (22%)	$202,200 (12%)	$346,821 (21%)	$920,609 (54%)
Total Reach (Resilience)	1,743 (2%)	1,692 (2%)	3,535 (4%)	6,970 (7%)
Cost per beneficiary ($)	**213**	**120**	**98**	**132**

Total cost (Peacebuilding	$68,242 (4%)	$15,228 (1%)	$43,151 (3%)	$126,621 (7%)
Total Reach Peacebuilding	1,458 (1%)	1,675 (2%)	1,791 (2%)	4,924 (5%)
Cost per beneficiary ($)	**47**	**9**	**24**	**26**

Note: Figures in the parentheses are percentages of the total cost (Total cost: $1,689,700) and total beneficiary reach (Total beneficiaries: 99,695) of all activities across programs and counties.

- The resilience program, with a total cost of $920,609, had the highest cost per beneficiary at $132, underscoring the substantial resources required for these interventions. The cost per beneficiary in this program area varied significantly across counties, with Wau County having the highest cost per beneficiary at $213, followed by Mayom County at $120, and Rubkona County at $98. These variations may reflect the differing intensity and nature of the activities implemented within each county.
- In contrast, the nutrition program with the highest number of activities (9 activities) was most cost efficient overall, with an average cost of just $5 per beneficiary. The cost per beneficiary in this program was lowest in Rubkona County at $2 per beneficiary, highlighting the high efficiency of the program in this area. In Mayom County, however, the nutrition program was less cost efficient, with a per beneficiary cost of $23, making it the least cost efficient program in that county. Interestingly, in Mayom County, the peacebuilding program emerged as the most cost efficient, with a cost of $9 per beneficiary.
- The agriculture program, with seven different activities, had a moderate cost per beneficiary reach of $11 overall. This cost varied widely across counties, with Wau County having the highest cost per beneficiary at $97, and Rubkona County again demonstrating higher efficiency with a cost of $12 per beneficiary.
- The peacebuilding program, with a total cost of $126,621, had an overall cost per beneficiary reach of $26, with Wau County having the highest per beneficiary cost at $47, followed by Rubkona County at $24, and Mayom County being the most efficient at $9 per beneficiary.
- There are significant differences in cost-effectiveness and beneficiary reach across eighteen project activities (Table 13).

Table 13: List of Project Activities with their Share in Total Cost and Beneficiary Reach

Activity number	Activity Name	Relevant Program	Cost ($)	Beneficiary Size	Cost per beneficiary ($)	Share of cost	Share of beneficiary
1	Development of nutrition key messages (hygiene promotion, guide on breastfeeding practices)	Nutrition	12,130	1,409	9	1%	1%

Activity number	Activity Name	Relevant Program	Cost ($)	Beneficiary Size	Cost per beneficiary ($)	Share of cost	Share of beneficiary
2	Facilitation of cooking demonstration/nutrition training	Nutrition	23,756	2,289	10	1%	2%
3	Establishment of Mid-Upper Arm Circumference (MUAC) screening for under 5 children	Nutrition	1,397	520	3	<1%	1%
4	Establishment of mother-to-mother care groups and training them on MIYCN	Nutrition	20,951	1,331	16	1%	1%
5	Cooking demonstration training	Nutrition	15,033	2,595	6	1%	3%
6	Establishment of kitchen garden	Nutrition & Agriculture	104,942	19,510	5	6%	20%
7	Farmer field school	Nutrition & Agriculture	125,754	20,380	6	7%	20%
8	Dry season farming/Drip Irrigation	Nutrition & Agriculture	129,625	20,520	6	8%	21%
9	Seed multiplication	Nutrition & Agriculture	33,160	17,420	2	2%	17%
10	Dyke construction/rehabilitation	Resilience	145,587	1,407	103	9%	1%
11	Floating garden construction	Resilience & Agriculture	24,034	480	50	1%	<1%
12	Permagardens construction	Resilience & Agriculture	18,119	180	101	1%	<1%
13	Cash transfer (unconditional cash distribution)	Resilience	301,390	1,814	166	18%	2%
14	PDRA activities, implementation of different Community Action Plans	Resilience	296,341	1,407	211	18%	1%
15	Establishment of IGAs (VSLA groups, Small scale businesses, and Medium enterprises)	Resilience	292,742	3,329	88	17%	3%
16	Establishment of permagarden practices	Resilience & Agriculture	18,119	180	101	1%	<1%
17	Intra & inter- community dialogues (conflict resolution, peaceful coexistence)	Peacebuilding	45,807	4,114	11	3%	4%
18	Community Safety Action Plan implementation	Peacebuilding	80,814	810	100	5%	1%

- The main observations at the activity level from Table 13 are as follows:

- **Limited beneficiary reach of high-cost activities:** The two most expensive activities were the cash transfer activities ($301,390) and PDRA activities ($296,341) from the resilience program, each accounting for around 18% of the total cost but reaching only 2% and 1% of the beneficiaries, respectively. Despite the high costs of activities like dyke construction ($145,587) and floating garden construction ($24,034), their beneficiary reach was minimal, accounting for only 1% and less than 1% of the total beneficiaries, respectively.
- **Cost-efficient agricultural and nutrition program activities:** The seed multiplication, kitchen garden, and farmers' school-related activities reached 57% of the total beneficiaries while accounting for only 15% of the total cost, making them among the most cost efficient activities ($6 or less per beneficiary). In addition, dry season farming/drip irrigation activities also had relatively lower costs per beneficiary ($6 per beneficiary), contributing to 21% of the total beneficiary reach.
- **Average across activities:** The 18 activities varied widely in terms of cost efficiency from as low as $2 (for seed multiplication activities) to $211 (for PDRA activities). This variation in cost efficiency across activities is also reflected in the cost efficiency across three counties and four program areas discussed above.

One limitation of this exercise was our inability to validate cost related results with implementers. For example, we couldn't confirm whether organizing joint activities led to duplication and higher costs or understand the reasons behind increased costs for certain activities in Wau. This was primarily due to project closures and the departure of key staff.

The analysis reveals significant differences in cost efficiency across the four program areas. The nutrition and agriculture programs generally demonstrated higher cost efficiency, reaching a large number of beneficiaries at relatively lower costs. In contrast, the resilience program, despite its substantial cost, reached a smaller proportion of beneficiaries, making it the least cost efficient across all counties. Resilience programs involve infrastructure construction work, which is inherently costly. However, having permanent infrastructure locally can be cost effective in the long run. When comparing counties, Rubkona County emerged as the most cost efficient, particularly in the agriculture and nutrition programs. Conversely, Wau County had the lowest cost efficiency, particularly within the resilience program. Cost efficiency varied considerably across the 18 activities analyzed, ranging from $2 per beneficiary each (for seed multiplication) to $211 (for PDRA activities). These variations suggest that the focus and nature of activities within the program areas greatly influence the overall cost efficiency at the county level.

The findings on the relative cost efficiency of various programs and activities offer valuable insights for future program design and implementation. However, these variations observed in cost efficiencies across program areas, counties, and activities must be supplemented with information on the challenges faced by implementing partners during the project implementation for further insights. The lack of information on activity frequency and the absence of control group data limited the ability to conduct a more rigorous comparative analysis. Furthermore, the null impact resulting from the contamination of the RCT further hindered our ability to compare treatment and control groups and assess the cost effectiveness of the interventions alongside their cost efficiency. These limitations highlight the need for improved data collection and evaluation methods in future programs to ensure more accurate and rigorous cost analyses for better resource allocation.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Although there were improvements in food security and resilience outcomes in the treatment households compared to the baseline, these achievements did not hold when compared to the control households. Only two indicators showed significance: the percentage of households participating in group-based savings and lending activities, and the percentage of households with soap and water at a handwashing station. Control households also fared well in most of the other indicators, suggesting that the emergency support program in South Sudan faced several implementation challenges that undermined its effectiveness.

First, implementing a Randomized Controlled Trial (RCT) in an emergency context poses significant challenges. It is often difficult to control the implementation in control groups due to the movement of people, which contaminates the samples and complicates impact measurement. For example, in Rubkona and Wau counties, continuous flooding forced a significant portion of households from both control and treatment groups to spend several months together in Internally Displaced Population camps. While in Mayom, continuous conflict impacted the communities. This not only hindered the full implementation of activities but also led to possible spillover effects in non-targeted areas, thereby diluting the treatment effect.

Second, as reported by implementing partners, there were numerous obstacles in reaching the target population, such as flooding and local conflicts, which hindered the full implementation of planned activities. This not only delayed the planned activities but also limited the program's total reach. Only

about 40% of households in the treatment group received some form of intervention.[6] Further, the implementation was less intense, risking the fading effects among the treatment households. In the context of poverty and food security programs, this means that reaching a critical mass can help overcome barriers to adoption and ensure that new practices or benefits are well-integrated into the community. It also helps in creating a network of support among beneficiaries, which can lead to enhanced resilience and sustainability of the program outcomes. During the KIIs, many local leaders highlighted that, given the extensive scope of the problems and needs, only a small portion of the population received assistance. This limited coverage likely contributed to the lack of a more significant impact in the treatment group.

Third, the frequent flooding in program areas impacted implementation efforts significantly. Many implementing partners struggled to operate effectively under these conditions, further complicating the program's execution. Capacity issues also played a role, with partners facing difficulties in financial management and technical implementation. While efforts were made to build capacity, these challenges slowed progress and affected the quality of implementation. As many communities were displaced due to rising water levels, they were forced to leave behind their agricultural plots and livestock, resulting in poor adoption of improved agricultural and livestock practices. The displacement disrupted their livelihoods and limited their ability to benefit from the program's interventions.

Fourth, it was impossible to control the activities of other implementing agencies in the control groups due to ethical considerations, which prevent restricting aid in emergency contexts. Consequently, the control group also showed improvements in several indicators. Nearly 40% of households in control groups also received some form of support from various implementing agencies including NRC and DRC. Some of the organizations that were active in control areas, as reported by survey households, were:

- World Concern
- FAO
- IOM
- WFP
- Red Cross
- War Child Canada
- Red Cross
- Welt Hunger
- CARE

[6] This low rate of exposure to the intervention activities is likely due to several factors, including both IP prioritization of services during a fluctuating emergency situation, and our sampling strategy, which aimed to be representative of treatment areas and track the same respondents longitudinally.

This also indicates that given the extent of needs on the ground, it is impossible to create a true control group in emergency situations. The external support complicated the assessment of the program's true impact when designing an RCT.

Fifth, nearly 50% of households in both control and treatment groups received external food support. Improvements in food security-related indicators may be attributed to this food aid received from various sources. This indicates that these achievements are not sustainable, as households remain at risk of severe food insecurity without continuous food aid flows. The reliance on external support underscores the need for more robust and sustainable interventions.

Sixth, there were significant delays in program implementation. Initially, as shared by some key informants in KII, some partners relaxed their efforts, assuming there would be opportunities to extend the program. This assumption persisted despite clear communication from the outset that the program would not be extended due to funding constraints. As a result, many partners only began serious implementation efforts later in the program period, which compressed the timeline and hindered the full realization of the program's objectives.

Seventh, for an RCT, the presence of the research team on the ground is crucial to validate the study design and ensure proper implementation and compliance. However, due to security and logistical challenges, our US-based team was unable to visit the study sites. This inability to conduct on-site visits necessitated a complete reliance on implementing partners for reporting activities. This reliance potentially delayed the early detection of issues such as sample contamination and hindered the development of alternate plans. Regular site visits by the research team could have facilitated more timely identification and resolution of these challenges, thereby enhancing the integrity and reliability of the study.

Recommendations

The null findings from our study indicate various challenges in implementing an RCT-based impact evaluation in emergency situations. We recommend several approaches to mitigate these issues for future program implementation and evaluations:

Research:

Selective Evaluation Criteria: Not all emergency programs qualify for RCT-based evaluation. All foreseeable challenges should be considered and reviewed before executing an RCT to ensure the program is suitable for such an evaluation. In the MYE evaluation, although we thought about the possible flooding, we could not estimate the extent of flooding and its consequences in the areas. Another thing we could not foresee was the involvement of other agencies in providing similar types of activities, especially in the control areas. It is important to consider these challenges before deciding on an impact evaluation in an emergency situation.

Enhancing RCT Integrity through Coordination with other Agencies: Effective communication between implementing partners (IPs) and evaluators is essential in complex emergency contexts, especially where multiple organizations are responding. Both should regularly assess potential RCT contamination from other agencies' activities. Mapping of not only the presence but also the specific activities of these agencies at both the baseline and midline stages of the project helps in identifying potential risks to the RCT and allows for timely corrective actions. Additionally, such mapping enhances the interpretation of evaluation results by providing a more nuanced understanding of external influences on the project outcomes.

Field Visits for Validation: None of the research team members from Notre Dame were able to visit the study sites in person due to security issues, hindering their ability to validate the design. Future designs should reconsider RCT-based evaluations if security prevents site visits by the research team for interim checks. A midline or automated follow-up (e.g. through SMS text messages) of a more limited selection of the sample, for example, can be implemented.

Co-Creation of Design with Implementers: The role of the implementer is crucial for compliance with the design and timely reporting of issues. Future evaluations should involve the co-creation of the design with direct participation from implementers and their participation beyond the design, clearly defining the roles of field staff in following the research design and reporting to the research team.

Updating Progress to the Team: Regular updates to the teams by implementers on progress, challenges, and mitigation measures should be a key component of future evaluations to ensure transparency and continuous improvement. In the MYE evaluation, the implementers were involved beyond the design phase, but their participation and reporting in monthly meetings declined toward the end of the project.

Programming:

Comprehensive Program Implementation: Full-fledged program implementation is required to achieve impact in the treatment areas. Given the null findings for most of the indicators, comprehensive program activities are needed to improve food security, nutrition, and resilience in households and communities. The most pressing need is the provision of nutritious food for children who are not getting enough at this time. A feasible implementation plan with full-fledged activities should be iteratively developed to ensure impact.

Contingency Planning for Shocks: Various man-made and natural shocks forced the study communities to relocate, limiting the implementing partners' ability to carry out activities. Future evaluations should include a contingency plan to ease implementation in case of disasters.

Invest in Community-Level Activities: More households in the treatment group are participating in group-based savings compared to the control group, suggesting that the CARB Activity has effectively facilitated the organization of local savings and lending groups within communities. This success indicates

that the program can benefit from focusing more on community-level interventions rather than individual household-level interventions.

Invest More in the Field: Resilience-building activities had limited impact. CARB can play a crucial role in investing in initiatives that increase access to and use of credit. Such investments could focus on creating or strengthening local financial institutions, providing financial literacy training, and facilitating better linkages between communities and credit providers. By addressing these issues, CARB can help improve the financial resilience and economic stability of the households in the treatment areas.

Monitoring and Addressing Delays: Delays in program implementation were reported, which might have resulted in null findings. A monitoring plan for process monitoring with strict measures to address any issues should be in place to ensure timely execution.

Consider Cost Analysis as an Integral Part of Evaluation: To optimize resource allocation and achieve more effective program outcomes, project implementers should consider both cost efficiency and cost-effectiveness. While cost efficiency provides useful insights, cost-effectiveness—measuring impact relative to cost—offers a more comprehensive evaluation. When possible, include comparisons between treatment and control groups in your cost analysis to generate valuable learnings. Accurate and disaggregated cost data by program, activity, and geography should be collected throughout the project. Careful planning is essential to determine the how, who, and when of data collection to ensure its accuracy and utility for informed decision-making.

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Annexes

Annex 1: Additional Analysis

Table A1: Endline Outcomes for Households, by Activity Participation

	Received no MYE activities (N=1,439)	Received at least one MYE activity (N=1,003)	P-value of Difference
Food Access and Nutrition Indicators			
Poor FCS (%)	20.98 [1.17]	1.64 [0.43]	<0.001
Borderline FCS (%)	19.96 [1.32]	16.93 [1.47]	0.266
Acceptable FCS (%)	59.05 [1.47]	81.44 [1.50]	<0.001
Moderate HHS score (%)	78.56 [1.19]	94.37 [0.77]	<0.001
Severe HHS score (%)	21.44 [1.19]	5.63 [0.77]	<0.001
Agriculture Indicators			
Access to sufficient seed to plant (%)	41.37 [1.42]	34.51 [1.73]	0.075
Applied improved management practices in crop (%)	32.07 [1.61]	29.39 [1.65]	0.477
Applied improved management practices in livestock (%)	31.64 [1.42]	32.81 [1.65]	0.730
Resilience Indicators			
Count of sources of income	1.46 [0.02]	2.43 [0.06]	<0.001
Ability to recover from shocks and stresses index [2-6]	3.31 [0.05]	3.58 [0.06]	0.123
Index of bridging social capital [0-2]	1.84 [0.01]	1.54 [0.02]	<0.001

Table A1: Endline Outcomes for Households, by Activity Participation

	Received no MYE activities (N=1,439)	Received at least one MYE activity (N=1,003)	P-value of Difference
Index of linking social capital [0-6]	0.57 [0.04]	1.73 [0.08]	<0.001
Trust local government to respond to future shocks (%)	18.95 [1.04]	18.76 [1.25]	0.952
Social Activity Indicators			
Participation in group-based savings, microfinance or lending programs (%)	6.44 [0.65]	20.77 [1.48]	<0.001
Use of financial services in the past 12 months (%)	10.69 [0.85]	42.21 [1.72]	<0.001
Women who are members of a community group (%)	4.69 [0.66]	11.54 [1.01]	<0.001
Men who are members of a community group (%)	12.61 [0.90]	27.19 [1.60]	<0.001
Gender Indicators			
Women's decision making with own cash (%)	2.35 [0.80]	9.42 [1.50]	<0.001
Women's decision making with spouse's cash (%)	0.83 [0.51]	4.05 [1.05]	0.022
Men with access to credit (%)	0.15 [0.11]	0.50 [0.29]	0.265
Women with access to credit (%)	3.58 [0.87]	2.63 [0.89]	0.521
Men who make decision about credit (%)	0.15 [0.11]	0.50 [0.29]	0.265
Women who make decision about credit (%)	3.58 [0.87]	2.63 [0.89]	0.521
Peacebuilding Indicators			
Interacted different ethnic groups last week (%)	48.30 [1.46]	52.09 [1.76]	0.411
Interacted with neighbor last week (%)	77.09 [1.17]	74.72 [1.59]	0.537

Table A1: Endline Outcomes for Households, by Activity Participation

	Received no MYE activities (N=1,439)	Received at least one MYE activity (N=1,003)	P-value of Difference
WASH Indicator			
Soap and water at a handwashing station on premises (%)	11.35 [1.09]	25.14 [1.53]	<0.001

MYE activities include all program activities except food distribution. Robust standard errors in brackets.

Table A2: Endline Outcomes for Children, by Activity Participation

	Received no MYE activities (N=541)	Received at least one MYE activity (N=298)	P-value of Difference
Children 6–23 months receiving a minimum acceptable diet (MAD) (%)	3.12 [1.14]	5.57 [2.21]	0.330
Exclusive breastfeeding of children under six months (%)	84.61 [3.35]	79.76 [2.92]	0.309

MYE activities include all program activities except food distribution. Robust standard errors in brackets.

Annex 2: Research Design

South Sudan Buy-in: BHA MYE Program Impact Evaluation

RESEARCH DESIGN DOCUMENT

Identifying Information
PTE: Purdue University
Sub-recipient: University of Notre Dame, Pulte Institute for Global Development
USAID Agreement Number: AID-7200AA18CA00009
Sub-award Number: F900255040211 9
Title: LASER Buy-In: BHA
Version Date: July 2021

Abstract

Emergency activities are typically short-term interventions, 18 months or less, designed to provide food assistance to save lives, reduce suffering, and support the early recovery of populations affected by both acute and protracted emergencies. However, USAID's Bureau of Humanitarian Assistance (BHA) pursued a pilot multi-year emergency (MYE) project under the premise that longer-term emergency interventions, in certain circumstances, can help populations move beyond relief assistance to longer-term recovery. MYE activities may also mitigate the impact of shocks, prevent the erosion of household assets and livelihoods, and accelerate recovery—contributing to the future resilience of affected households and communities. These MYE activities have the potential to provide a critical link between humanitarian and development programs, and rigorous evaluation can contribute to the evidence base for effectively designing and implementing multi-year emergency activities. The purpose of this evaluation is to measure the impact of the Bureau of Humanitarian Assistance's (BHA) MYE emergency activity in beneficiary communities of South Sudan that are prone to both natural and man-made disasters. Led by University of Notre Dame, this evaluation brings experts from ResilientAfrica Network (RAN) and Gender Empowerment and Women Leadership Program (GEWLP) in South Sudan to develop and implement the evaluation.

Objectives

The USAID Mission in South Sudan has developed a strategy for resilience programming, which includes the BHA MYE activities. The development of this strategy began with the Partnership for Recovery and Resilience (PfRR) in areas of collaboration with the UN and other donors. A rigorous evaluation is expected to contribute to the evidence base supporting the strategy for effectively designing and implementing multi-year emergency activities and strengthening resilience in South Sudan. The evaluation is designed and carried out in collaboration with the implementing partner for the activity to be

evaluated. The research/evaluation team will seek to answer the following evaluation questions through a rigorous process:

- What is the impact of the activity on household food and nutrition security?
- What is the impact of the activity on households' ability to mitigate and recover from shocks and stresses (conflict or climate related)?
- What is the impact of the activity on building community resilience?
- What value does the multi-year emergency activity add compared to a typical ~12 month activity?
- What are the added advantages of layering MYE activities with other USAID emergency, non-emergency, and resilience activities?
- Are MYE interventions cost effective?

Background and Significance

USAID's Bureau for Humanitarian Assistance (BHA), released a pilot multi-year emergency APS in 2020, under the premise that longer-term emergency interventions in certain circumstances can help populations move beyond relief assistance to longer-term recovery. MYE activities may also mitigate the impact of shocks, prevent the erosion of household assets and livelihoods, and accelerate recovery—contributing to the future resilience of affected households and communities. These MYE activities have the potential to provide a critical link between humanitarian and development programs (aka, the Humanitarian-Development-Peacebuilding nexus).

Continued conflict, disease outbreaks, and increasingly frequent environmental shocks will further increase the need for emergency assistance over the coming years in South Sudan. At the same time, continued financial support in humanitarian assistance is not sustainable in the end. However, recent work in the area of resilience cited by USAID shows that "with sustained investment and the right approach, each dollar invested in resilience and early response can yield nearly three dollars in reduced humanitarian spending and avoided asset losses" (USAID/South Sudan Strategic Framework 2020-2024, p. 3). Given this evidence, BHA seeks to rethink its approach in South Sudan, aiming at carefully laying the foundation for self-reliance, and reducing high levels of humanitarian need that cannot be met sustainably and indefinitely. Robust evidence to support this shift in funding and programming is needed. In this sense, the evaluation will be designed and carried out in collaboration with the implementing partner (NRC) for the activity to be evaluated. The evaluation comprises two distinct phases:

Phase One: Baseline. (Includes the planning stage of the evaluation). During this phase, the research team will also work with the implementing partner to confirm the precise geography and interventions for the evaluation and define the treatment and comparison groups that will be applied across both Phases One and Two. Working with the implementing partner, the research team will be able to

understand the targeting criteria they employed to determine their treatment areas and identify comparison groups that meet similar characteristics as the treatment group.

Also during Phase One, USAID and the research/evaluation team will jointly develop final evaluation questions as part of the evaluation co-design process to center on the following:

- Impact of the activity on household food and nutrition security
- Impact of the activity on households' ability to mitigate and recover from shocks and stresses (conflict or climate related)
- Impact of the activity on building community resilience
- The value added of a multi-year emergency activity (compared to a typical ~12 month activity)
- The added impact of layering MYE activities with other USAID emergency, non-emergency, and resilience activities
- Cost effectiveness of interventions

Based on these factors, the research team will determine the experimental design based on flexibility within the program to create different treatment options, availability of administrative data, ethical concern, and implementer's commitment for the design.

Finally, the UND/RAN team will coordinate with the USAID South Sudan Mission and the implementing partner to plan the data collection process. This includes identifying the ideal time for enumerator training and data collection to precede the start of humanitarian interventions as quickly as possible.

Phase Two: Endline. Phase Two will take place once the Baseline Period has ended and will focus on preparations and carrying out the endline, drawing off the evaluation design elements determined during Phase One. As a result, the research team expects to engage remotely with the implementing partner quarterly to help monitor how implementation is proceeding and to ensure that the implementer is adhering to basic guidelines that will be developed around the experimental design.

When carrying out the endline evaluation, the research team will attempt to engage the same enumerators who were involved in the baseline to achieve as much continuity around data collection as possible. This will also require re-confirming that the control group is still valid and accounting for any factors that may have affected the design. This will require reviewing the protocols for the endline evaluation, training teams again on the evaluation tools and developing a final evaluation report.

Methods

The evaluation will be completed through a rigorous randomized control trial (RCT) of the USAID/BHA-funded multi-year emergency Complementary Action for Resilience Building in South Sudan (CARB). Consistent with the design of a RCT, both treatment and control villages were selected at random by the LASER PULSE (Long-term Assistance and SErvices for Research, Partners for University-Led Solutions Engine) evaluation team from a list of eligible villages provided by the CARB

consortium partners after a long period of consultation across both sides. Approximately 169 villages were identified in total, with half of these assigned as treatment villages and the other half as control villages. The terms of CARB's interventions in treatment and control villages is laid out below. While the evaluation team only anticipates evaluating a total 150 villages (75 treatment and 75 control), a larger number was selected to buffer the potential of running into issues during the data collection process.

Village selection process for the evaluation sample

1. CARB partners provided a list of eligible villages to the UND and RAN evaluation team for random assignment to control and treatment groups. All of the villages were selected as potential areas for implementation under the CARB MYE Activity funded by USAID/BHA.
2. The villages originated from Wau County (Western Bahr EL Ghazal State, with interventions implemented by NRC), Rubkona (Unity State, with interventions implemented by DRC) and Mayom County (Unity State, with interventions implemented by NRC).
3. The minimum required number of villages for the evaluation was 150.
4. All the villages of Wau[7] and Rubkona[8] counties selected by CARB partners were included for randomization.
5. A portion of Mayom (about 76 villages out of 203 villages) were selected randomly as control and treatment villages.
6. The evaluation team also selected alternate villages to use as replacements in case it is not feasible to provide programming or to survey households in a given village.

The main focus of impact evaluations is to establish causality and attribution. To estimate the impact of a program on outcomes, an impact evaluation must estimate the counterfactual: that is, what the outcome would have been for program participants if they had not participated in the Activity. In practice, this requires identification of an identical comparison group to estimate what would have happened to the participants without the Activity, versus a treatment group that has received the Activity. Randomized assignment of treatment is considered the gold standard of impact evaluations in finding a counterfactual group. It uses a random process, or chance, to decide who is granted access to the Activity and who is not. Under randomized assignment, every eligible unit (i.e. an individual, household or community) has the same probability of being selected for treatment by an Activity.

South Sudan's evolving contexts can compromise the assumptions of randomized control trials. Currently, millions of South Sudanese are affected by seasonal floods in the White Nile region areas.[9] While the ceasefire is holding between the 2018 peace agreement signatories, some factions are not part of the peace process and are active in different regions. Further, even among those who are part of the peace process, not all combatants belonging to these groups are in the cantonments. Some combatants

[7] 56 villages total; 28 in treatment group
[8] 45 villages total; 23 in treatment group
[9] South Sudan: Floods - Aug 2020." https://reliefweb.int/disaster/fl-2020-000193-ssd

in the cantonments are on the verge of returning to communities due to lack of food and supplies. Reports abound of communal violence that threaten to displace entire villages. While the return process of IDPs and refugees has slowed with the COVID-19 pandemic, it has not stopped and can pick up quickly as the security situation improves. Further, University of Notre Dame (UND's) team strives to meet Sphere standards for humanitarian intervention, which uphold flexibility and adaptability as critical pillars within humanitarian contexts.

Study Design Limitations

Main issues:

- Threats and hazards related to violence in South Sudan in general and Wau, Mayom and Rubkona County in particular may pose challenges for the MYE Activity implementation and evaluation work. If there is increased violence and higher levels of displacement, it may increase the attrition rate.
- Weather and meteorological conditions may cause widespread flooding in the study area which may force people to relocate. Further, the flooding events may also create a problem for the evaluation team to travel in the villages.

Geographical barriers and the safety and security context in South Sudan impose restrictions for the research, in terms of access to certain areas of the country where open armed confrontations, attacks on civilians, and attacks on personnel affiliated with aid programs are recurrent. In addition, heavy seasonal rains coupled with inadequate road infrastructure make it difficult to gain access to the MYE study areas of the country. The contested control over territories between armed factions and military confrontation within the armed opposition movements could expand in the MYE study areas. In this sense, decisions on the units to be used in the study (households), the places where said units are going to be engaged (MYE program prioritized bomas/payams/villages), the sample size (3,887 households) and the number of places where data is going to be collected (169 sites), are a function of the CARB Activity prioritized areas. The current security situation in those areas, their accessibility by road, as well as other constraints, such as time, budget and the in-country capacity of the evaluation team.

Official demographic, social and economic data is unreliable or largely nonexistent. The UN System and INGOs operating in South Sudan have produced most of the information available for the design of this study. This information was, for the most part, incomplete or outdated. Given human mobility patterns in South Sudan, influenced by conflict, natural hazards and events, and economic cycles, it is assumed that the location of villages and households is dynamic, and that migration is usually unaccounted for. Under such a condition, it might be challenging to acquire household and individual-level data. Given the time, financial and scope constraints of the study, the evaluation team will concentrate efforts in collecting and analyzing data relative to the CARB Activity's program outcomes. This means that a

number of questions related to, for instance, Emergency Humanitarian Assistance (EHA) and Housing, Land and Property (HLP), have not been included in the survey modules.

Cultural and language barriers are considered by the project at different levels. First, the local firm, GEWLP, has provided continuous guidance and relevant input to the research design, operational preparedness, and selection and training of enumerators that can navigate, culturally and linguistically, the particularities of the sites selected for the conduction of the study. The project acknowledges that South Sudan is a multilingual society, and that this might create communication barriers between the research team and the study participants. Based on advice from CARB's consortium partners and GEWLP, researchers have decided to administer the survey modules and key informant questionnaire in the Juba Arabic dialect, given its widespread use in the areas prioritized by the project.

Data Collection

Procedures for Data Collection

Sample Size

One of the outcomes of the MYE Activity is improved food security at household level. The work, particularly implementing MYE activities, will bring changes in the food security situation with more food items available in the households for consumption. One of the measures of improved food security in households is the Food Consumption Score (FCS). FEWS NET reported that from 2016 to 2018, the mean FCS was around 25 in South Sudan, a score that would be achieved if a household consumed only cereal, wild foods/vegetables, and oil daily. Prior to the outbreak of conflict, FSNMS data reported national mean Food Consumption Scores (FCS) over 40, a score indicative of a household likely consuming cereals, lentils/beans, and oil every day, and other foods periodically, during the past seven days.

In the design of this study, the households constitute the unit of analysis (the unit at which the main outcome is defined) and the villages constitute the unit at which the treatment is implemented, with households nested within villages. The power analyses we have performed take into account this nesting of households within villages and are broadly applicable to the (household-level) binary outcomes being considered in this evaluation study. Such outcomes give place to measures such as improvement in FCS.

We are interested to know if the program has effects on improving the FCS in program villages. We start by assuming an expected Poor FCS score at the baseline is 55% in the villages, and a level of significance of 0.05.

We used STATA for power calculation with following specifications:

- power .8
- baseline proportion .55

- rho (ICC) .2
- # of hh per village: 20
- # of villages in smallest strata: 22 T, 22 C (number of villages in Rubkona county)
- alpha (significance level) .05

The command in stata was:

power twoprop .55 , k1(22) k2(22) m1(20) m2(20) cluster diff(.1(.005).25) graph rho(.2)

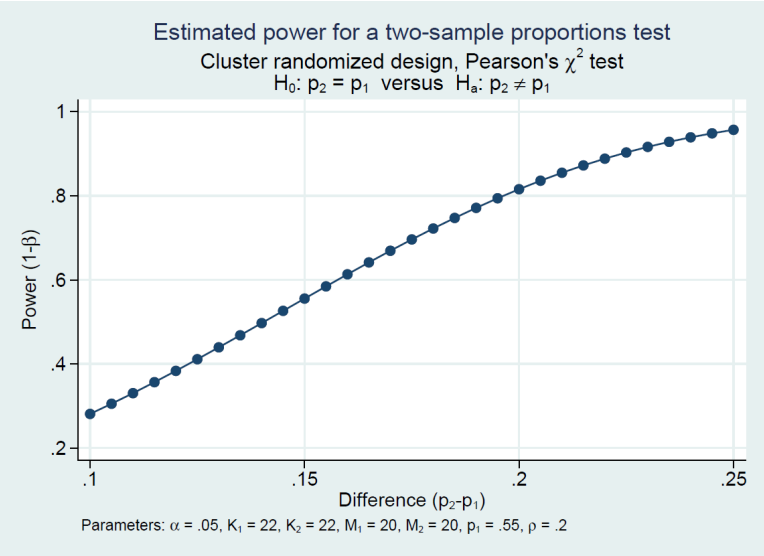


Figure A1: Estimated Power for a Two-Sample Proportions Test

Under these assumptions, a study with 150 clusters, 75 in the treatment and 75 in the control groups, and 20 households per village, will have at least 0.80 statistical power to detect a difference of 20 percentage points for prevalence of poor FCS score between the treatment and control group mean percentages. In other words, 150 villages with 20 households per village will detect, at 0.80 statistical power, a difference of 20 percentage points from the baseline (e.g., to 35%). It is based on the reporting of Poor FCS (<=21) which went up significantly over this time, from roughly 10-15 percent between 2011 and 2013 to around 55% after 2016 in South Sudan per FEWS NET report.

We estimate the total number of households for treatment and controls, i.e. 20x75=1,500 per group or 3,000 total. We have oversampled the household by 15% (i.e. 23 households per village) for expected nonresponse and/or attrition. Further, we have also oversampled the villages to buffer the possible loss of villages due to security and access problems. We have included 19 additional villages (10 in treatment and 9 in control groups) in the sample. With all these considerations, our baseline sample would be 23x 169=3,887.

Household Selection

We will apply a two stage sampling procedure in selecting the respondents from all 169 villages. First, villages within three counties will be selected randomly for MYE Activity intervention. Second, within each village we will select households. For the survey, it is desirable to have a list of all the households from the village for randomly selecting for the survey. However, in our case it is costly to list the households prior to the survey so we will use a random walk method to select the households for the survey. In each village, the survey team will select 23 households for the survey randomly. Enumerators will add GPS coordinates and location descriptions using geographical, topographic and/or infrastructure points of reference to the survey form for each household. Since we will follow up the same households that are selected for baseline during the endline, we will oversample our baseline households sample by 15% to account for possible attrition. Following is the procedure to select the households randomly:

- First, the team will get the approximate number of households in the given village and the team will divide the total number by the sample size. This number can be used as an interval number. For example, if a village has roughly 66 households and the interval number would be 3 if the target number of sampled households is 22. Estimates which result in a decimal interval number will be rounded to the nearest whole number.
- The evaluation team will select a landmark in the village (a school, a big tree, a church/mosque, etc.) to start the selection of households
- The first house will be selected based on which day of the week the team is doing a survey in the village (Sunday being Day 1, Monday Day 2, etc.). For example, the fourth house from the landmark if they are doing the survey on Wednesday.
- For the subsequent house for survey, it will be the third house when the team uses the interval number of 3.
- The survey team will alternate which direction they begin to walk along a road from the starting point (right or left), and can stop the process when they reach the 22nd house.

Key Informant Interview Procedures:

During the baseline, it is expected that at least 6 Key Informants from each county will be interviewed, for 18 interviews in total from three counties. The key informants will be the community/village leaders, elected officials at Payam/Boma level, civil society/NGO workers, women leaders, donors community people who are familiar with the local context on shocks, food needs, livelihood options, different program and projects being implemented to address the local needs, local security situation, etc. The key informants will be selected based on their specialized and unique knowledge, understanding and their condition in selected counties. Each informant may be asked to suggest other people who might be interviewed. Only adults, ages 18 and above, will be recruited to participate as Key Informants. Researchers and Interviewers will ensure that, at least, 40% of the Key Informants are women.

The interview guide will be translated from English into South Sudanese Arabic, so that interviewers can ask informants about their language preference for the interview. Interviewers will then seek to establish rapport with each key informant by explaining the purpose of the interview, the intended use of the information being collected, and by reassuring participants about the confidentiality of the information. The Informed Consent Form will be handed over to the key informant, and will be read jointly with the interviewers to ensure that the participants understand their rights and the researchers' obligations to them. If they agree, informants will be asked to sign a printed Informed Consent Form in the language of their choosing.

Survey Procedures:

Upon approval, the study will be rolled out in the respective study areas observing participants' confidentiality and rights. Prior to administering the questionnaire each participant will be explained to the purpose of the survey and their consent to participate sought and documented by signing an informed consent form. The participant reserves their right not to respond to questions they are not comfortable with. The findings from these studies will be anonymized and not linked to specific respondents.

Our survey tool consists of eight modules (see attached survey tool), to be administered using tablets that can support the ODK platform. ODK enables offline data collection and storage that allows for ex post data uploading and synchronization. We anticipate that each household survey will last for about 60 minutes. The head/spouse of the household will participate in the survey. Each survey will begin with a verbal consent. Enumerators will clearly communicate to participants that a second interview for endline data collection should be expected, and ask them if they would agree to participate at that stage as well. For the endline data collection, the Evaluation Team will, again, ask for participants consent.

Key Informant Interviews will be used to engage with humanitarian organizations implementing relief programs, to understand how these programs are implemented, its mechanisms, and the processes for impact in the households (see attached qualitative questionnaire). Potential participants will have the opportunity to ask questions about the research, its objectives, and their rights as participants as well as the obligations of researchers towards them in relation to disclosure of information of the project, and confidentiality in the use of the information provided by participants. Potential participants will be approached, with help from Community Leaders, via email, telephone or in-person. Willing participants will be given the informed consent form before the survey sessions start.

Below is the recruitment script that will be used during the survey:

> *Hello. My name is _____. I am working with a consortium of University of Notre Dame, Makerere University School of Public Health under ResilientAfrica Network (RAN) and Gender Equity Women's Leadership Program (GEWLP) as a research assistant. We are conducting a survey to learn*

about household characteristics, agriculture, food security, expenditures, and nutrition of women and children. Your household was selected to participate in an interview that may take up to sixty (60) minutes to complete. We will interview you and other members of your household as needed.

Your participation is completely voluntary. There are no known risks or discomforts associated with this survey. There will be no benefit provided to you because of your participation. We hope you will agree to answer the questions since your views and experiences are important. If I ask you any questions you don't want to answer, let me know and I will go on to the next question. You can also stop the interview at any time. The data collected in this survey may be used as part of a study in the future. If your household is selected for the future study then a second survey will be conducted. If you agree to participate in the second survey, the data from this survey will be used for comparison. If you decide not to participate in either survey or if you withdraw from participating at any time, you will not be penalized in any way.

Your privacy is important to us. No part of this interview is being recorded or videoed. If you agree to participate, some of the information you provide will be available on a public website that researchers and others will be able to access without identifying you. The information will be entered into a database that will NOT contain confidential information such as your name or the name of your village that could be used to identify you. Any data attached to your personal information will be stored in a password protected electronic format.

Do you have any questions about the survey or what I have said? If in the future you have any questions regarding the survey or the interview, or concerns or complaints, we welcome you to contact [name of the implementing partner]. We will leave a copy of this statement and our organization's complete contact information with you so that you may contact us at any time [GIVE INFORMATION SHEET].

Do you agree to participate in the survey?

Enumerator Training

There will be two phases of training; one before baseline and another one prior to endline phase which will be guided by fully developed training manuals. RAN in collaboration with Purdue University, University of Notre Dame and GEWLP of South Sudan will conduct a 5 days face to face training of 50 Research Assistants (RAs) who will conduct data collection. The RAs will be trained at a selected location in Juba, Capital city of South Sudan. Specifically, RAs will be trained into two separate cohorts of 25 and each cohort will be trained for 5 days. The training will cover concepts of both qualitative and quantitative methodologies of data collection including aspects of research ethical conduct. The training sessions will be highly interactive involving both in-class, group discussions as well as role plays. Additionally, we shall conduct a one day pilot of the tools at the end of the training to ascertain ambiguity, duration and competences of administering the study tools.

Data Analysis and Interpretation

For data analysis purposes, the evaluation will consider USAID/South Sudan Strategic Framework (2020-2024), and its development hypothesis as its point of departure for the framing of resilience as an approach that links humanitarian assistance with longer-term development outcomes. In this sense, resilience can be understood as both the process and the result of intentional, evidence-based

interventions that seek to boost households' and communities' capacities to effectively function in the face of shocks and stresses and still meet a set of well-being outcomes. For the specific case of this evaluation, the initial description and categorization of observations will be based on the resilience frameworks employed by USAID/BHA, NRC, and the CARB Consortium.

Based on the programmatic priorities of the CARB Activity, the evaluation team will organize the data collected through the surveys and KIIs. The programmatic priorities identified by CARB are 1) Rural livelihood restoration and increased food production; 2) Strengthened nutritional practices, and 3) Strengthened coordination platforms and rapid response mechanisms; and 4) Enhanced community social cohesion. Field-level activities will focus, across the board, on community and household capacity development, distribution of equipment and materials, the establishment of market-driven organizations, behavior change for improved nutrition, and GBV prevention.

Data Analysis Plan

Balance test

For an RCT, there should be a match between the control and treatment groups. A balance test in MYE program evaluation will be conducted to ensure that the randomization created statistically equivalent groups between treatment and control villages. We will test whether differences in key characteristics are statistically significant between the two groups by using t-test. Tests of significance will consider survey design, including both the strata (counties) and primary sampling unit (village). Standard errors will be clustered at the village level. Following variables will be used for the balance tests at the baseline and endline.

- Percent male respondent
- Average age of respondent
- Percent of married respondent
- Household size
- Percent male respondents with multiple wives
- Education level of respondent:
    - Percent with no schooling
    - Percent with primary level
    - Percent with Secondary O level
    - Percent with Secondary A level
    - Percent with Secondary A or B level
    - Percent with Tertiary level
- Percent households with children below 2 years
- Percent households engaged in farming/crop production
- Number of crops grown in rainy season

- Number of crops grown in dry season
- Average number of groups active in the village
- Percent household with at least one animal (cattle/goat/sheep/pig/camel/donkey) in the household
- Average number of shocks the households went through in the last 12 months

Attrition

Attrition can present an issue as the respondents to the baseline survey may move to other places, the households may be vacated, or the respondents may simply become uninterested in participating in the survey. Our power calculations include an attrition rate of 15 percent by the end of the study.

To ensure that we find the same households/respondents and thus minimize the possibility of attrition, we will maintain records of household contact information (location, phone, etc.) and also record the GPS coordinates of the households. We will attempt to mitigate attrition by informing respondents of the longitudinal nature of the study when acquiring consent. Enumerators will explain to respondents that someone will return to follow-up approximately in two years for the final round of survey. In this way, the respondent agrees to a return visit up front (although consent will be obtained at each data collection).

Efforts will be made to reduce attrition in the villages. During a survey, if at the first attempt surveyors do not find the respondent, then they will visit the household the following day. However, if surveyors do not find the respondent after two visits, we will not collect data from this household. Households that drop out of the sample will not be replaced.

Testing attrition bias: Our first approach to understanding attrition will be comparing the overall rate of attrition with the differential attrition in treatment and control villages. We will compare the attrition rates at the level of households and villages (cluster-level attrition) using the standards from the What Works Clearinghouse. If the levels of attrition surpass the thresholds indicating unacceptable levels of bias, we will investigate further using regression analysis. We will use regression analysis to understand what variables (including treatment status) are correlated with attrition status. We will estimate the following equation:

$$A_i = \beta_0 + \beta_1 Treatment_i + \beta_3 X_i + \epsilon_i$$

Where A_i is the indicator whether the individual has left the sample, $Treatment_i$ is the treatment dummy, and X_i is the explanatory variables such as gender, age, household size or ethnic group. In the case that attrition is at an unacceptable level, we will correct for potential attrition bias using a Heckman model or another appropriate model.

Outcome of Interest and hypothesis to be tested

Since the main objective of MYE programming is improving household level food and nutrition security, this evaluation will use FCS score to estimate the impact. Further, the program aims to improve the nutrition of children between 6-23 months. The following two hypotheses to be tested for these goals are:

Hypothesis 1: *The NRC-led MYE program improves the household level food consumption score (FCS) in CARB villages*

Hypothesis 2: *The NRC-led MYE program improves the minimum acceptable diet (MAD) in CARB villages*

These two hypotheses are related to Q 1: What is the impact of the activity on household food and nutrition security?

The second focus of MYE programming is to improve households' ability to mitigate and recover from shocks and stress. Further, it also aims to improve household level social capital. Following three hypotheses will be tested toward these goals:

Hypothesis 3: *The NRC-led MYE program improves households' ability to recover from shocks and stresses index in CARB villages*

This hypothesis is related to Qs 2: What is the impact of the activity on households' ability to mitigate and recover from shocks and stresses (conflict or climate related)?

Hypothesis 4: *The NRC-led MYE program improves the social capital index in CARB villages*

Hypothesis 5: *The NRC-led MYE program lead to higher participation in group-based savings, micro-finance or lending program in CARB villages*

These two hypotheses are related to Qs 3: What is the impact of the activity on building community resilience?

Treatment effect estimation

The primary outcome of this research is improved household level food and nutrition security, which will be examined through food consumption score (FCS). The statistical model to calculate the impact will be based on an ANCOVA regression defined by McKenzie (2012) as:

$$Y_{ivct} = \gamma\, Treat_{vct} + \theta\, Y_{vc0} + r_{vct} + u_{ct} + e_{ivct}$$

Where Y_{ivct} is individual i in village v in county c measured at time t for baseline or endline. This equation also considers the individual's baseline score on the same indicator, denoted as Y_{vc0}. $Treat_{vct}$ takes value one if the village has been assigned to receive treatment by time t, and zero otherwise. The δ_t variables will also consider the seasonality of the different rounds of data collection. The treatment effect is given by γ. We assume that r_{vct}, u_{ct}, and e_{ivct} are normally distributed with mean zero and

variance according to the cluster level. In this equation we treated counties as random effects; we will test whether the use of fixed effects (dummies for county) or independent equations for each county produces a better model.

Data cleaning and construction of indicators

Data Cleaning

Data cleaning refers to the process of dealing with potential errors or extreme values such as duplicate entries, missing data, or outliers. Data will be checked for quality during fieldwork by supervisors, and data uploads will be spot-checked by the research team remotely on a regular basis. When data collection is complete, the data will be examined for duplicates and duplicate entries will be removed if found.

As the majority of our key indicators are scores, indices, or percentages, we do not anticipate major issues with outliers as would be expected with continuous variables such as income or agricultural production. Similarly, as the majority of our questions are not sensitive, we do not anticipate major issues with missing data. Regardless, we will tabulate and summarize all variables used to construct the key indicators listed below to confirm this. This will be an internal check and will not be reported unless there is a concern on specific variables. In those cases, outliers and missing data will be reported and corrected using an acceptable standard procedure. The chosen procedure will be documented in the final report.

Further, to ensure minimum missing data or erroneous data, the enumerators will be specially alerted on the major indicators/ variables that are critical to this study. A pre-test will be done to check for any potential variables that may be too sensitive to answer or likely to be difficult to estimate/ or recall and addressed accordingly.

Construction of Indicators

Refer to a separate file here which describes the construction of all key indicators

Qualitative data analysis and integration

We will use the following approach for qualitative data analysis.

Preparation of codebook: Since this analysis will be based on the deductive method of analysis, we will create a collection of codes to start with based on research objectives and questions, a particular term we are looking for, or themes or patterns we come across while reviewing the qualitative data transcripts. Nevertheless, we will make it more iterative, meaning that we will learn as we code the content which may need to code the content by using the inductive method. Deductive coding can help you organize your codes and analysis, while inductive coding helps you identify new ideas as they emerge from the data.

Coding, indexing, and framing data: As we begin reading and coding the documents in Atlas.ti, we may need to match concepts and relevant quotations to the codes we have identified. This process is called indexing, a step often used when we are sorting through large amounts of qualitative data. When we index the data, we essentially tag the content related to the various MYE indicators and outcomes using the codes that are identified for the analysis. Then, we create a list of those tags and where they are in the data in the form of an index for framing the data. The framing is a process of describing qualitative data in a matrix that organizes the data according to categories that are identified for this analysis.

Analysis: Analysis will be based on the emerging theme in the data with synthesis. In addition, we will use the coding frames as reference. The frames will focus on the major research questions of the assessment and data generated. Based on the coding, reading of transcripts, and field notes, the data will be analyzed thematically. The analysis of the qualitative data will be based on the variability and uniqueness of responses, using software for consolidating qualitative information. Qualitative findings will be integrated with the quantitative results to add context to the findings. In addition we will provide exemplary quotes from the people we speak with to support the findings.

Data Management Procedures

At the end of each interview, the research assistant will thoroughly check the questionnaire for completeness. Before submission, the filled questionnaire will be saved on the android tablet after the interview, later edited, finalized and submitted to the cloud server. Supervisors will cross check all the questionnaires at the end of each days' work to ensure that no important data is missing. In addition, the questionnaire in the ODK software will have inbuilt quality checks to further ensure accuracy of the data.

One RAN staff and another from UND, who are able to access the back end of the data cloud server, will be able to validate the data for completeness in real time to inform the study team for corrective action. The UND PI and the RAN staff will oversee the quality control aspects of the study, in liaison with the field supervisors. In addition, the study team will hold daily debriefs to track data collection progress and plan for the next days' work.

Information collected from participants will be de-identified. No video or photographic records of participants will be made or kept by the researchers. The PI, Co-PI, Associate Researchers and USAID will have access to de-identified data, and only the PI, Co-PI, and Associate Researchers will have access to the personal identifiable information, which will be stored electronically in ResilientAfrica Network (RAN) secure servers, protected with a password that only the Associate Researchers from RAN will know. KII notes, as well as signed consent forms will be stored under lock & key in RAN's office, in different cabinets.

Surveys will be coded for confidentiality and anonymity and will be kept electronically in the RAN's servers for the three years after the end of the sub-award. At that time, the data will be properly

disposed of. During data analysis, only coded copies of the data files will be used. Upon dissemination, no identifying data will be discussed regarding the participants.

The personal Identifiable Information that might be recorded is: Age, Audio Recordings from Interviews/Focus Groups, Date of Birth, GPS coordinates, Ethnicity, Gender, Site (County, Payam, Boma, Village), Name, Signed Consent form, Telephone number.

Interview and survey participants who do not wish to participate in the research will not be interviewed. They will not engage with any aspect of the research and no data concerning them will be recorded. The identity of all participants and non-participants in the research project will be kept confidential, and no identifiable photographs, names, or descriptions will be kept in our qualitative data through the practice of pseudonyms or blurring when necessary.

Time Table

Indicative Work Plan and COVID-19 contingency measures

Access to the indicative workplan at this link.

Given the current restrictions imposed on travel and direct human contact, as a result of the spread of the coronavirus SARS-CoV-19 and its impacts on human health, program activities such as international travel and enumerator training have been adjusted to mitigate the risks and exposure of participant communities and researchers to the virus.

The nature of this project requires that a number of technical and cultural barriers are considered, such as connectivity and accessibility to internet or cell phones in the selected villages, literacy of participants, language barriers and the need for translators, awareness of cultural cues, expressions and gestures that might be lost without face-to-face interaction through interviews, just to mention a few.

The COVID-19 pandemic is a unique emergency situation, in which the ethical issues arising from relevant contexts are defined by local realities but also, and importantly, the specificities of the virus itself and government responses to the outbreak. For the project's research sites, this means that decisions made either by the Government of South Sudan (GoSS) or other actors controlling the prioritized geographies will affect the project's capabilities to undertake data collection activities. Therefore, both the IRB Committee determination on the protocol application, as well as the decisions made by the South Sudanese administration that affect the prioritized bomas/payams, might impose changes to the list of targeted villages, and the dates for the data collection process.

COVID-19 Risk Management Plan

Context

From January 3, 2020 to August 3, 2021, WHO[10] reports 11,076 cases of COVID-19 and 120 deaths in South Sudan. Up to August 3, 2021, 59,989 vaccine doses had been administered, since the start of the vaccination campaign, on April 6, 2021.[11] According to the UN, "[t]he risk of COVID-19 in South Sudan is very high as a result of factors such as severe malnourishment and related health complications; a weak, limited and under-resourced health care system, including near absence of palliative care facilities, and the large number of IDPs with limited and/or cramped shelter."[12]

Although "South Sudan has been ranked as the riskiest country for the spread of COVID-19 in Africa",[13] it should be acknowledged that community-level systems and structures to control epidemics and infectious diseases are in place across the country: people have experience and extensive knowledge in dealing with epidemics during war and other crises.[14] However, media reports alert of a lack of efforts from the side of the government to educate the public about protective measures against COVID-19 and provide face masks[15], which people can't afford. Restrictive measures, such as fines and curfews, are likely to backfire given the precarious economic situation of households across the country.

Risks

According to the Centers for Disease Control and Prevention (CDC), COVID-19 spreads in three main ways[16]:

- Breathing in air when close to an infected person who is exhaling small droplets and particles that contain the virus.
- Having these small droplets and particles that contain the virus land on the eyes, nose, or mouth, especially through splashes and sprays like a cough or sneeze.
- Touching eyes, nose, or mouth with hands that have the virus on them.

Close, face-to-face contact is, therefore, a major source of risk directly linked to research and data collection activities. In order to mitigate risks for research participants and project enumerators,

[10] WHO. (2021). COVID-19 Dashboard. South Sudan. https://covid19.who.int/region/afro/country/ss
[11] UNICEF. (2021). COVID-19 vaccination kicks-off in South Sudan. https://www.unicef.org/southsudan/press-releases/covid-19-vaccination-kicks-south-sudan
[12] UN South Sudan. (2020). COVID-19 Socio-Economic Response Plan. https://southsudan.un.org/sites/default/files/2020-10/United%20Nations%20SouthSudan%20%20%20COVID-19%20Response%20Plan.pdf
[13] Africa Center for Strategic Studies, 2020, cited by UN South Sudan, 2020.
[14] Rift Valley Institute. (2021). Community Approaches to Epidemic Management in South Sudan Lessons from local healthcare systems in tackling COVID-19. https://reliefweb.int/sites/reliefweb.int/files/resources/Community%20Approaches%20to%20Epidemic%20Management%20in%20South%20Sudan%20-%20RVI%20%282021%29.pdf
[15] Cirino, W. (2021, March 8), South Sudan Introduces Fines for Not Wearing Masks, Social Distancing. Voice of America News. https://www.voanews.com/covid-19-pandemic/south-sudan-introduces-fines-not-wearing-masks-social-distancing
[16] CDC. (2021, July 14) How COVID-19 Spreads. https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/how-covid-spreads.html

measures related to movement restrictions, social distancing, requirements to wear protective gear (e.g. face masks and gloves), and adapt hygiene practices like frequent handwashing, should be considered by the project, for both participants and enumerators.

The research team is also aware that restrictions and government measures to prevent the spread of COVID-19 might impose additional burdens to households, increasing their vulnerability and exposure to other sources of risk. Within the limits and capacities of the project, the research team will seek to avoid or mitigate imposing additional burdens by abiding to national policies and procedures, and by following best practices and recommendations from the US CDC and the WHO.

Assessment

According to international SOS[17], a safety and security consultant firm, the COVID-related levels of risk are **HIGH** for Juba, and **EXTREME** for the rest of South Sudan.

Potential Risk Treatments

The project team will adopt a Risk Reduction approach. Risk reduction includes adopting behaviors that effectively mitigate the severity of loss or damage. Measures include equipping staff with health and safety kits, keeping emergency numbers, and adopting additional hygiene conducts before, during and after face-to-face contact with other enumerators and research participants.

Procedures and Actions

Precautions

- Mandatory wearing of masks during all project activities by the project staff and study participants will be ensured.
- The enumerator team will ensure social distancing of at least 2 meters during each activity.
- Hand sanitizer, face masks and gloves will be made available for enumerators and study participants before, during and after the interviews.. Everyone will be required to wash hands for 20 seconds using water and soap or an alcohol-based hand sanitizer.
- All project staff and study participants will be required to check their temperature using a thermometer hand scanner. If the temperature is above 37.2 degrees Celsius, the individual will be asked to step aside and wait for another 15 minutes to retake the temperature.
- If the temperature is still high, the individual will be asked to step aside and the nearest health facility will be contacted for further action.
- All members at the study site will be required to avoid handshakes and hugs or any form of exchanging greetings that require physical contact.
- All study participants will be registered, and their contact information kept confidential and for future purposes and to aid contact tracing, if the need arises.

[17] International SOS South Sudan Country Report. Consulted on August 4, 2021.

- Participants will be asked to complete a brief signs and symptoms checklist
- The enumerator theme will follow good respiratory hygiene by keeping windows widely open while interviewing study participants.

Ethical Considerations and Limitations

The proposed research does not require participants to be deceived. Participants will be recruited among community members inhabiting selected villages in the prioritized bomas/payams (see list in annexes). Participants will determine the conditions of their involvement in the research endeavor. This is a necessary condition both for the collection of relevant data and for trust-building with participants and communities. In case participants feel any discomfort during interviews, group discussions or responding questionnaires, they will be empowered to retain full control over the course of action to avoid such a situation, and will be referred to an appropriate professional if they make the request. Participants will be informed that their decision to participate or not in the survey would have no effect whatsoever in programmatic decisions, and that it would not be a criteria of exclusion for receiving material and technical support in the framework of the CARB Activity.

Knowledge Translation Strategy

Along with the data collection activities planned to retrieve information from participant communities, the project team will design a questionnaire for key informants (leaders, officials and organization representatives). This questionnaire will be used in Key Informant Interviews with community/village leaders, elected officials at Payam/Boma level, civil society/NGO workers, women leaders, donors community people who are familiar with the local context, in order to clarify operational challenges that practitioners have faced in the implementation of their programs, their perceptions on changing conditions for humanitarian assistance and resilience programming.

The responses collected from practitioners will also help determine approaches to research translation products. By understanding the gaps in knowledge and shortcomings of ongoing and past development programs, this research project will be able to provide useful insight and information to be used by NGOs and other stakeholders in their decision-making processes.

This project will use LASER PULSE's approach to Research Translation, which aims to "tailor research products for non-technical audiences with the intent of facilitating the application of the research." This approach consists of 1) the identification of relevant stakeholders; 2) researcher outreach to development practitioners; 3) the increase of research capacity, output, translation, dissemination and use of research results in an intentional way; and 4) influencing policy and program implementation for evidence-based decision-making.

Dissemination products of the results of the baseline research are expected to have the form of:

1. Baseline Survey Report

2. Brief/infographic with key findings
3. Baseline Findings presentation
4. Baseline dataset submission to USAID

Appendices

Appendix 1. Data Collection Forms

See documents attached: Survey; Key Informant Questionnaire

Appendix 2. Informed Consent Forms

See documents attached: Survey; Key Informants

Appendix 3. List of Villages - Treatment and Control

See documents attached

Appendix 4. Research Design Work Plan

See documents attached

Annex 3: Indicators Calculation Guide

Indicators Calculation Methods

Module: Household food access and nutrition: food consumption score, food diversity, hunger

☐ INDICATOR #4: Percent of households with poor, borderline, & acceptable food consumption score (FCS)

Percent of households with poor, borderline, and acceptable food consumption score

$$\frac{\text{Sample-weighted number of households with poor, borderline and acceptable food consumption score}}{\text{Sample-weighted number of households in the FFP development implementation area}}$$

The FCS is a composite score based on dietary diversity, food frequency and relative nutritional importance of different food groups. The frequency of consumption (in days) is asked over a recall period of seven days. Food items are grouped into nine standard groups with a maximum value of seven days/week. Those values are then weighted and summed to obtain the FCS.

Food Group	Food Items (examples)	Weight
1. Main staples	Maize, maize porridge, rice, sorghum, millet, bread, cassava, plantains, potatoes, sweet potatoes, other tubers	2
2. Pulses	Beans, peas, groundnuts, cashew nuts	3
3. Vegetables	Vegetables, leafy greens	1
4. Fruit	Fresh and dried fruits	1
5. Meat and fish	Beef, goat, pork, chicken, duck, fish, eggs	4
6. Milk and dairy	Milk, yogurt, kefir, and other dairy	4
7. Sugar	Sugar, honey, candy, other products with sugar	0.5
8. Oil	Oil, butter, ghee, other fats	0.5
9. Condiments	Spices, coffee, tea, salt, small amounts of milk or fish powder	0

Table A3: FCS Group and Weight

The following steps should be followed to calculate the FCS score:

- Reset all values of 9 to 0 for questions C04 to C15
- Construct the 9 food group scores:
    1. Staples = C04 + C05
    2. Pulses = C11
    3. Vegetables = C06
    4. Fruit = C07
    5. Meat = C08 + C09 + C10
    6. Dairy = C12
    7. Sugar = C14
    8. Oil = C13
    9. Condiments = C15
- If any of the food groups scores are greater than 7, then reset to 7 (recall the questions are asked about consumption in days)
- Multiply each food group score by the appropriate weight
- Sum the weighted food group scores

FCS = Staples*2 + Pulses*3 + Vegetables*1 + Fruit*1 + Meat*4 + Dairy*4 + Sugar*0.5 + Oil*0.5

The FCS can have a maximum value of 112, which implies that each of the food groups was consumed every day for the last seven days.

Once the FCS is calculated, it is then compared with pre-established thresholds that indicate the status of the household's food consumption. *The thresholds for the food consumption profiles should be determined based on the frequency of the scores and the knowledge of the consumption behavior in the country/region.* The thresholds most be applicable in a wide range of situations as shown below:

Standard Thresholds	Food Consumption Profile	Thresholds with oil and sugar eaten on a daily basis (~7 days a week)
0 – 21	Poor food consumption	0 – 28
21.5 – 35	Borderline food consumption	28.5 – 42
> 35	Acceptable food consumption	> 42

Table A4: Standard Thresholds

Using the standard thresholds, the food consumption profiles are

constructed as shown below. The three percentages should sum to 100 percent.

Calculation for Poor Food Consumption	Sample-weighted number of households with FCS ≤ 21 / Sample-weighted number of households in the FFP development implementation area	X 100
Calculation for Borderline Food Consumption	Sample-weighted number of households with FCS > 21 and ≤ 35 / Sample-weighted number of households in the FFP development implementation area	X 100
Calculation for Acceptable Food Consumption	Sample-weighted number of households with FCS > 35 / Sample-weighted number of households in the FFP development implementation area	X 100

☐ *INDICATOR #5: Reduced Coping Strategies Index (rCSI)*

Table A5: Reducing Coping Strategies Index

INDICATOR #5: Reduced Coping Strategies Index (rCSI)			
INDICATORS REFERENCE: FFP E3			
DEFINITION: The rCSI is a proxy indicator of household food insecurity that is based on a list of behaviors (coping strategies). The index reflects both the frequency of each behavior (i.e. how many days over the last 7 days the coping strategy was used by any member of the household) and severity (i.e. how serious the strategy). The rCSI is based on a list of five food-related coping strategies that the household used in the seven days prior to the survey. These five coping strategies carry different weights as shown in the table below. The final rCSI raw scores are calculated by multiplying the frequency with which a behavior was used by the universal severity weight, then summing the weighted scores for each coping strategy. The maximum raw score for the rCSI is 56, i.e. a household that used all five strategies every day for the last 7 days would have a raw score of 56. The reduced CSI is calculated using five food related coping strategies and standard weights, as indicated in the table below.			
(Repeat the introductory phrase for each of the strategies below).	**Frequency (number**	**Severity weight**	**Weighted score**

Standard question: In the previous seven days, if there have been times when you did not have enough food or money to buy food, how often has your household had to_____?	**of days out of 7 days)**		**(frequency x weight)**
1. Rely on less preferred and/or less expensive food		1	
2. Borrow food, or rely on help from a friend or relative		2	
3. Limit portion size at mealtime		1	
4. Restrict consumption by adults in order for small children to eat		3	
5. Reduce the number of meals eaten in a day		1	
Total Household Score	**Sum the subtotals**		

UNIT OF MEASURE: Mean rCSI score, Median rCSI score, Standard Deviation of mean, CI for mean

CALCULATIONS:

The ***mean*** (or sample mean) is the mathematical average of the survey sample. Basic statistical software can be used to calculate the mean.

The ***standard deviation*** is a measure of variation or dispersion in a dataset. Basic statistical software can be used to calculate the standard deviation.

The ***confidence interval*** is a range of numbers within which the true population parameter falls; in this case, the confidence interval gives us an estimated range for the true rCSI mean. The confidence interval is calculated by finding the upper and lower limits of the true population parameter. Basic statistical software can be used to calculate the confidence interval at the 95% level. Note that the correct formula should be used to calculate the confidence interval for a mean, not a proportion; also identify if the population variance is known or unknown. Note that confidence interval should only be reported if data are collected using a sample (not a census).

The ***median*** is a measure of central tendency. To find the median, arrange the observations in order from least to greatest value. If there are an odd number of observations, the median is the middle value. If there is an even number of observations, the median is the average of the two middle values. Basic statistical software can be used to calculate the median.

REQUIRED DISAGGREGATION:

Descriptive statistics: Mean, Standard deviation, Confidence interval (95%), Median.

Gendered household: Female & Male Adults (F&M), Adult Female no Adult Male (FNM), Adult Male no Adult Female (MNF), Child no Adults (CNA).

HOW TO COUNT LOA (level of accuracy): use the endline survey value.

LEVEL: Outcome	**DIRECTION OF CHANGE:** For mean, lower is better (-)
MEASUREMENT NOTES	
DATA SOURCE: Standard WFP data collection questionnaire developed to collect periodic data for FCS.	
FROM WHO: Activity Beneficiary	
WHO COLLECTS DATA: Baseline data will be collected using trained enumerators from the intervention area. Consortium partner MEAL manager will closely supervise, monitor and manage the data collection closely. The M&E lead will clean, analyze and produce the report. Endline data will collected by An independent consultant.	
FREQUENCY OF DATA COLLECTION & REPORTING: Twice, at start and at end of the project period.	
DATA COLLECTION METHODS: Beneficiary-Based Survey (BBS)	
BASE VALUE INFORMATION: Baseline value will be derived from the baseline survey	
REPORTING NOTES: For IPTT, enter the overall values (required) and disaggregate values **Overall**: 1. Mean rCSI score for all households in the survey 2. Standard deviation of rCSI score for all households in the survey 3. Confidence Interval (95%) of rCSI scores for all households in the survey 4. Median rCSI score for all households in the survey 5. Total number of households in the activity target **By Household Composition** 6a. Mean rCSI score for F&M households in the survey 6b. Standard deviation of rCSI score for F&M households in the survey 6c. Confidence Interval (95%) of rCSI scores for F&M households in the survey 6d. Median rCSI score for F&M households in the survey 6e. Total number of F&M households in the activity target area 7a. Mean rCSI score for FNM households in the survey 7b. Standard deviation of rCSI score for FNM households in the survey 7c. Confidence Interval (95%) of rCSI scores for FNM households in the survey 7d. Median rCSI score for FNM households in the survey 7e. Total number of FNM households in the activity target area 8a. Mean rCSI score for MNF households in the survey 8b. Standard deviation of rCSI score for MNF households in the survey 8c. Confidence Interval (95%) of rCSI scores for MNF households in the survey 8d. Median rCSI score for MNF households in the survey	
FURTHER GUIDANCE: *FFP Handbook, Part III: Indicators for Emergency Activities, January 2020, pp19.*	

INDICATOR #6: Prevalence of households with moderate or severe Household Hunger Scale (HHS) score

INDICATOR #6: Prevalence of households with moderate or severe Household Hunger Scale (HHS) score	
INDICATORS REFERENCE: FFP E4	
DEFINITION: HHS is a food deprivation scale that measures the percent of households experiencing hunger. To collect data for this indicator, the person in the household in charge of food preparation is asked about the frequency with which three events were experienced by any household member in the last four weeks: 1. No food at all in the house and occurrence frequence 2. Went to bed hungry and occurrence frequence 3. Went all day and night without eating and occurrence frequence **CALCULATIONS**: If the event is reported as having not been experienced in the last four weeks, the response is coded as "never" (value = 0). If the event is reported as having been experienced in the last four weeks, a frequency of occurrence question is asked to determine how often the event was experienced. For each frequency of occurrence question, the following responses are possible: "rarely" (value = 1), "sometimes" (value = 2), and "often" (value = 3). For tabulation purposes, the responses are then recoded into three frequency categories: "never" (new recoded value = 0), "rarely or sometimes" (new recoded value = 1), and "often" (new recoded value = 2). Values for the three questions are summed for each household, producing a HHS score ranging from 0 to 6. The raw scores are then tabulated into the following categories: • HHS score 0-1 = little to no hunger • HHS score 2-3 = moderate hunger • HHS score 4-6 = severe hunger To calculate the percent of households with a score of "moderate" to "severe" hunger, add up the number of households in the "moderate" and "severe" food security categories, then divide by the total number of participant households, multiply by 100.	
HOW TO COUNT LOA: use the endline survey value.	
UNIT OF MEASURE: Percent	
REQUIRED DISAGGREGATION: **Gendered households:** Female and Male Adults (F&M), Adult Female no Adult Male (FNM), Adult Male no Adult Female (MNF), Child no Adults (CAN)	
LEVEL: Outcome	**DIRECTION OF CHANGE:** lower is better (-)
MEASUREMENT NOTES	
DATA SOURCE: Household survey questionnaire	

FROM WHO: from the person in the beneficiary household in charge of food preparation
WHO COLLECTS DATA: Baseline data will be collected using trained enumerators from the intervention area. Consortium partner MEAL manager will closely supervise, monitor and manage the data collection closely. The M&E lead will clean, analyze and produce the report. Endline data will be collected by an independent consultant.
FREQUENCY OF DATA COLLECTION & REPORTING: At start and at end of the project.
DATA COLLECTION METHODS: Beneficiary-based sample Survey (BBS)
BASE VALUE INFORMATION: Baseline value will be derived from the baseline survey
REPORTING NOTES: **Overall**: 1) Percent of households with Moderate HHS; 2) Percent of households with Severe HHS, 3) Total number of households in the beneficiary survey. **Gendered household**: 4) Percent of F&M households with Moderate HHS Score, 5) Percent of F&M households with Severe HHS Score, 6) Total number of F&M households in the beneficiary survey, 7) Percent of FNM households with Moderate HHS Score, 8) Percent of FNM households with Severe HHS Score, 9) Total number of FNM households in the beneficiary survey, 10) Percent of MNF households with Moderate HHS Score, 11) Percent of MNF households with Severe HHS Score, 12) Total number of MNF households in the beneficiary survey, 13) Percent of CNA households with Moderate HHS Score, 14) Percent of CNA households with Severe HHS Score, 15) Total number of CNA households in the beneficiary survey.
FURTHER GUIDANCE: *FFP indicator Handbook, Part III: Indicators for Emergency Activities, Jan2020, pp24.*

INDICATOR BL 12: Percent of children 6–23 months receiving a minimum acceptable diet (MAD)

Percent of children 6-23 months receiving a minimum acceptable diet	Sample-weighted number of breastfed children 6–23 months who had at least the minimum dietary diversity and the minimum meal frequency during the previous day and night	AND	Sample-weighted number of non-breastfed children 6–23 months who received two or more milk feeds and the minimum dietary diversity (not including milk feeds) and the minimum meal frequency during the previous day and night
	Sample-weighted number of breastfed AND non-breastfed children 6–23 months in the FFP development implementation area		

This indicator summarizes several infant and young children feeding practices, including breastfeeding, dietary diversity, and feeding frequency. Calculation of the indicator involves combining the two numerators and two denominators shown above. Because the indicator is somewhat complex, the tabulation of the indicator should be carried out in a series of steps.

The first step required to calculate this indicator is to create a food group score (as a new variable) for the dietary diversity component of the indicator. A separate food group score should be created for breastfed and non-breastfed children, following the instructions below.

For **breastfed children**, a seven-food group score is used. The seven food groups used for calculation of the dietary diversity component of the indicator for breastfed children are:

1. Grains, roots, and tubers
2. Legumes and nuts
3. Dairy products (milk, yogurt, cheese)
4. Flesh foods (meat, fish, poultry, and liver/organ meats)
5. Eggs
6. Vitamin-A rich fruits and vegetables
7. Other fruits and vegetables

Construct the seven-food group score as follows:

Begin with a score of 0.

For each of the seven food groups, add a point if any food in the group was consumed.

Food group 1: Add 1 point if: D30 = 1 OR D33 = 1 OR D35 = 1

Food group 2: Add 1 point if: D42=1 OR D43 = 1

Food group 3: Add 1 point if: D22 = 1 OR D24 = 1 OR D28 = 1 OR D44 = 1

Food group 4: Add 1 point if: D38A=1 OR D38B=1 OR D39A = 1 OR D39B=1 OR D41 = 1

Food group 5: Add 1 point if: D40 = 1

Food group 6: Add 1 point if: D34 = 1 OR D36A = 1 OR D37A = 1 OR D49 = 1

Food group 7: Add 1 point if: D36B = 1 OR D37B = 1

Minimum dietary diversity for **breastfed** children 6–23 months of age is defined as consuming four or more food groups out of the seven food groups.

For **non-breastfed children**, a six-food group score is used. The six food groups used for calculation of the dietary diversity component of the indicator for non-breastfed children are:

1. Grains, roots, and tubers
2. Legumes and nuts
3. Flesh foods (meat, fish, poultry, and liver/organ meats)
4. Eggs
5. Vitamin-A rich fruits and vegetables
6. Other

fruits and vegetables

Construct the six-food

group score as follows:

Begin with a score of 0.

For each of the six food groups, add a point if any food in the group was consumed.

Food group 1: Add 1 point if: D30 = 1 OR D33 = 1 OR D35 = 1

Food group 2: Add 1 point if: D42=1 OR

D43 = 1
Food group 3: Add 1 point if: D38A=1 OR D38B=1 OR D39A = 1 OR D39B=1 OR D41 = 1
Food group 4: Add 1 point if: D40 = 1
Food group 5: Add 1 point if: D34 = 1 OR D36A = 1 OR D37A = 1 OR D49 = 1
Food group 6: Add 1 point if: D36B = 1 OR D37B = 1

Minimum dietary diversity for **non-breastfed** children 6–23 months is defined as consuming four or more food groups out of the six food groups *in addition* to two or more milk feeds.

The second component of this indicator is minimum meal frequency.

Minimum meal frequency for **breastfed** children is defined as two or more feedings of solid, semi-solid, or soft food for children 6–8 months (D51 ≥ 2); or three or more feedings of solid, semi-solid, or soft food for children 9–23 months **(**D51 ≥ 3).

Minimum meal frequency for **non-breastfed** children 6-23 months is defined as four or more feedings of solid, semi-solid, or soft foods (D51) ≥ 4) and two or more milk feeds: (D23 + D25 + D29) ≥ 2.

Before calculating the MAD indicator, recode D51 as "0" if D50 = 2. Then tabulate the MAD indicator following the calculation below.

Calculation	Sample-weighted number of children with [(D17 = 1 **OR** D18 = 1) **AND** (age in days ≥ 183) **AND** (age in days < 274) **AND** (7-food group score ≥ 4) **AND** (D51 ≥ 2)] **OR** [(D17 = 1 **OR** D18 = 1) **AND** (age in days ≥ 274) **AND** (age in days < 730) **AND** (7 food group score ≥ 4) **AND** (D51 ≥ 3)] **OR** [(D17 = 0 AND D18 = 0) **AND** (age in days ≥ 183) **AND** (age in days < 730) **AND** ((D23 + D25 + D29) ≥ 2) **AND** (6-food group score ≥ 4) **AND** (D51 ≥ 4)] **/** Sample-weighted number of children with [(age in days ≥ 183) **AND** (age in days < 730)]	X 100

INDICATOR BL 13: Prevalence of exclusive breastfeeding of children under six months

Prevalence of exclusive breastfeeding of children under six months	Sample-weighted number of children under six months who are exclusively breastfed / Sample-weighted number of children under six months in the FFP development implementation area

To calculate the percentage of children under six months who are exclusively breastfed, estimate children's "age in days" (see box on estimating a child's age in days above). Include only children that are less than 183 days of age (this is equivalent to 0–5 months) and follow the calculations below.

Calculation	Sample-weighted number of children with (age in days < 183) **AND** (D17 = 1 **OR** D18 = 1) **AND** (D21, D22, D24, D26, D27, D28, D30, D31, D32 all = 0) **AND** (D33–D49 all = 0) / Sample-weighted number of children with (age in days < 183) in the FFP development implementation area	X 100

Notes: The source documents for this information are WHO. 2008. *Indicators for assessing infant and young child feeding practices – Part 1: Definitions*. Available at: http://www.who.int/nutrition/publications/infantfeeding/9789241596664/en/index.html and WHO. 2010. *Indicators for assessing infant and young child feeding practices – Part 2: Measurement*. Available at: http://www.who.int/nutrition/publications/infantfeeding/9789241599290/en/index.html. FFP awardees should refer to these documents for complete information on questionnaire adaptation, data collection, and tabulation for this indicator.

Module: Agriculture management practices, technology used, yield and marketing

INDICATOR #A05: Percentage of households with access to sufficient

INDICATOR #7: Percentage of households with access to sufficient seed to plant	
INDICATORS REFERENCE: BHA, A5	
DEFINITION: This indicator is intended to capture what proportion of farmers in a given catchment area (i.e., target area of a BHA activity intervention) have access to sufficient seed to plant. This indicator should ideally reflect the full range of channels through which farmers procure seed to meet their household needs, which may include, receipt of BHA-distributed seed. A household has "**access to sufficient seed to plant**" when the household either: has seed in hand (i.e., own stocks) or has the ability or means to get it elsewhere (e.g., from neighbors, market, agro dealers) in a timely manner to plant the household's normal intended planting area. **Sufficient** seed is captured through farmer self-reporting of the minimum amount of seed required to plant her/his normal intended planting area. Conceptually, seed access is foundational but not necessarily sufficient to achieve seed security, as indicated in the FOA Seed Security conceptual framework. As such, this measure may be used as a rough proxy for overall seed security at the household level. *Data is collected based on the farmer's perception of access to adequate seed. A binary response question "did you acquire adequate (minimum) amount of seed for the last planting season (last 12 months)?" is asked. If the person (male or female) being interviewed answers "Yes", put "**1**" whereas put the code **"0"** for "No"*.	
UNIT OF MEASURE: Percent (of households)	
CALCULATIONS: The percent is derived by dividing the number of households in the survey reporting access to sufficient seed to plant by the total number of households in the survey. Numerator: Number of households in the survey reporting access to sufficient seed to plant (1=yes) Denominator: Total number of households in the survey	
HOW TO COUNT LOA: LOA value will be generated from the endline survey.	
REQUIRED DISAGGREGATION: Not applicable. However, partners may disaggregate by the type of seed (e.g., maize, sorghum, beans) since seed access may vary widely depending on the operational context.	
LEVEL: Outcome	**DIRECTION OF CHANGE:** higher is better (+)
MEASUREMENT NOTES	
DATA SOURCE: Household survey questionnaire	
FROM WHO: Farming households in the activity implementation area	
WHO COLLECTS DATA: Baseline data will be collected using trained enumerators from the intervention area. Consortium partner MEAL manager will closely supervise, monitor and manage the data collection closely. The M&E lead will clean analyze and produce the report. Endline data is collected by an independent consultant.	

FREQUENCY OF DATA COLLECTION & REPORTING: At start and at end of the project.
DATA COLLECTION METHODS: Beneficiary-based Survey (BBS)
BASE VALUE INFORMATION: Baseline value will be derived from the baseline survey
FURTHER GUIDANCE: USAID Bureau for Humanitarian Assistance indicator handbook for emergency activities July 2020, pp41.

INDICATOR #8: Percent of producers who have applied targeted improved management practices or technologies

Percent of producers who have applied targeted improved management practices or technologies	Sample-weighted number of producers of targeted commodities who have applied at least one promoted improved management practice and/or technology in the previous production year / Sample-weighted number of producers of targeted commodities in the FFP development implementation area

This indicator is calculated and reported separately for each targeted commodity (crop, livestock or aquaculture) that the DFSA identifies. The indicator is not reported across all commodities because it would not be meaningful.

Producers of a targeted crop commodity are identified in question G13. Calculate the indicator as follows:

Crop Calculation	Sample-weighted number of producers with G13 = 1 **AND** [who report practicing at least one of the management practices/technologies listed in question G14 **OR** who report using one of the NRM practices listed in question G19 **OR** who report using one of the improved storage practices listed in question G14] / Sample-weighted number of producers of the targeted crop (G13 = 1) in the FFP development implementation area	X 100

Questions G13, G14 and 7.9206 are repeated for each targeted crop commodity. Calculate this indicator separately for each targeted crop commodity.

Producers of a targeted livestock commodity are identified in question G16. Calculate the indicator as follows:

Livestock Calculation	Sample-weighted number of producers with G16 = 1 **AND** [who report practicing at least one of the management practices/technologies listed in question G17 **OR** who report using one of the NRM practices listed in question G19]	X 100
	Sample-weighted number of producers of the targeted livestock (G16 = 1) in the FFP development implementation area	

Questions G16 and G17 are repeated for each targeted livestock commodity. Calculate this indicator separately for each targeted livestock commodity.

Module: Resilience, capacities (absorptive, adaptive, and transformative), safety nets, livelihood diversifications

INDICATOR: Number of sources of income in households

The total number of livelihood activities engaged in over the last year. The question asked to identify these livelihoods is "What were the sources of your household's food/income over the last 12 months?" The possible options are:

- Own farming/crop production and sales
- Own livestock production and sales
- Ag wage labor (within the village)
- Ag wage labor (outside the village)
- Non-ag wage labor (within the village)
- Non-ag wage labor (outside the village)
- Salaried work
- Sale of wild/bush products (e.g., charcoal, firewood)
- Honey production
- Petty trade (reselling other products, e.g., grains, veggies, oil, sugar, etc.)
- Petty trade (own products, e.g., local beer, sex work)
- Other self-employment/own business (agricultural, e.g., buying/selling chat)
- Other self-employment/own business (non-agricultural, e.g., stone cutting, hair braiding, etc.)
- Rental of land, house, rooms
- Remittances
- Gifts/inheritance
- Safety net food assistance
- Artisanal mining/quarrying
- Other

Survey questions:

R1001

INDICATOR BL 23: Ability to recover from shocks and stresses index

Ability to recover index is based on estimation of the ability of households to recover from the typical types of shocks that occur in the Title II program areas based on data regarding the shocks that households experienced in the year prior to the survey.

The index is calculated based on responses to two questions:
"To what extent has your ability to meet food needs returned to the level it was before the shocks and stressors you experienced in the last 12 months?" With possible responses and weighted values:

- Ability to meet food needs is the same as before the shocks (= value of 2)
- Ability to meet food needs is better than before the shocks (= value of 3)
- Ability to meet food needs is worse than before the shocks (= value of 1)

AND

"In light of the shocks you faced in the last 12 months, to what extent do you believe you will be able to
meet your food needs in the next year?", with possible responses and weighted values:

- Ability to meet food needs will be the same as before the shocks (= value of 2)
- Ability to meet food needs will be better than before the shocks (= value of 3)
- Ability to meet food needs will be worse than before the shocks (= value of 1)

The responses to the two questions are combined into one variable that has a minimum value of 2 and a maximum value of 6.

Survey questions: R107, R108

INDICATOR BL 38 : Index of social capital at the household level

Bridging social capital. The bridging social capital index is based on the responses to two questions:

- whether the household indicted it would be able to ***get help*** from various

categories of people living OUTSIDE OF their community if they needed it;
- whether the household indicated it would be able to ***give help*** to people living OUTSIDE OF their community who needed it.

The possible responses for whom a household could get help from or to whom they would give help are: "relatives", "non-relatives within my ethnic group/clan", "non-relatives of other ethnic groups/clan" and "no one". An additive index ranging from 0 to 6 is calculated based on these responses.

Survey questions: R1305, R1308

Linking social capital. The linking social capital index is based on answers to six questions regarding whether household members know a government official and/or NGO leader, how well they know them, and whether they believe the official/leader would help their family or community if help was needed. The maximum value for each question equals 1. The index ranges from 0 to 6.

Survey questions: R1309-R1314

INDICATOR BL 24. Percent of households that believe local government will respond effectively to future shocks and stresses

Local government responsiveness. Summary variable ranging from 0 to 2 as follows:

- A security/police force provided by the local government that can reach the village in less than one hour (1) Survey questions: R1506, R1507
- A conflict resolution committee (1) Survey question: R1506

Module: Participation in social activities/networking

INDICATOR BL 31: % of households participating in group-based savings, micro-finance or lending programs

This Indicator (EG.4.2) is calculated from the responses to questions BL 3.07 A, E and R602. The indicator value has a value of '1' if BL3.07A or BL3.07E has value of 1-3, or if R602 has value of 2

or 3.

Survey questions: BL3.07A, BL3.07E, R602

☐ INDICATOR #29: Percent of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 month

Percent of farmers who used financial services in the past 12 months	Sample-weighted number of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months Sample-weighted number of farmers in the FFP development implementation area

Calculation	Sample-weighted number of farmers with G07 = 1 **OR** G08 = 1 **OR** G09 = 1	X 100
	Sample-weighted number of farmers in the FFP development implementation area	

☐ INDICATOR BL 41: Percent of women/men in a union who are members of a community group

Percent of men in a union who are members of community groups	Sample-weighted number of men in a union who are members of one or more community groups Sample-weighted number of men in a union in the FFP development implementation area

Calculation	Sample-weighted number of men (K04=1) with B14=1 (married) AND (K10A OR K10B OR K10C OR K10D OR K10E OR K10F OR K10G OR K10H OR K10I OR K10J OR K10K = 1)	X 100
	Sample-weighted number of men (K04=1) with B14=1	

Percent of women in a union who are members of community groups	Sample-weighted number of women in a union who are members of one or more community groups / Sample-weighted number of women in a union in the FFP development implementation area

Calculation	Sample-is weighted number of women (K04=2) with B14=1 **AND** (K10A **OR** K10B **OR** K10C **OR** K10D **OR** K10E **OR** K10F **OR** K10G **OR** K10H **OR** K10I **OR** K10J **OR** K10K = 1)	X 100
	Sample-weighted number of women (K04=2) with B14=1	

Module: Gender participation in decision making process, access to credit

☐ **INDICATOR BL 33: Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash**

Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash	Sample-weighted number of women in a union and earning cash who report participation in decisions about the use of self-earned cash / Sample-weighted number of women in a union who earned cash in the past 12 months in the FFP development implementation area

Calculation	Sample-weighted number of women with B14 (if married) =1 **AND** J06 =1 **AND** J07 = 1 or 2 **AND** J10 =1 or 3 or 4 / Sample-weighted number of women with B14 (if married)=1 **AND** J06 = 1 **AND** J07 = 1 or 2 in the FFP development implementation area	X 100

- **INDICATOR BL 34: Percent of women in a union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash**

Percent of women in a union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	Sample-weighted number of women in a union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash / Sample-weighted number of women in a union who earned cash in the past 12 months in the FFP development implementation area

Calculation	Sample-weighted number of women with B14 = 1 (married) **AND** J06 =1 **AND** J07 = 1 or 2 **AND** J12 = 1 **AND** J13 = 1 or 2 **AND** J14 = 1 or 3 or 4 / Sample-weighted number of women with B14 = 1 **AND** J06 = 1 **AND** J07 = 1 or 2 in the FFP development implementation area	X 100

- **INDICATOR BL 42: Percent of women/men in a union with access to credit**

Percent of men in a union with access to credit	Sample-weighted number of men in a union who access credit from one or more sources / Sample-weighted number of men in a union in the FFP development implementation area

Calculation	Sample-weighted number of men (K04 (if male)=1) with B14=1 **AND** (K06A **OR** K06B **OR** K06C **OR** K06D **OR** K06E **OR** K06F = 1 or 2 or 3) / Sample-weighted number of men (K04 (if male)=1) with B14 (if married) = 1 in the FFP development implementation area	X 100

Percent of women in a union with access to credit	Sample-weighted number of women in a union who access credit from one or more sources / Sample-weighted number of women in a union in the FFP development implementation area

Calculation	Sample-weighted number of women (K04 (if female)=2) with B14 (if married)=1 **AND** (K06A **OR** K06B **OR** K06C **OR** K06D **OR** K06E **OR** K06F = 1 or 2 or 3) / Sample-weighted number of women (K04=2) with B14 = 1 in the FFP development implementation area	X 100

☐ INDICATOR BL 43: Percent of women/men in a union who make decisions about credit

Percent of men in a union who make decisions about credit	Sample-weighted number of men in a union who make decisions about credit from one or more sources / Sample-weighted number of men in a union who access credit from one or more sources in the FFP development implementation area

Calculation	Sample-weighted number of men (K04=1) with B14 (if married)=1 **AND** (K06A OR K06B OR K06C OR K06D OR K06E OR K06F = 1 or 2 or 3) **AND** (K07A = A OR K07B = A OR K07C = A OR K07D = A OR K07E = A OR K07F = A) **OR** (K08A = A OR K08B = A OR K08C = A OR K08D = A OR K08E = A OR K08F = A) / Sample-weighted number of men (K04=1) with B14=1 **AND** (K06A **OR** K06B **OR** K06C **OR** K06D **OR** K06E **OR** K06F = 1 or 2 or 3)	X 100

Percent of women in a union who make decisions about credit	Sample-weighted number of women in a union who make decisions about credit from one or more sources. / Sample-weighted number of women in a union who access credit from one or more sources in the FFP development implementation area	

Calculation	Sample-weighted number of women (K04=2) with B14 (married)=1 **AND** (K06A OR K06B OR K06C OR K06D OR K06E OR K06F = 1 or 2 or 3) **AND** (K07A = A OR K07B = A OR K07C = A OR K07D = A OR K07E = A OR K07F = A) **OR** (K08A = A OR K08B = A OR K08C = A OR K08D = A OR K08E = A OR K08F = A) / Sample-weighted number of women (K04=2) with B14 (married) =1 **AND** (K06A **OR** K06B **OR** K06C **OR** K06D **OR** K06E **OR** K06F = 1 or 2 or 3)	X 100

Module: Peace and security (perception about security, interaction with others)

☐ **INDICATOR: Percent respondents who said they interacted with people from different ethnic/tribal groups last week**

- Number of respondents who interacted with another group

☐ **INDICATOR: Percent respondents who interacted with their neighbor**

- Number of respondents who said they interacted with their neighbor

Module: Water and sanitation (hand washing facility)

☐ **INDICATOR BL 17: Percent of households with soap and water at a handwashing station on premises**

Percent of households with soap and water at a handwashing station on premises	Sample-weighted number of households with water and soap (or another cleansing agent) at handwashing station on premises / Sample-weighted number of households in the FFP development implementation area where observation of handwashing station was permitted

Calculation	Sample-weighted number of households with F14 = 1 **AND** F15 = 1 **AND** F16 = 1 / Sample-weighted number of households in the FFP development implementation area	X 100

Annex 4: Analysis Plan

Background

USAID/BHA funded a Multi-Year Emergency (MYE) Activity spanning from 2021 to 2023, aimed at mitigating the impact of shocks, preventing the erosion of household assets, and accelerating recovery in South Sudan. Complementary Action for Resilience Building in South Sudan (CARB), led by the Norwegian Refugee Council (NRC), is leading the MYE implementation activity. To measure the impact of the MYE Activity, the research team, led by the University of Notre Dame, designed a Randomized Control Trial (RCT)-based impact evaluation. As such, prior to implementing the MYE activities, some villages in program areas were assigned to the Control Group (not receiving interventions) and Treatment Group (receiving interventions). However, the Treatment and Control villages had access to life-saving emergency relief when needed, and the randomized activities were more supplemental.

For measuring the impact, the evaluation considers the USAID/South Sudan Strategic Framework (2020-2024) and its development hypothesis, which frames household-level resilience as an approach that links humanitarian assistance with longer-term development outcomes. For the specific case of this evaluation, the initial description and categorization of observations are based on the resilience frameworks employed by USAID/BHA, NRC, and the CARB Consortium.

This document provides our approach for analyzing data and estimating the impact.

MYE Evaluation Questions

Given the multi-year nature of the Activity, the expected outcome of the MYE is improved food and nutrition security with improved resilience at household and community levels. Mainly, the following questions will be answered by this evaluation:

1. What are the impacts of the Activity on household food and nutrition security?
2. What are the impacts of the Activity on households' ability to mitigate and recover from conflict or climate-related shocks and stresses?
3. What are the impacts of the Activity on building community resilience?
4. What value does the multi-year emergency activity add compared to a typical approximately 12-month activity?
5. What are the added advantages of layering MYE Activity with other USAID emergencies, non-emergency, and resilience activities?
6. Is the MYE Activity cost-effective?

Data Analysis Plan

Data Source

The data for this impact evaluation comes from the following sources:

- data collected in 2021 (Baseline), and
- data collected in 2023 (Endline)

The survey team aimed to revisit the same HHs who participated in the survey at baseline during the endline. However, nearly 23% of HHs were not available during the endline, as many of them relocated due to flood-related disasters or simply left the village for other livelihood concerns.

Balance Test

For an RCT, the control and treatment groups should match. During the baseline, a balance test was done, and we found that the control and treatment villages were balanced well for the various demographic and socioeconomic variables.

During the endline, we will repeat the balance tests to ensure compliance with the design. We will test whether differences in key characteristics are statistically significant between the two groups by using a t-test. Tests of significance will consider the survey design, including both the strata (counties) and primary sampling unit (village). Standard errors will be clustered at the village level.

Attrition

During the endline, the overall attrition is about 23%, varying by County, with the highest in Wau (~35%) and the lowest in Rubkona (~3%). Attrition can present an issue as the respondents to the baseline survey might move to other places, the households may be vacated, or the respondents may simply become uninterested in participating in the survey. In our preliminary analysis, we observed attrition, which may have affected the reliability of our results. We will also examine the differential impact between the control and treatment groups, as the intervention might have varying effects on different groups of participants.

Testing attrition bias

Our first approach to understanding attrition will be comparing the overall rate of attrition with the differential attrition in treatment and control villages. We will compare the attrition rates at the level of households and villages (cluster-level attrition) using the standards from the What Works Clearinghouse. The Clearinghouse document emphasizes the importance of reporting and documenting attrition rates in research studies that allow readers to assess the potential impact of attrition on the study findings and to make informed judgments about the validity and generalizability of the results. If the attrition levels surpass the thresholds indicating unacceptable levels of bias, we will investigate further using regression analysis. We will use regression analysis to understand what variables (including treatment status) are correlated with attrition status. We will estimate the following equation:

$$A_i = \beta_0 + \beta_1 Treatment_i + \beta_2 X_i + \epsilon_i$$

Where A_i is the indicator of whether the individual has left the sample, $Treatment_i$ is the treatment dummy, and X_i is the explanatory variables such as gender, age, education, household size, number of children, or religion. If the coefficient β_1 is not statistically significant, then the treatment assignment does not influence attrition.

In the case that attrition is at an unacceptable level, we will correct for potential attrition bias using a Heckman model or another appropriate model.

If we discover certain characteristics are linked to attrition, we will control for such characteristics during the analysis.

Indicators and hypothesis to be tested

As the main objective of MYE programming is improving household-level food and nutrition security, this evaluation will use the FCS score to estimate the impact. Further, the program aims to improve the nutritional outcomes of children between 6-23 months. The following two hypotheses to be tested for these goals are:

Hypothesis 1: *The NRC-led MYE program improves the household-level food consumption score (FCS) in CARB villages.*

Hypothesis 2: *The NRC-led MYE program improves the minimum acceptable diet (MAD) in CARB villages.*

These two hypotheses are related to Q 1: What is the impact of the activity on household food and nutrition security?

The second focus of MYE programming is to improve households' ability to mitigate and recover from shocks and stress. Further, it also aims to improve household-level social capital. The following three hypotheses will be tested toward these goals:

Hypothesis 3: The NRC-led MYE program improves households' ability to recover from shocks and stress index in CARB villages.

This hypothesis is related to Qs 2: What is the impact of the activity on households' ability to mitigate and recover from shocks and stresses (conflict or climate-related)?

Hypothesis 4: *The NRC-led MYE program improves the social capital index in CARB villages.*

Hypothesis 5: *The NRC-led MYE program leads to higher participation in group-based savings, micro-finance or lending programs in CARB villages.*

These two hypotheses are related to Qs 3: What is the impact of the activity on building community resilience?

Treatment effect estimation

The primary outcome of this research is improved household-level food and nutrition security, which will be examined through food consumption score (FCS).

Impact evaluation model

For this evaluation, we are tracking 20 indicators for the impact estimation that we finalized during the inception phase in 2021 (Table 1). All these indicators are expressed as binary outcomes (if the household met the condition, then 1, 0 otherwise).

Given that the outcome variables are binary (1= yes, 0 = N0), a logistic regression as follows will be appropriate:

$$P(Y = 1|X) = f(\beta_0 + \beta_1 T + \cdots + \beta_k X_k) \quad \text{———————} \quad \text{Equation (1)}$$

where Y is the binary outcome variable value (0,1) as a function of treatment status (T) and co-variables (X). Since we have data for both baseline and endline from our RCT, it will be appropriate to control for baseline characteristics as covariates, especially to correct any attrition bias.

The interpretation of logistic regression results (equation 1) is often reported in odds ratios and is not straightforward. In this regard, it is a common practice to use the linear probability model (LPM), especially if the impact evaluation is based on RCTs, despite some limitations. An LPM model can be specified in equation (2).

$$E(Y) = \beta_0 + \beta_1 T + \ldots + \beta_k X_k + \mu \quad \text{———————} \quad \text{Equation (2)}$$

In the context of experimental impact estimation, Y in equation (1) is a binary outcome indicator of interest, then E(Y) is the proportion of 1 given treatment status (T) and co-variables (X) that would include baseline covariates, especially to correct any attrition bias. Equation (2) assumes that the error term (μ) is distributed normally, but it is not, as Y is binary (0,1). However, it is commonly used for its ease of interpretation and computation, especially for randomized control trials RCT (Huang, 2019[18]; Deke, 2014[19]; Huang, 2021[20]; Hippel, 2015[21]) and for better communication of the magnitude of impact. Some economists suggest that the limitations and criticism of LPM do not apply to RCT-based impact analysis[22]. In this regard, we can attempt to estimate the impact using both approaches and compare the results.

[18] https://www.tandfonline.com/doi/full/10.1080/00220973.2019.1699769
[19] https://ideas.repec.org/p/mpr/mprres/62a1477e274d429faf7e0c71ba1204b2.html
[20] https://pubmed.ncbi.nlm.nih.gov/33822249/
[21] https://statisticalhorizons.com/linear-vs-logistic/
[22] https://ideas.repec.org/p/mpr/mprres/62a1477e274d429faf7e0c71ba1204b2.html

Table A6. MYE indicators

Food security and nutrition • Percent of households with poor, borderline, and acceptable food consumption score (FCS) - poor - borderline - acceptable • Prevalence of households with moderate or severe Household Hunger Scale (HHS) score - moderate - severe • Percent of children 6–23 months receiving a minimum acceptable diet (MAD) • Prevalence of exclusive breastfeeding of children under six months	*Resilience* • Avg. # of sources of income in HHs • Ability to recover from shocks and stresses index • Index of social capital at the household level - Bridging - Linking • Percent of households that believe the local government will respond effectively to future shocks and stresses
Agriculture • Percentage of households with access to sufficient seed to plant • Percent of producers who have applied targeted improved management practices or technologies - in crop production - in livestock production	*Social activities* • % of households participating in group-based savings, micro-finance or lending programs • Percent of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months

Gender • Percent of women/men in a union who are members of a community group - men - women • Percent of women in a union and earning cash who report participation in decisions about the use of self-earned cash • Percent of women in a union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash • Percent of women/men in a union with access to credit - men - women • Percent of women/men in a union who make decisions about credit -men -women	*Peacebuilding* • Percent respondents who said they interacted with people from different ethnic groups last week • Percent respondents who interacted with their neighbor last week
WASH • Percent of households with soap and water at a handwashing station on premises	

Research Questions 4 -5

What value does the multi-year emergency activity add compared to a typical approximately 12-month activity?

What are the added advantages of layering MYE Activity with other USAID emergency, non-emergency, and resilience activities?

The qualitative data will be supplemented with the literature review to answer these two questions. Key informant interviews with implementing partner program managers (and USAID staff) who have managed both one-year and multi-year activities, or emergency activities alone, and this one, which integrates with other resilience activities, are conducted. Further, a review of evidence will be done from previous activities in South Sudan, where some emergency efforts were short-term and emergency-only, and others were multi-year or integrated with resilience activities. We have documented some evidence

from the documents review, which we will integrate with the key informant's interviews. Together, we present a more comprehensive understanding of the added advantages of MYE activities.

Research question 6

Is the MYE Activity cost-effective?

For cost-effectiveness analysis, we will do a direct comparison of cost vs. outcome between the treatment and control groups within the study area. We have been able to secure cost data for the following Indicators (cost for activities directly related to those indicators) and the number of beneficiaries reached in three counties separately.

- Household Hunger Scale (HHS)
- Percent of households with poor, borderline, and acceptable food consumption score (FCS)
- Percent of producers who have applied targeted improved management practices or technologies in crop and animal farming
- Ability to recover from shocks and stress index
- Percent respondents who interacted with people from different ethnic group last week

Analysis:

For each outcome variable,

$$= \frac{\text{Cost (Treatment) - Cost (Control)}}{\text{Estimated change in the value of the outcome variable}}$$

Where, estimate change in the value of the outcome variable = (Endline value - Baseline value) for the treatment group - (Endline value - Baseline value) for the control group

Qualitative Data Analysis

We will have qualitative data collected from FGDs and KIIs. Codes books will be developed to guide the transcripts coding processes in Atlas.ti. These codebooks will be based on the evaluation questions. Additional codes might be added while reviewing the transcripts. This means the team will approach the transcripts by using both the deductive and inductive methods. Analysis of the transcripts will focus on content and context, descriptions, language, and narratives that reveal respondents' respective viewpoints on the local level contexts of various aspects of food security, nutrition, shocks and resilience, gender relations, sanitation, and health and hygiene practices and the impacts of the MYE Activity, given the fact that this evaluation is participant-informed and -prioritized, we will include

narratives and excerpts of interviews to illustrate findings from the study. Qualitative findings will be incorporated with the quantitative findings in the report.

Annex 5: Survey Questions

MYE Survey Tool

South Sudan 2021

CONSENT
Hello. My name is _____. I am working with a consortium of the University of Notre Dame, Makerere University School of Public Health under ResilientAfrica Network (RAN) and Gender Equity Women's Leadership Program (GEWLP) as a research assistant. We are conducting a survey to learn about household characteristics, agriculture, food security, expenditures, and nutrition of women and children. Your household was selected to participate in an interview that may take up to sixty (60) minutes to complete. We will interview you and other members of your household as needed. Your participation is completely voluntary. There are no known risks or discomforts associated with this survey. There will be no benefit provided to you because of your participation. We hope you will agree to answer the questions since your views and experiences are important. If I ask you any questions you don't want to answer, let me know and I will go on to the next question. You can also stop the interview at any time. The data collected in this survey may be used as part of a study in the future. If your household is selected for the future study then a second survey will be conducted. If you agree to participate in the second survey, the data from this survey will be used for comparison. If you decide not to participate in either survey or if you withdraw from participating at any time, you will not be penalized in any way. Your privacy is important to us. No part of this interview is being recorded or videoed. If you agree to participate, some of the information you provide will be available on a public website that researchers and others will be able to access without identifying you. The information will be entered into a database that will NOT contain confidential information such as your name or the name of your village that could be used to identify you. Any data attached to your personal information will be stored in a password protected electronic format. Do you have any questions about the survey or what I have said? If in the future you have any questions regarding the survey or the interview, or concerns or complaints, we welcome you to contact [name of the implementing partner]. We will leave a copy of this statement and our organization's complete contact information with you so that you may contact us at any time [GIVE INFORMATION SHEET]. Do you agree to participate in the survey? Do you have any questions?

Can we begin the interview now?	[____]	Yes=1 No=2
If yes (respondent agreed), go to part 2 If no (respondent did not agree), thank the respondent and END		

Table A7: Survey Tool

PART 1: DEMOGRAPHICS		
Question	**Response**	**Response Codes**
1.1 Who is the Respondent?	|____|____]	01=Household head
		02=Spouse
		03=Son/daughter
		04=son/daughter in-law
		05=Grandchild
		06=Other relative
		07=Hired worker
		96=Other (*please specify below*)
		Other:
1.2 Total number of persons in household	[____|____]	
1.3 Total Adult Female and Adult Male (F&M) in the household?	[____|____]	
1.4 Total Adult Female No Adult Male (FNM) in the household?	[____|____]	
1.5 Total Adult Male No Adult Female (MNF) in the household?	[____|____]	
1.6 Total Child No Adult (CNA) in the household?	[____|____]	
1.7 Sex of the household head?	[____]	1=Male
		2=Female
1.8 Religion of household head?	[____|____]	1=Anglican
		2=Catholic
		3=Moslem
		4=Pentecostal
		5= Presbytery
		6= Episcopal
		96=Other
1.9 Age of household head in completed years?	[____|____|____]	If don't know, enter 998

PART 1: DEMOGRAPHICS		
1.10 Current marital status of household head?	[____]	1=Married
		2=Never married
		3=Widowed
		4= Co-habit
		5=Divorced
		6= separated
If the HH head is Male (1.7 =1) and Married (1.10=1)		
1.11 Is household head married to more than one woman?	[____]	1=Yes
		2=No
		3=Refused to answer
If Yes, **1.11.1** How many?	[____]	
If the HH head is Female (1.7 =2) and Married (1.10=1)		
1.11.2 Does she have any co-wives?	[____]	1=Yes
		2=No
		3=Refused to answer
If Yes, **1.11.3** How many?	[____]	
1.12 Highest level of education that you (household head) has completed	[____]	1=None
		2=Primary
		3=Secondary not complete
		4=Secondary complete
		5=Tertiary
1.13. Total number of children below 24 months	[____]	
List of Children Below 2 Years		
Name	**Age in Months**	**Sex**

Part 2: Agriculture								
MODULE 2A: AGRICULTURE (Irrigation/dry season)								
2.0	Did you or any household member produce any crops during last irrigation/dry season (Nov/Dec-March/April 2020/2021)? LIST THE CROPS IN 2.1. THEN ASK FOR EACH CROP QUESTIONS 2.3 TO 2.6							
	2.1	**2.2**	**2.3**		**2.4**		**2.5**	**2.6**
Sl. #	IF YES IN Q2.0: Can you tell me the types of crops planted during last winter season? **PROBE:** Any other crop? Any other crop? **Please check whether referring to last winter makes any sense here or not?) Winter 2020?**	CROP CODE: Sorghum, millet, wheat, maize, rice sesame, groundnuts, sunflower, cotton and tomato (USE CODE SHEET)	Inter/mix or single crop? 1=Single 2=Inter/Mix		Did you acquire adequate (minimum) amount of seed for the last planting season?		Major source of seed	Area planted) IN ACRE WITH **2** DECIMAL PLACES (FEDAN)
SL	CROP	CODE	S	I/M	Y	N	CODE	ACRE
1			1	2	1	2		__.
2			1	2	1	2		__.
3			1	2	1	2		__.
4			1	2	1	2		__.
5			1	2	1	2		__.
6			1	2	1	2		__.

Part 2: Agriculture								
7			1	2	1	2		__.
8			1	2	1	2		__.

CODES FOR 2.5:

1. ACTED, IRC, NRC, DRC, FAO, WFP, etc.	6. Borrowed/given by other farmers/relatives/friends
2. Other NGOs/Government	7. Community Seed Bank
3. Own seed (verify this)	96. Other
4. Purchased (Local market)	98 = None
5. Purchased (Agro dealer)	

MODULE 2B: AGRICULTURE (Rainy/Wet Season)								
2.7	Did you or any household member produce any crops during last rainfed season (April/May – Oct/Nov 2020)? LIST THE CROPS IN Q2.1. THEN ASK FOR EACH CROP QUESTIONS 2.10 TO 2.13							
	2.8	**2.9**	**2.10**		**2.11**		**2.12**	**2.13**
Sl. #	IF YES IN 211A: Can you tell me the types of crops planted during the last rainfed season? **PROBE:** Any other crop?	CROP CODE: Sorghum, millet, wheat, maize, rice sesame, groundnuts, sunflower, cotton and tomato (USE CODE SHEET)	Inter/mix or single crop? 1=Single 2=Inter/ Mix		Did you acquire adequate (minimum) amount of seed for the last planting season?		**Major** source of seed?	Area planted IN ACRE WITH **2** DECIMAL PLACES
SL	CROP	CODE	S	I/M	Y	N	CODE	ACRE
1			1	2	1	2		__.
2			1	2	1	2		__.
3			1	2	1	2		__.
4			1	2	1	2		__.
5			1	2	1	2		__.
6			1	2	1	2		__.
7			1	2	1	2		__.
8			1	2	1	2		__.
9			1	2	1	2		__.

CODES FOR 2.12:	
1. ACTED, IRC, NRC, DRC, FAO, WFP, etc.	6. Borrowed/given by other farmers /relatives/friends
2. Other NGOs/Government	7. Community Seed Bank
3. Own seed (verify this)	96. Other
4. Purchased (Local market)	98 = None
5. Purchased (Agro dealer)	

No.	Question	Response codes	Response
2.14	WHETHER THE FARMER HAS ACCESS TO A PLOT OF LAND OVER WHICH HE/SHE MAKES DECISIONS.	1 = Yes 2 = No >> skip to G15	
2.15	In the past 12 months, did you plant any **[CROP XXX]** in the plot(s) over which you make decisions?	1 = Yes 2 = No >> skip to G15	
2.16	Did you use any of these practices for cultivation of **any of the crop** in the **[PAST 12 MONTHS]**? **RECORD ALL THAT APPLY.**	**THE OPTIONS BELOW ARE EXAMPLES AND SHOULD BE MODIFIED BASED ON THE PRACTICES BEING PROMOTED BY THE ACTIVITY FOR [CROP XXX]** A. Kitchen gardens B. Early warning system	

No.	Question	Response codes	Response
	IF NONE OF THESE PRACTICES WERE USED THEN RECORD Y.	C. Improved storage	
		D. Pos-harvest storage and handling	
		E. Drip irrigation	
		F. Aquaculture management (improved nets/monofilaments/hooks, sustainable fishing – right net sizes, not fishing young fingerlings, avoid fishing during breeding season etc.)	
		G. Promotion of nutrient dense vegetables - Moringa tree (moringa olifera) and Vegetables	
		H. Improved agronomic practices (Early planting, plant spacing, gapping/thinning, pruning, weeding, row planting, stacking, etc.)	
		I. Conservation agriculture/Soil and water management: Mulching, cover crops, agroforestry, crop rotation, intercropping, zero tillage, minimum tillage)	
		J. Crop pest/diseases control and prevention	
		K. Farmer Field School, demo plots and Farmers Market Associations	
		L. Crop value chain and market linkage	
		Y = Did not use any of these practices in the past 12 months	

No.	Question	Response codes	Response
LIVESTOCK XXX - REPEAT QUESTIONS G15 TO G17 FOR EACH LIVESTOCK SELECTED BY THE ACTIVITY			
2.17	**CHECK G05: DETERMINE WHETHER RESPONDENT HAS ANY ANIMALS OR AQUACULTURE PRODUCTS OVER WHICH HE/SHE MAKES DECISIONS.**	1 = Yes 2 = No >> skip to G18	
2.18	In the past 12 months, did you raise **[LIVESTOCK XXX]**?	1 = Yes 2 = No >> skip to G18	

No.	Question	Response codes	Responses
2.19	Did you use any of the following practices when you cared for the livestock during the **[PAST 12 MONTHS]**? **RECORD ALL THAT APPLY.**	**THE OPTIONS BELOW ARE *EXAMPLES* AND SHOULD BE MODIFIED BASED ON THE PRACTICES BEING PROMOTED BY THE ACTIVITY FOR [LIVESTOCK XXX]** A = Improved shelters B = Vaccinations C = Deworming	

No.	Question	Response codes	Responses
	IF NONE OF THESE PRACTICES WERE USED THEN RECORD Y.	D = Castration	
		E = Dehorning	
		F = Homemade animal feeds made of locally available products	
		G = Animal feed supplied by stock feed manufacturer	
		H = Artificial insemination	
		I = Pen feeding	
		J = Fodder production and/or veld reinforcement with legumes	
		K = Used the services of community animal health workers/paravets	
		Y = Did not use any of these practices in the past 12 months	
NATURAL RESOURCE MANAGEMENT PRACTICES			
2.20	**Did you use any natural resource management practices?**	1 = Yes >> continue	
		2 = No >> skip to next farmer	
2.21	Did you use any of the following natural resource management practices or techniques that were not related directly to your on-farm production during the **[PAST 12 MONTHS]**?	**THE OPTIONS BELOW ARE *EXAMPLES* AND SHOULD BE MODIFIED BASED ON THE PRACTICES BEING PROMOTED BY THE ACTIVITY.**	
		A = Management or protection of watersheds or water catchments	

No.	Question	Response codes	Responses
		B = Agro-forestry	
		C = Management of forest plantation	
		D = Regeneration of natural landscapes	
		E = Sustainable harvesting of forest products	
		Y = Did not practice any of these activities for the past 12 months	
END OF MODULE			

Part 3: Food security and Nutrition			
FCS QUESTIONS			
No.	**Question**	**Response codes**	**Responses**
	Now I would like to ask you about the types of foods that you or the majority of your household members ate during the past 7 days. How many days over the last 7 days, did members of your household eat the following food items, prepared and/or consumed at home? READ THE QUESTION INSERTING THE NAME OF THE FOOD ITEM LISTED IN QUESTIONS C04 TO C15 AND RECORD THE NUMBER OF DAYS CONSUMED IN THE BOXES PROVIDED.	1 = 1 day 2 = 2 days 3 = 3 days 4 = 4 days 5 = 5 days 6 = 6 days 7 = 7 days 9 = Not consumed	

Part 3: Food security and Nutrition			
	RECORD "9" IF NO ONE IN THE HOUSEHOLD CONSUMED THE FOOD.		
3.1	(CO4) Any **[Kisra, Asida, Kop and Piech in Unity State]** bread, rice, noodles, biscuits, or other foods made from millet, sorghum, maize, rice, wheat or **[insert any other locally available grain]**?	Number of days	
3.2	(C05) Any potatoes, yams, manioc, cassava, or any other foods made from roots or tubers?	Number of days	
3.3	(C06) Any vegetables?	Number of days	

No.	Question	Response codes	Responses
3.4	Any fruits?	Number of days	
3.5	Any beef, pork, lamb, goat, rabbit, wild game, chicken, duck, or other birds, liver, kidney, heart, or other organ meats?	Number of days	
3.6	Any eggs?	Number of days	

No.	Question	Response codes	Responses
3.7	Any fresh or dried fish or shellfish?	Number of days	
3.8	Any foods made from beans, peas, lentils, or nuts?	Number of days	
3.9	Any cheese, yogurt, milk, or other milk products?	Number of days	
3.10	Any foods made with oil, fat, or butter?	Number of days	
3.11	Any sugar or honey?	Number of days	
3.12	Any other foods, such as condiments, coffee or tea?	Number of days	
HHS QUESTIONS			
3.13	In the past (4 weeks/30 days), was there ever no food to eat of any kind in your house because of lack of resources to get food?	0= No (Skip to Q2) 1= Yes	
3.14	How often did this happen in the past (4 weeks/30 days)?	1 = Rarely (1-2 times) 2 = Sometimes (3-10 times) 3 = Often (more than 10 times)	
3.15	In the past [4 weeks/30 days], did you or any household member go to sleep at night hungry because there was not enough food?	0= No (Skip to Q3) 1= Yes	

No.	Question	Response codes	Responses
3.16	How often did this happen in the past [4 weeks/30 days]?	1 = Rarely (1-2 times)	
		2 = Sometimes (3-10 times)	
		3 = Often (more than 10 times)	
3.17	In the past [4 weeks/30 days], did you or any household member go a whole day and night without eating anything at all because there was not enough food?	0= No (Skip to next section)	
		1= Yes	
3.18	How often did this happen in the past [4 weeks/30 days]?	1 = Rarely (1-2 times)	
		2 = Sometimes (3-10 times)	
		3 = Often (more than 10 times)	

No.	Question	Response codes	Responses
3.19	**CHECK QUESTION 1.11. Are there any children in the household that are under 2 years of age**	1 = Yes	
		2 = No >> skip to another section	
3.20	Has **[child's name]** ever been breastfed?	1 = Yes	

No.	Question	Response codes	Responses
		2 = No >> skip to D18	
		8 = Don't know >> skip to D18	
3.21	Was **[child's name]** breastfed yesterday during the day or at night?	1 = Yes >> skip to D19	
		2 = No	
		8 = Don't know	
3.22	Sometimes babies are fed breast milk in different ways, for example by spoon, cup, or bottle. This can happen when the mother cannot always be with her baby. Sometimes babies are breastfed by another woman or given breast milk from another woman by spoon, cup, bottle, or some other way. This can happen if a mother cannot breastfeed her own baby. Did **[child's name]** consume breast milk in any of these ways yesterday during the day or at night?	1 = Yes	
		2 = No	
		8 = Don't know	
3.23	Now I would like to ask you about some medicines and vitamins that are sometimes given to infants. Was **[child's name]** given any vitamin drops or other medicines as drops yesterday during the day or at night?	1 = Yes	
		2 = No	
		8 = Don't know	

No.	Question	Response codes	Responses
3.24	Was **[child's name]** given **[local name for oral rehydration solution]** yesterday during the day or at night?	1 = Yes 2 = No 8 = Don't know	
	Next, I would like to ask you about some liquids that **[child's name]** may have had yesterday during the day or at night. Did **[child's name]** have any **[item from list]**: **READ THE LIST OF LIQUIDS STARTING WITH "PLAIN WATER."**		
3.25	Plain water?	1 = Yes 2 = No 8 = Don't know	

No.	Question	Response codes	Response
3.26	Infant formula such as **[insert local examples]**?	1 = Yes 2 = No >> skip to D24 8 = Don't know>> skip to D24	
3.27	How many times yesterday during the day or at night did **[child's name]** consume any formula?	98 = Don't know	
3.28	Did **[child's name]** have any milk such as tinned, powdered, or fresh animal milk?	1 = Yes 2 = No >> skip to D26	

No.	Question	Response codes	Response
		8 = Don't know >> skip to D26	
3.29	How many times yesterday during the day or at night did **[child's name]** consume any milk?	98 = Don't know	
3.30	Did **[child's name]** have any juice or juice drinks?	1 = Yes	
		2 = No	
		8 = Don't know	
3.31	Clear broth? (soup)	1 = Yes	
		2 = No	
		8 = Don't know	
3.32	Yogurt?	1 = Yes	
		2 = No >> skip to D30	
		8 = Don't know>> skip to D30	
3.33	How many times yesterday during the day or at night did **[child's name]** consume any yogurt?	98 = Don't know	
3.34	Did **[child's name]** have any thin porridge such as **[Medida,chuor,yahda]**? **LIMIT TO PORRIDGE MIXED VERY THIN OR THICK DRINKS MADE FROM CEREAL. THICKER LESS LIQUID PORRIDGE IS INCLUDED UNDER ITEM D33.**	1 = Yes	
		2 = No	
		8 = Don't know	
3.35	Any other liquids such as **[list other water-based liquids available in the local setting]?**	1 = Yes	
		2 = No	
		8 = Don't know	

No.	Question	Response codes	Response
3.36	Any other liquids?	1 = Yes	
		2 = No	
		8 = Don't know	

No.	Question	Response codes	Response
	Now I would like to ask you about (other) liquids or foods that **[child's name]** ate yesterday during the day or at night. I am interested in whether your child had the item even if it was combined with other foods. For example, if **[child's name]** ate a millet porridge made with a mixed vegetable sauce, you should reply yes to any food I ask about that was an ingredient in the porridge or sauce. Please do not include any food used in a small amount for seasoning or condiments (like chilies, spices, herbs, or fish powder), I will ask you about those foods separately. Yesterday, during the day and night, did **[child's name]** eat any **(ASK QUESTIONS D33-D49)?**		

No.	Question	Response codes	Response
3.37	Food made from grains, such as bread, rice, noodles, porridge, or **[kisra, Asida, wal-wall]**	1 = Yes 2 = No 8 = Don't know	
3.38	Pumpkin, carrots, squash, sweet potatoes or **[other local yellow/orange root crops]** or any other foods made from dark yellow or orange-fleshed roots or tubers	1 = Yes 2 = No 8 = Don't know	
3.39	White potatoes, white yams, manioc, cassava, **[other local root crops],** or any other foods made from roots or tubers	1 = Yes 2 = No 8 = Don't know	
3.40	Any dark green leafy vegetables such as **[Regella, Tamaleka, khudra]**	1 = Yes 2 = No 8 = Don't know	
3.41	Any other vegetables such as **[other local vegetables]**	1 = Yes 2 = No 8 = Don't know	
3.42	Ripe mangoes, ripe papayas, or **[ripen pumpkin and carrots]**	1 = Yes 2 = No 8 = Don't know	
3.43	Any other fruits such as **[Borea, Banana, Orange, Abukamira]**	1 = Yes 2 = No 8 = Don't know	
3.44	Liver, kidney, heart, or other organ meats from domesticated animals such as cow, pig, goat, chicken or duck	1 = Yes 2 = No 8 = Don't know	
3.45	Any meat from domesticated animals such as beef, pork, lamb, goat, chicken, or duck	1 = Yes 2 = No	

No.	Question	Response codes	Response
		8 = Don't know	

No.	Question	Response codes	Response
3.46	Liver, kidney, heart, or other organ meats from wild animals, such as birds, wild pigeons, wild fowl, wild boar, monkey,	1 = Yes 2 = No 8 = Don't know	
3.47	Any flesh from wild animals, such as birds, wild pigeons, wild fowl, wild boar, monkey, rodents, wild goat	1 = Yes 2 = No 8 = Don't know	
3.48	Eggs	1 = Yes 2 = No 8 = Don't know	
3.49	Fresh or dried fish, shellfish, or seafood	1 = Yes 2 = No 8 = Don't know	
3.50	Any foods made from beans, peas, lentils, peanuts, peanut paste or other legumes such as **[Lubia]**	1 = Yes 2 = No 8 = Don't know	
3.51	Any foods made from nuts and seeds such as pumpkin seeds, cashews, ground nuts, jackfruit **[toy (african date)]**	1 = Yes 2 = No 8 = Don't know	
3.52	Cheese, yogurt, or other milk products	1 = Yes 2 = No 8 = Don't know	
3.53	Any oil, fats, or butter, or foods made with any of these	1 = Yes 2 = No 8 = Don't know	

No.	Question	Response codes	Response
3.54	Any sugary foods such as chocolates, sweets, candies, pastries, cakes, or biscuits	1 = Yes	
		2 = No	
		8 = Don't know	
3.55	Condiments for flavor, such as chilies, spices, herbs, or fish powder	1 = Yes	
		2 = No	
		8 = Don't know	
3.56	Crubs, snails, or insects	1 = Yes	
		2 = No	
		8 = Don't know	
3.57	Foods made with red palm oil, red palm nut, or red palm nut pulp sauce, lulu oil, sim sim oil	1 = Yes	
		2 = No	
		8 = Don't know	
	CHECK CATEGORIES D33–D49	If all "no" >> continue	
		If at least one "yes" or all "DK" >> skip to D51	
3.58	Did **[child's name]** eat any solid, semi- solid, or soft foods yesterday during the day or at night? **IF "YES" PROBE:** What kind of solid, semi-solid, or soft foods did **[child's name]** eat?	1 = Yes >> go back to D33–D49 and record foods eaten. Then continue with D51.	
		2 = No >> skip to D52	
		8 = Don't know >> skip to D52	

No.	Question	Response codes	Response
3.59	How many times did **[child's name]** eat solid, semi-solid, or soft foods other than liquids yesterday during the day or at night?	98 = Don't know	

Part 4: Resilience		
		4.0
	Sources	What were the sources of your household's food/income over the last 12 months?
a.	Farming/crop production and sales	
b.	Livestock production/fattening and sales	
c.	Agricultural wage labor	
d.	Non-agricultural wage labor	
e.	Salaried work	
f.	Sale of wild/bush products (including charcoal, firewood)	
g.	Honey production and sales	
h.	Petty trade (selling other products, e.g., grain, veggies, oil, sugar, etc.)	
i.	Petty trade (selling own products, e.g., local beer, sex work)	
j.	Other self-employment/own business (agricultural, e.g., buying/reselling chat)	

Part 4: Resilience		
k.	Other self-employment/own business (non-agricultural, e.g., stone cutting, hair braiding, etc.	
l.	Rental of land, house, rooms	
m.	Remittances	
n.	Gifts/inheritance	
o.	Safety net food/cash assistance	
p.	Artisanal mining/quarrying	
q.	Other (specify):	
		4.1
		Total number of sources

4.2 Over the last year (12 months) did your household experience [the shock]?	
Climatic shocks	
A. Excessive rains/ flooding	1= Yes, 2= No, 99=Don't know
B. Too little rain/drought	1= Yes, 2= No, 99=Don't know
C. Variable rain (early/late)	1= Yes, 2= No, 99=Don't know
D. Hail/frost	1= Yes, 2= No, 99=Don't know
E. Landslides/erosion/mud flows	1= Yes, 2= No, 99=Don't know
Biological shocks	
F. Crop disease (rust on wheat, sorghum)	1= Yes, 2= No, 99=Don't know
G. Crop pests (locusts)	1= Yes, 2= No, 99=Don't know
H. Weeds (e.g., associated with striga)	1= Yes, 2= No, 99=Don't know
I. Livestock disease	1= Yes, 2= No, 99=Don't know
J. Human disease outbreaks (from contaminated water)	1= Yes, 2= No, 99=Don't know

Conflict shocks	
K. Theft or destruction of assets	1= Yes, 2= No, 99=Don't know
L. Theft of livestock (raids)	1= Yes, 2= No, 99=Don't know
M. Land conflict	1= Yes, 2= No, 99=Don't know
N. Water conflict	1= Yes, 2= No, 99=Don't know
O. Gender Based Violence	1= Yes, 2= No, 99=Don't know
Economic shocks	
P. Delay in food assistance	1= Yes, 2= No, 99=Don't know
Q. Increasing food prices	1= Yes, 2= No, 99=Don't know
R. Increased prices of agricultural or livestock inputs	1= Yes, 2= No, 99=Don't know
S. Decreased prices for agricultural or livestock products	1= Yes, 2= No, 99=Don't know
T. Loss of land/rental property	1= Yes, 2= No, 99=Don't know
U. Unemployment	1= Yes, 2= No, 99=Don't know
V. Death or long-term illness of household member	1= Yes, 2= No, 99=Don't know
W. Non-function of borehole	1= Yes, 2= No, 99=Don't know

Ask the following questions (4.3 and 4.4) if one of them (A through W) above is Yes=1.		
No.	**Question**	**Response codes**
4.3	To what extent has your ability to meet food needs returned to the level it was before all the shocks and stressors you experienced in the last 12 months? *[PROMPT]*	Ability to meet food needs is the same as before the shock 1
		Ability to meet food needs is better than before the shock 2
		Ability to meet food needs is worse than before the shock 3
4.4	In light of the shocks and stressors you faced in the last 12 months, to what extent do you believe you will be able to meet your food needs in the next year?	Ability to meet food needs will be the same as before the shock 1
		Ability to meet food needs will be better than before the shock 2

	[PROMPT]	Ability to meet food needs will be worse than before the shock 3
		Don't know 4

No.	Question	Response codes
4.5	If your household had a problem and needed help urgently (e.g., food, money, labor, transport, etc.), who OUTSIDE THIS VILLAGE could you turn to for help? **Read list; select all that apply**	1. Relatives
		2. Non-relatives in my ethnic group/clan
		3. Non-relatives in another ethnic group/clan
		4. No one
		5. Other (specify)
		99. Don't know
4.6	Compared to one year ago has your ability to get this type of help (from someone within or outside of your village):	1. Increased
		2. Stayed the same
		3. Decreased
		99. Don't know
4.7	Who **INSIDE THIS VILLAGE** would you help if they needed help urgently (e.g., food, money, labor, transport, etc.)? **Read list; select all that apply**	1. Relatives
		2. Non-relatives in my ethnic group/clan
		3. Non-relatives in another ethnic group/clan
		4. No one
		5. Other (specify):
		99. Don't know

	Who **OUTSIDE THIS VILLAGE** would you help if they needed help urgently (e.g., food, money, labor, transport, etc.)? **Read list; select all that apply**	1. Relatives 2. Non-relatives in my ethnic group/clan 3. Non-relatives in other ethnic group/clan 4. No one 5. Other (specify): 99. Don't know
LINKING SOCIAL CAPITAL		
4.8	Do you or does anyone else in your household personally know an elected government official?	1. Yes 2. No>>**Skip to R1312** 99. Don't know
4.9	How do you (or other household member) know the government official? Is he or she a… **Read list; select all that apply**	1. Family member or relative 2. Friend /neighbor 3. Acquaintance (members of a group, friend of a friend, etc.) 4. Other (specify): 99. Don't know
4.10	Could you ask the official to help your family or village if help was needed?	1. Yes 2. No 99. Don't know
4.11	Do you or does anyone else in your household personally know a staff member of an NGO?	1. Yes 2. No >> Skip to another section 99. Don't know
4.12	How do you (or another household member) know the NGO staff member? Is he or she a… **Read list; select all that apply**	1. Family member or relative 2. Friend /neighbor

		3. Acquaintance (members of a group, friend of a friend, etc.)
		4. Other (specify):
		99. Don't know
4.13	Could you ask the NGO staff member to help your family or community if help was needed?	1. Yes
		2. No
		99. Don't know

		4.14	**4.15**
		Are any of the following groups active in this village? **Read list**	For any HH member who is in the group, how active is s/he in the group's decision-making?
		1= Yes	1. No HH member in group
		2= No	2. HH member does not participate in decision-making
		99 Don't know	3. Somewhat active
		If =2 or 99, skip to next topic	4. Very active
			5. HH member is a leader
			99. Don't know
A.	Communal water users' group		
B.	Farmers'/cattle rearing cooperative		
C.	Communal grazing land users' group		
D.	Communal natural resources group		

E.	Disaster planning /response group		
F.	Credit or micro-finance group		
G.	Savings groups (VLSA, merry-go-round, etc.)		
H.	Mutual help group (e.g., burial societies etc.)		
I.	Trade or business associations		
J.	Religious group (i.e. Mother's Union)		
K.	Mothers' group		
L.	Women's group		
M.	Youth group		
N.	Other (specify)		

ASK ONLY IF 4.14c = Yes		
No.	**Question**	**Response codes**
4.16	Does the group decide who in the village can use communal grazing land and when they can use it?	1. Yes
		2. No
		99. Don't know
		>> Go to R802c
ASK ONLY IF 4.14d = Yes		
4.17	Does the communal natural resources group decide who in the village can gather firewood and how much?	1. Yes
		2. No
		99. Don't know
		>> Go to R802d

No.	**Question**	**Response codes**
4.18	In the last 12 months, did you or your household receive any government or NGO assistance?	1. Yes
		2. No **Skip to 1505**
		99. Don't know

4.19	What type(s) of assistance did you or your household receive? **Read list; Select all that apply**	1. Emergency food/cash assistance
		2. Food/cash transfers
		3. Household materials and non-food items
		4. Educational assistance
		5. Agricultural inputs (seeds, fertilizer, etc.)
		6. Livestock inputs (feed, fodder, medicine, etc.)
		7. WASH
		8. Disaster planning/response
		9. Safety net (Food-for-work, Cash-for-Work)
		10. Child malnutrition/infant feeding
		11. Install water points
		12. Install latrines
		13. Other
		99. Don't know
4.20	Is there an emergency plan for livestock offtake if a drought hits your village?	1. Yes
		2. No
		99. Don't know
4.20	Do you have an active Peace Committee in your village?	1. Yes
		2. No
		99. Don't know
4.20a	Do you have an active Area Land Committee in your village?	1. Yes
		2. No
		99. Don't know

No.	Question	Response codes
4.21	Does this village have a security or police force that can reach the village in less than one hours?	1. Yes
		2. No **Skip to next module**
		99. Don't know

Part 5: Social Activities					
ACCESS TO AND DECISIONS ABOUT CREDIT					
"Next I'd like to ask about your household's experience with borrowing money or other items in the past 12 months."					
CODE	**LENDING SOURCE NAME**	**5.0**		**5.1**	
		Has anyone in your household taken any loans or borrowed cash/in- kind from [SOURCE] in the past 12 months?		Who made the decision to borrow from [SOURCE]?	
				SELECT ALL THAT APPLY	
A	Non-governmental organization (NGO)	YES, CASH	1	SELF	A
		YES, IN-KIND	2	PARTNER/SPOUSE	B
		YES, CASH AND IN-KIND	3	OTHER HH	C
		NO	4	OTHER NON-HH	D
		DON'T KNOW	8	NOT APPLICABLE	X
		GO TO NEXT SOURCE			

B	Informal lender	YES, CASH	1	SELF	A
		YES, IN-KIND	2	PARTNER/SPOUSE	B
		YES, CASH AND IN-KIND	3	OTHER HH	C
		NO	4	OTHER NON-HH	D
		DON'T KNOW	8	NOT APPLICABLE	X
		GO TO NEXT SOURCE			
C	Formal lender (bank/financial institution)	YES, CASH	1	SELF	A
		YES, IN-KIND	2	PARTNER/SPOUSE	B
		YES, CASH AND IN-KIND	3	OTHER HH	C
		NO	4	OTHER NON-HH	D
		DON'T KNOW	8	NOT APPLICABLE	X
		GO TO NEXT SOURCE			
D	Friends or relatives	YES, CASH	1	SELF	A
		YES, IN-KIND	2	PARTNER/SPOUSE	B
		YES, CASH AND IN-KIND	3	OTHER HH	C
		NO	4	OTHER NON-HH	D
		DON'T KNOW	8	NOT APPLICABLE	X
		GO TO NEXT SOURCE			
E	Group based micro-finance or lending including Village Savings and	YES, CASH	1	SELF	A
		YES, IN-KIND	2	PARTNER/SPOUSE	B
		YES, CASH AND IN-KIND	3	OTHER HH	C

	Loan Association (VSLAs)/ Savings and Credit Cooperative Organization (SACCOs)	NO	4	OTHER NON-HH	D
		DON'T KNOW	8	NOT APPLICABLE	X
		GO TO NEXT SOURCE			
F	Informal credit/savings groups such as merry-go-rounds, tontines, funeral societies, etc.	YES, CASH	1	SELF	A
		YES, IN-KIND	2	PARTNER/SPOUSE	B
		YES, CASH AND IN-KIND	3	OTHER HH	C
		NO	4	OTHER NON-HH	D
		DON'T KNOW	8	NOT APPLICABLE	X
		END MODULE			

No.	Question	Response codes
5.2	Do you or any other household member regularly save cash?	1. Yes
		2. No **Skip to Module 6**
		99. Don't know
5.3	Where are the savings primarily held? **Select only one**	1. At home
		2. MFI (SACCO)
		3. Village savings/credit group (e.g., VSLA)
		4. Bank
		5. Mobile banking
		6. Other
		99. Don't know

FINANCIAL SERVICES			
No.	**Question**	**Response codes**	**Response**
5.4	Did you take any agricultural credit, in cash or in kind, in the **[PAST 12 MONTHS]** from any of the following? **PROBES:** Agri-dealers, contract farming, village savings and credit groups, farmers group, MFI, Bank, RUSACCO etc.	1 = Yes 2 = No 8 = Don't know	
5.6	Did you save any cash in the **[PAST 12 MONTHS]**? **PROBES:** village savings and credit group, MFI, cooperatives, bank, mobile banking, etc.	1 = Yes 2 = No 8 = Don't know	
5.7	Some people insure their agricultural production against negative unexpected circumstances, such as drought, floods, and pests by paying for this service. Did you buy agricultural insurance in the [past 12 months]	1 = Yes 2 = No 8 = Don't know	

GROUP MEMBERSHIP					
"The next few questions are about different groups or organizations that may exist in your community."					
CODE	**GROUP CATEGORIES**	**5.8**		**5.9**	
	GROUP MEMBERSHIP	Is there a [GROUP] in your community?		Are you a member of this [GROUP]?	
A	Agricultural/livestock/fisheries producer's group (including marketing groups)	YES	1	YES	1
		NO	2	NO	2
		DON'T KNOW	8	REFUSE	7
		SKIP TO NEXT GROUP			
B	Water users' group	YES	1	YES	1
		NO	2	NO	2
		DON'T KNOW	8	REFUSE	7
		SKIP TO NEXT GROUP			
C	Forest users' group	YES	1	YES	1
		NO	2	NO	2
		DON'T KNOW	8	REFUSE	7
		SKIP TO NEXT GROUP			
D	Credit or microfinance group including Savings and Credit Cooperative Organization (SACCOs)/merry-go-rounds/ Village Savings and Loan Association (VSLAs)	YES	1	YES	1
		NO	2	NO	2
		DON'T KNOW	8	REFUSE	7
		SKIP TO NEXT GROUP			
E	Mutual help or insurance group (including burial societies)	YES	1	YES	1
		NO	2	NO	2

GROUP MEMBERSHIP					
"The next few questions are about different groups or organizations that may exist in your community."					
CODE	**GROUP CATEGORIES**	**5.8**		**5.9**	
		DON'T KNOW	8	REFUSE	7
		SKIP TO NEXT			
F	Trade and business association	YES	1	YES	1
		NO	2	NO	2
		DON'T KNOW	8	REFUSE	7
		SKIP TO NEXT GROUP			
G	Civic groups (people working together to improve their community) or charitable group (people working together to help people in need)	YES	1	YES	1
		NO	2	NO	2
		DON'T KNOW	8	REFUSE	7
		SKIP TO NEXT GROUP			
H	Local government	YES	1	YES	1
		NO	2	NO	2
		DON'T KNOW	8	REFUSE	7
		SKIP TO NEXT GROUP			
I	Religious group	YES	1	YES	1
		NO	2	NO	2
		DON'T KNOW	8	REFUSE	7
		SKIP TO NEXT GROUP			
J	Other group ONLY INCLUDE A GROUP HERE IF IT DOES NOT FIT	YES	1	YES	1
		NO	2	NO	2
		DON'T KNO	8	REFUSE	7

GROUP MEMBERSHIP					
"The next few questions are about different groups or organizations that may exist in your community."					
CODE	**GROUP CATEGORIES**	**5.8**		**5.9**	
	INTO ONE OF THE OTHER CATEGORIES	SKIP TO NEXT GROUP			
K	Any other formal or informal organization (SPECIFY)	YES	1	YES	1
		NO	2	NO	2
		DON'T KNOW	8	REFUSE	7
		END MODULE			

Part 6: Peace and Security			
No.	**Question**	**Response Code**	**Responses**
6.1	1. Did you physically interact with any person from different ethnic group or tribe last week	1 = Yes 2 = No	
6.1.1	1.1. If Yes, how many times within the last week did you interact with people from a different tribe?	a. 0 b. 1-3 times c. 4-7 times d. 8-10 times e. More than 10 times	
6.2	Did you interact with any of your neighbor last week?	1=Yes 2-No	
6.2.1	If yes, how many times within the last week did you interact with neighbors?	a. 0 b. 1-3 times c. 4-7 times d. 8-10 times	

Part 6: Peace and Security			
No.	**Question**	**Response Code**	**Responses**
		e. More than 10 times	
6.3	Have you noticed any improvements in peace and security since signing a peace agreement in 2018?	a. Significantly improved	
		b. Moderately improved	
		c. Stayed the same	
		d. Moderately decreased	
		e. Significantly decreased	
		f. Do not know	
		g. Decline	

Part 7: Water and Sanitation			
No.	**Question**	**Response Code**	**Responses**
7.1	Please show me where members of your household most often wash their hands.	1 = Observed	
		2 = Not observed, not in dwelling/yard/plot	
		3 = Not observed, no permission to see	
		4 = Not observed, other reason	
		If 2,3, or 4 >> End of Module	
7.2	**<u>OBSERVATION ONLY:</u> OBSERVE PRESENCE OF WATER AT THE PLACE FOR HANDWASHING.**	1 = Water is available	
		2 = Water is not available	
7.3	**<u>OBSERVATION ONLY:</u>**	1 = Soap, ash or detergent (bar, liquid, powder, paste)	

Part 7: Water and Sanitation			
No.	**Question**	**Response Code**	**Responses**
	OBSERVE PRESENCE OF SOAP, ASH OR DETERGENT AT THE PLACE FOR HANDWASHING.	2 = Mud or sand	
		3 = Other cleansing agent	
		4 = None	

Part 8: Gender			
No.	**Question**	**Response Code**	**Responses**
8.1	Has the household head done any work/job in the last 12 months?	1 = Yes	
		2 = No >> skip to next cash earner	
8.2	During the last 12 months, were you usually paid in cash or kind for this work or were you not paid at all?	1 = Cash Only	
		2 = Cash and Kind	
		3 = In Kind Only	
		4 = Not Paid	
8.3	Who usually decides how the cash you earn will be used?	1 = Yourself	
		2 = Spouse/Partner	
		3 = Yourself and Spouse/Partner Jointly	

8.4	Has your spouse/partner done any work in the last 12 months?	1 = Yes	
		2 = No	
		8 = Don't know	
8.5	During the last 12 months, was he usually paid in cash or kind for this work or was he not paid at all?	1 = Cash Only	
		2 = Cash and Kind	
		3 = In Kind Only	
		4 = Not Paid	
8.6	Who usually decides how the cash he earns will be used? **READ ALL RESPONSES AND SELECT ONE.**	1 = Yourself	
		2 = Spouse/Partner	
		3 = Yourself and Spouse/Partner Jointly	
		4 = Yourself and Other Jointly (specify)	
		5 = Other (specify)	
	END MODULE		

Annex 6: Qualitative Instruments

Qualitative Data Collection Guidelines

South Sudan Multi-Year Emergency (MYE) Endline Evaluation

2023

Purpose:

1. To ascertain whether the project has achieved its goals, with a specific focus on determining if households have experienced an enhancement in food security and improved access to livelihood opportunities.

2. To assess if there has been an increase in households' capacity to mitigate and recover from various shocks and stresses resulting from external factors.

3. To understand the mechanism and process of these aforementioned changes in participating communities.

Sample:

FGDs: 18 (six in each county–two with women groups and two with men groups in each county)

KIIs: 18

Focus Group Discussions (FGDs)

1. The FGD will be organized in person with the people who were participating in MYE programming in treatment villages.
2. A facilitator will conduct the FGD with the assistance of a scribe. Both will be local researchers who speak the participants' language, as the FGD will be conducted in the local language.
3. The participants of FGDs will come from programming villages but NOT the ones who participate in the survey.

4. There will be 6 to 8 participants in an FGD, selected using a purposive sampling among the people who are knowledgeable about the program's activities (*please use a screener here to find the program participants*)

5. Each FGD will last 60 – 90 minutes.

6. FGDs will be organized by gender (3 male groups and 3 female groups). There will be 18 FGDs, and the breakdown is as follows

Table A8: Respondent Category Table

County	Successful villages	Less-successful villages	Total
Rubkona	4	2	6
Wau	4	2	6
Mayom	4	2	6
Total	12	6	18

7. To organize FGD in the communities, two Bomas can be selected randomly, and we can invite people from different villages (from the treatment list) for the FGDs. Organize both male and female FGDs in the same Boma.

For each county:
Find two Boma or village that are reported to be successful and one Boma or village that are reported to be less-successful for MYE impact for the FGDs

invite eight males and eight females from each village selected (one successful and one less-successful) based on who is knowledgeable about the program (total 32)→ organize two FGDs– one with males and one with females*

*Successful villages: villages that the implementer thinks are performing better and showing positive impacts of the intervention. Seek suggestions from local IP staff to get the names of successful villages and select two for the data collection from each county.
*Less-successful villages: as suggested by the implementers

8. An attendance list will be prepared before starting the meeting. The list should include participant names, ages, gender, and ethnic background.

9. Participants should be informed that their personal information will not be publicly disseminated in any report. These lists will be scanned and put in a secure project's Google folder, and the hard copies will be destroyed. Only authorized personnel will have access to these lists.

10. All qualitative participants will read the text from the Consent in their local language, or the moderator will read out if the participants can't read. Verbal consent will be captured and noted.

11. All the information about FGD should be captured in the template given below.

Consent

Introduction and Consent for Audio Recording – 5 minutes

The purpose of this section is to introduce the participants to the study and request consent for audio recording.

Thank you for taking the time for this discussion today. My name is [NAME]. I am working for GEWLP, gathering information for the evaluation of the MYE project carried out in your area.

I would like to talk with you because the project was conducted in your community, and we are interested in how it went.

Our study is funded by USAID, an agency of the US government that provides aid and development assistance to other countries.

The study is designed to learn about whether and how the project's activities and outcomes have impacted you and to learn more about its impacts in areas such as food security and resilience.

We want to learn about your experiences with the project and hear your opinions regarding the project's impact.

The interview is expected to take about 1.5 hours.

There are no right or wrong answers in this interview.

Participation in this discussion is voluntary.

You may skip any question you do not want to answer, and you may stop participating at any time.

Please note that this is a study and not a way to apply for any humanitarian assistance.

There is no risk and no direct advantage to participating in this study. However, studies such as this one can help development partners like USAID to design better programs that are effective in addressing food insecurity and disasters here and elsewhere.

Your experience provides invaluable input.
None of your responses will be identified as yours in study reports or shared with anyone outside the study team.

We will not share any information you provide that can identify you with anyone outside the study team. We also ask that you not share other participants' responses with anyone outside this group.

If you have any questions, concerns, or complaints about the study or your rights as a participant, please feel free to ask at any time.

Should you have any questions I cannot answer, you may call Mr/Ms….[GEWLP], who is leading our team and whose phone numbers are written on this card.

I would like to get your permission to record our discussion and take notes.

The purpose of doing this is to ensure we can accurately capture the thoughts and ideas you share.

The recording will only be heard by the researchers involved in this study.

Do I have your permission to record the discussion?
If yes, start the voice recorder.

Finally, I would like to ask your permission to take photos.

These photos could be published in our report if they help people understand your experiences and input, but we would not include your name.

Do I have your permission to take some photos?

Do you have any questions before we begin?

Once questions have been answered, please proceed with the guide below.

Background information – 5 minutes

I just wanted to say thank you again for taking the time to meet with us. To begin, I would like to learn a bit more about each of you. Could you go around the room and introduce yourself?

Follow along and map out how the group is seated in the room in relation to where you are sitting.

Questions for FGDs

1. Background

Warm-up questions:

1. We are here to talk about the MYE program (*they may identify it with a different name(s) and check it with the implementer for the correct name that the participants call it*). Reflecting on your experience participating in this MYE program, can you explain which activities you were involved in?

   Probe for: the involvement in food security and nutrition, agriculture, resilience, social activities, gender development, peace and security, and WASH.

   Probe for: the year and month when they participated in the activity

   Probe for: your experience with different parts of the program and what was helpful or not about the interventions

2. Main questions

Food and nutrition

1. What are the main challenges to the livelihood of the people in the community?

   Probe for: availability of employment opportunities

   Probe for: main shocks and stresses

2. Please tell us about the current "food security" situation in your community/boma.

   Probe for: do you think accessing food is problematic in your community? Why?

Probe for: what factors might trigger food insecurity?

Probe for: How could this situation be improved?

3. What is the impact of the MYE Program on household food and nutrition security?

Probe for: what activities were done under the MYE program to improve food and nutrition security in your community/boma?

Probe for: whether HHs were able to produce enough from the land (for the fishery group, ask about fish production) for consumption and how.

Proba for: if they have more options for food items in the households compared to before the programming? What more are they eating now?

Probe for: if children and expecting/lactating women are getting more food these days compared to before the program? What more are they eating now?

Probe for: status of malnutrition among the children? if they see fewer cases of malnutrition in their HH and Boma

Probe for: If they realize the existence of this problem, do they understand the implications of child malnutrition, especially that of chronic malnutrition like stunting for children under 5 years old?

4. Were there any food security programs implemented by the government, foreign donors, or community-based organizations over the past 3-5 years?

Probe for: more information about your experiences with those programs. How did they impact your community/boma?

Probe for: some of the strengths of those programs. And weaknesses?

Probe for: any recommendations to improve their work in the future?

Resilience and disaster preparedness

1. What are the impacts of the MYE program on **households**' ability to mitigate and recover from conflict or climate-related shocks and stresses?

[*Shocks are "external short-term deviations from long-term trends that have substantial negative effects on people's current state of well-being, level of assets, livelihoods, safety or their ability to withstand future shocks". Shocks can be slow-onset like drought, or relatively rapid onset like flooding, disease outbreak, or market fluctuations. Stresses are "long-term trends or pressures that undermine the stability of a system and increase vulnerability within it". Stresses could include factors such as population pressure, climate variability, chronic poverty, persistent discrimination, and protracted crises like intergroup conflict.* Mercy Corps]

> ***Probe for***: compared to before the MYE program, how are you feeling about the shocks and stresses? Please discuss your level of security–high or low and the reasons?
>
> ***Probe for***: what types of preparation do you have in case of shocks and stresses?

2. What are the impacts of the MYE Program on building **community** resilience?

> ***Probe for***: What types of shocks/stresses the community feels well prepared and for what they feel less prepared and why
>
> ***Probe for***: Give some examples of community preparedness (e.g., access to resources, boats in case of flooding, or existence of local level disaster preparedness committee, or others depending on the local context)

<u>Social capital and networking</u>

1. If your household had a problem and needed help urgently (e.g., food, money, labor, transport, etc.), who could you turn to for help?

> ***Probe for***: your relatives, friends, and organizations
>
> ***Probe for***: inside the village or outside the village?
>
> Probe for: is there a change after MYE intervention?

2. Are you a member of any organizations/groups/cooperatives that are meant for organizing and helping local communities?

   Probe for: local cooperatives, farmers' groups, and saving groups

   Probe for: types of benefits or help you receive from participating in such groups

Agriculture

1. What improved agricultural practices have you adopted in your crop and/or animal farming in your community/boma after MYE intervention?

   Probe for: use of mulch, compost, planting spaces/intercropping, mixed, application of organic fertilizers, storage facilities, improved breed of animals, castration, deworming for animals, etc

2. Did you find an increase in production after adopting these practices?

   Probe for: how much increased and for what crops or animals

Peacebuilding

1. What types of peacebuilding activities have you participated in?

   Probe for: how did the program help to build trust and social cohesion in the communities?

   Probe for: what was the impact of peacebuilding activities in the community-level conflict?

Water and Sanitation

1. What has the MYE Program done to improve access to WASH facilities/conditions in the communities?

Probe for: how communities have been engaged in the efforts to improve WASH facilities/conditions in the communities

Under each of the subsections, probe on challenges and recommendations.

Key Informant Interview

Process:

- Identify the key informants ahead of time and inform them you are coming
- Speak with them individually, take notes, and record the conversation
- Each interview will take about 30-45 minutes

Sample:

Three local leaders/chiefs who are familiar with the MYE programming in each county (representing three villages, selected randomly), three implementers/donors (one from USAID, one from NRC, and one from DRC)

Table A9: Respondent Category Table

COUNTY	CHIEFS/LEADERS	PARTNER	USAID
Wau	3 (2 male, 1 female)	1 NRC representative	0
Mayom	3 (2 male, 1 female)	1 NRC representative	0
Rubkona	3 (2 male, 1 female)	1 DRC representative	0
			1 central representative in Juba
Total	9	3	1

Consent

Introduction and Consent for Audio Recording – 5 minutes

The purpose of this section is to introduce the key informant to the study and request consent for audio recording.

Thank you for taking the time for this interview today. My name is [NAME].

I am working for GEWLP, gathering information for the evaluation of the MYE project carried out in your area.

I would like to talk with you because the project was conducted in your community, and we are interested in knowing how it went.

Our study is funded by USAID, an agency of the US government that provides aid and development assistance to other countries.

The study is designed to learn about whether and how the project's activities and outcomes have impacted communities and to learn more about its impacts in areas such as food security and resilience.

We want to learn about your experiences with the project and hear your opinions regarding the project's impact.

The interview is expected to take about 45 minutes.

There are no right or wrong answers in this interview.

Participation in this interview is voluntary.

You may skip any question you do not want to answer, and you may stop participating at any time.

Please note that this is a study and not a way to apply for any development assistance.

There is no risk and no direct advantage to participating in this study. However, studies such as this one can help development partners like USAID to design better programs that are effective in addressing food insecurity and disasters here and elsewhere.

Your experience provides invaluable input. None of your responses will be identified as yours in study reports or shared with anyone outside the study team.

We will not share any information you provide that can identify you with anyone outside the study team. If you have any questions, concerns, or complaints about the study or your rights as a participant, please feel free to ask at any time.

Should you have any questions I cannot answer, you may call Mr.….[GEWLP], who is leading our team and whose phone numbers are written on this card.

I would like to get your permission to record our discussion and take notes.
The purpose of doing this is to ensure we can accurately capture the thoughts and ideas you share.

The recording will only be heard by the researchers involved in this study.

Do I have your permission to record the discussion?
If yes, start the voice recorder.

Finally, I would like to ask your permission to take photos.

These photos could be published in our report if they help people understand your experiences and input, but we would not include your name.

Do I have your permission to take some photos?

Do you have any questions before we begin?

Once questions have been answered, please proceed with the questions below.

Background information – 5 minutes

I just wanted to say thank you again for taking the time to meet with us.

Would you please start by telling me your name and position?
Probe for: how long have you been in this village/this organization?

Questions:

For local leaders:

1. Are you familiar with the work of USAID through NRC/DRC to address food insecurity issues in this community/boma?

   Probe for: what types of program activities they are implementing
   Probe for: type of activity that has high demand in the communities
   Probe for: your comments on the effectiveness of this program in addressing the problem

2. What are the main shocks and stresses[23] in your community/boma?

   Probe for: conflicts, floods, droughts,...

   Probe for: what are the main impacts of these shocks and stresses, and how are you dealing with them?

3. Please tell us about the "food security" situation in your community.

   Probe for: Do you think accessing food is a problem in your community? Why?

   Probe for: What factors might trigger food insecurity? How could this situation be improved?

   Probe for: What solutions did the MYE Program put in place to improve food security in your community /boma?

   Probe for: Do you feel these interventions were sufficient? Explain why.

   Probe for: What were the gaps in implementing these interventions?

   Probe for: What recommendations would you suggest for future programming to improve food security?

4. What do you think are the primary reasons for the lack of food at particular times of the year?

   Probe for: What times of year does that happen?

   Probe for: During those times, are there changes in the eating patterns of particular household members (differences by age, gender, work status, etc.)?

5. Where does the majority of food consumed in this community/boma come from (are they purchased, produced, or provided by another source)?

[23] *Shocks are "external short-term deviations from long term trends that have substantial negative effects on people's current state of well-being, level of assets, livelihoods, safety or their ability to withstand future shocks". Shocks can be slow-onset like drought, or relatively rapid onset like flooding, disease outbreak, or market fluctuations. Stresses are "long-term trends or pressures that undermine the stability of a system and increase vulnerability within it". Stresses could include factors such as population pressure, climate variability, chronic poverty, persistent discrimination, and protracted crises like intergroup conflict.* Mercy Corps

Probe for: Has that changed over time? Does that food source change depending on the different seasons?

6. In your opinion, how do the program activities support agricultural production locally?

   Probe for: provision of seed, new technologies, marketing

7. In your opinion, how does the MYE program help women's empowerment in the communities/boma?

   Probe for: women's participation in HH and community decision-making

8. How did the program help to build the resilience of communities and households from the various shocks and stresses?

   Probe for: discuss in terms of absorptive, adaptive, and transformative capacities

9. What is the state of conflict in local communities?

   Probe for: common issues of conflicts and intensity

   Probe for: impact of MYE program on peace and security

10. How have communities been engaged in the efforts to improve WASH facilities/conditions in the communities?

    Probe for: provision of safe drinking water

    Probe for: hand washing practices and provision of latrines in communities

If development actors (donors/implementing partners)

1. What was your role as an institution in implementing the MYE Program?

   Probe for: What thematic area were you supporting?

   Probe for: What sub-populations did you serve?

   Probe for: What areas did you operate in?

2. As an institution, what was your experience in implementing the MYE Program?

Probe for: What were the successes?

Probe for: What were the challenges?

Probe for: What recommendations do you have for future programming?

3. In your opinion, what positive impact has been attained by implementing partners in strengthening household resilience in communities?

Probe for: how they have affected the development

Probe for*:* effect on the resilience of communities

Probe for: factors that have contributed to the household's resilience and pathways to resilience, i.e., steps taken by the household to become resilient

4. What are the main shocks/stresses affecting the study populations?

Probe for: their frequency, effects in the target communities, and factors that make households vulnerable to the effects of the shocks/stresses

Probe for: strategies have been used to effectively mitigate, adapt to, recover, and learn from the shock/stresses

5. In the past, how has your institution engaged with development partners and other stakeholders in implementing community-based resilience programs?

Probe for: a. partners they are currently engaging with

b. Under what conditions have you worked with these partners

c. Challenges working with development partners

d. How have they tried to address these challenges?

6. In your opinion, does the MYE add any value compared to other short emergency programming? If yes, how so? If no, why not?

Probe for: what types of values MYE adds for the reach, impact, sectoral coverage, sustainability, etc?

Probe for: *a*dded benefits of MYE to the communities compared to other short program

Probe for: added benefits to donors and program implementers of MYE compared with other short emergency programs

7. Are there any advantages or disadvantages of layering MYE Activity with other USAID emergencies, non-emergency, and resilience activities? What are they?

Probe for: what types of benefits you see of layering the MYE activities with other programs in terms of their reach to the community, impact, sectoral converge, meeting the needs of people and sustainability of the activities

Probe for: advantages to local communities and implementers compared to other non-emergency programming

8. Is the MYE Activity cost-effective?

Probe for: Compared to other short-term emergency programs, is a multi-year program cost-effective? if yes, how?

Probe for: If you were to make a decision on the use of funds for emergency programming in South Sudan, would you go for a MYE programming or opt for multiple short-term projects to meet the needs of South Sudanese, and why?

Probe for: How do the costs of this multi-year activity compare with the typical costs of short-term emergency activities?

Template for data: *Use this for each transcript prepared*

MYE Evaluation

Focus Group/KII Transcription

Name of the country:

Program	*MYE*
Interview Protocol and Type	*FGD or KII*
If KII, name of interviewee and position	
Location of FGD/KIIs	e.g., *name of hotel, church, office, etc*
Name of Community	
Name of County/Boma/village	
Date of FGD/KIIs	
For FGD, the number and description of participants (including gender)	*Total=?* *Male=?, Female=?*
Moderator's Name	
Notetaker's Name	
Transcriber's Name	
Cleaner's Name	
Coder's Name	
The language or languages in which the discussion is conducted	
Start Time of Focus Group/KII	
End Time of Focus Group/KII	

Word-for-word transcription or translation begins here…

Name…*first question*

Annex 7: Qualitative Codebook

Main codes	Sub-codes	Description	I. Background
			Warm-up questions:
			1. We are here to talk about the MYE program (they may identify it with a different name(s) and check it with the implementer for the correct name that the participants call it). Reflecting on your experience participating in this MYE program, can you explain which activities you were involved in?
activities		look for the types of activities--e.g. training, seed distribution, aquaculture, dialogue for peacebuilding, etc they participated in	***Probe for: the involvement in food security and nutrition, agriculture, resilience, social activities, gender development, peace and security, and WASH.***
year_month		look for the information for year and month they participated in the activities	***Probe for: the year and month when they participated in the activity***
program_experience		look for the information that shows participants' experience after participating in the program, e.g. helpful, not helpful, very timely, etc	***Probe for: your experience with different parts of the program and what was helpful or not about the interventions***
			2. Main questions
			Food and nutrition
food_challenges		look for livelihood challenges each participant shared	1. What are the main challenges to the livelihood of the people in the community?
	challenges_employment	look for the information on available opportunity for employment, e.g. no any opportunity, working as	***Probe for: availability of employment opportunities***

		laborer, in agriculture, etc	
	challenges_shocks	look for the information about the various forms of shocks and stresses, e.g. drought, flood, ethnic conflict, price hike up, etc	***Probe for: main shocks and stresses***
food_security		look for the information that participants describe the food insecurity situation, e.g. no food to eat, starvation, skipping meals, child suffering	2. Please tell us about the current "food security" situation in your community/boma.
	food_insecurity_accessing	look for the information that indicates problem in accessing food in the community, e.g. price, accessibility, production	***Probe for: do you think accessing food is problematic in your community? Why?***
	food_insecurity_trigger	look for the information that likely to be a contributing factor for food insecurity, e.g. natural shocks, price shocks, conflicts, etc	***Probe for: what factors might trigger food insecurity?***
	food_security_situation	look for the insights of respondents who propose solutions for addressing food insecurity problem, e.g. training to the farmers, seed distribution, price control, etc	***Probe for: How could this situation be improved?***
MYE_impact_FS		find the information that mentions about the impact of activities, e.g. availability of more food, a bumper harvest, women empowerment, improved sanitation, etc	3. What is the impact of the MYE Program on household food and nutrition security?
	MYE_activities	find the information that mentions about the types of activities, e.g., training to the	***Probe for: what activities were done under the MYE program to improve food and nutrition security in your community/boma?***

		farmers, seed distribution, post-harvest technologies, fishery, etc	
	MYE_production	look for the information that indicates people were able to produce (crops, livestock, fish, etc) more after participating in the program	***Probe for: whether HHs were able to produce enough from the land (for the fishery group, ask about fish production) for consumption and how.***
	MYE_more_food	look for the information that provides evidence of more food options for the households, e.g. availability of cereals, vegetables, fish, meat, etc that was not possible before	***Proba for: if they have more options for food items in the households compared to before the programming? What more are they eating now?***
	MYE_child_food	look for the evidence that show children and mothers are getting more nutritious foods	***Probe for: if children and expecting/lactating women are getting more food these days compared to before the program? What more are they eating now?***
	MYE_child_malnutrition	look for the information that talks about the malnutrition status of the children, e.g. starving children, stunting cases, etc	***Probe for: status of malnutrition among the children? if they see fewer cases of malnutrition in their HH and Boma***
	MYE_malnutrition_impli	look the information that indicates people's understanding about the impact of malnutrition	***Probe for: If they realize the existence of this problem, do they understand the implications of child malnutrition, especially that of chronic malnutrition like stunting for children under 5 years old?***
	MYE_share	Shared what they learned	
other_FSP		look for the information that shows existence of food security programs implemented by other, e.g. donor funded, World Bank,	4. Were there any food security programs implemented by the government, foreign donors, or community-based organizations over the past 3-5 years?

		FAO, IFAD, and NGO or Govt funded programs I have used this code for any mention of another NGO, not only those working in food security	
	other_FSP_impact	look for the information that talks about the impact of other food security programs, e.g. production of more foods, less scarcity of foods, etc	***Probe for: more information about your experiences with those programs. How did they impact your community/boma?***
	other_FSP_strengths	look for the information for the strength of such a program, e.g. reaching out to poorest of the poor	***Probe for: some of the strengths of those programs. And weaknesses?***
	other_FSP_recco	look for the information for the recommendations to improve the programming of such a program	***Probe for: any recommendations to improve their work in the future?***
			Resilience and disaster preparedness
MYE_impacts_shocks		look for the information about the impact of MYE in HHs ability to mitigate the shocks, e.g. diversified income, more production from the farm	1. What are the impacts of the MYE program on households' ability to mitigate and recover from conflict or climate-related shocks and stresses?
			[Shocks are "external short-term deviations from long-term trends that have substantial negative effects on people's current state of well-being, level of assets, livelihoods, safety or their ability to withstand future shocks". Shocks can be slow-onset like drought, or relatively rapid onset like flooding, disease outbreak, or market fluctuations. Stresses are "long-term trends or pressures that

			undermine the stability of a system and increase vulnerability within it". Stresses could include factors such as population pressure, climate variability, chronic poverty, persistent discrimination, and protracted crises like intergroup conflict. Mercy Corps]
	MYE_chng_shocks	look for the information that talks about changes in level of threat from the various shocks, e.g. lower flood risk	***Probe for: compared to before the MYE program, how are you feeling about the shocks and stresses? Please discuss your level of security–high or low and the reasons?***
	MYE_prep_shocks	look for the information that talks about the preparation, e.g. savings or raising animals, to ease shocks	***Probe for: what types of preparation do you have in case of shocks and stresses?***
MYE_imp_resilience		look for the information for community resilience as a result of MYE program, e.g. community has a committee to work on during the crisis, or community has now road access, etc	2. What are the impacts of the MYE Program on building community resilience?
	shocks		***Probe for: What types of shocks/stresses the community feels well prepared and for what they feel less prepared and why***
	preparedness	look for the information that talks about the community preparedness, e.g., access to resources, boats in case of flooding, or existence of local level disaster preparedness committee, or others depending on the local context)	***Probe for: Give some examples of community preparedness (e.g., access to resources, boats in case of flooding, or existence of local level disaster preparedness committee, or others depending on the local context)***

	shocks_flood	Respondents report floods	
	shocks_drought	Respondents report drought	
	shocks_health	Includes incidence of human disease, lack of hospital, medicine, or clinic, and also lack of proper sanitation and clean water	
	shocks_crops/livestock	Respondents report losing their crops or herds to theft, pest, flood, etc.	
	shocks_conflict	Includes both large-scale conflict and displacement as well as petty thievery, general lawlessness, etc.	
	shocks_economic	High prices, unemployment, lack of markets	
	shocks_other	Other shocks not mentioned above, including lack of education or schools, poor road quality, etc.	
Shelter		Respondents were provided materials to build or improve shelters	
		crop	Social capital and networking
SC_need		look for the information where the participants talk about the need for help and the source they count on to get helped	1. If your household had a problem and needed help urgently (e.g., food, money, labor, transport, etc.), who could you turn to for help?
	SC_received_help	if it is relatives, friends or local organizations, government offices, etc	***Probe for: your relatives, friends, and organizations***
	SC_inside_o	find if the participants depend	***Probe for: inside the village or***

	utside	on inside the village or outside to get help	***outside the village?***
	SC_change	find the information where they report change in practices of getting help from other after MYE intervention	Probe for: is there a change after MYE intervention?
SC_member		if the participants are members of any groups, organizations, cooperatives	2. Are you a member of any organizations/groups/cooperatives that are meant for organizing and helping local communities?
	member_co	find if they are members of cooperatives, farmers groups, saving groups	***Probe for: local cooperatives, farmers' groups, and saving groups***
	member_benefits	look for the information where people talk about the benefits they receive after participating in such groups, e.g. borrow money, getting seeds, health services, etc	***Probe for: types of benefits or help you receive from participating in such groups***
Youth		Discussion of youth: program impacts, challenges, or recommendations	
	Youth_girls	Specify young women/girls	
			Agriculture
Ag_improved_practices		look for the improved agricultural practices the participants named during the FGD, e.g. improved seed, weeding, pesticides use, post-harvest technology, use of improved breed of animals, etc	1. What improved agricultural practices have you adopted in your crop and/or animal farming in your community/boma after MYE intervention?

	practices_types	identify each practices people mention, use of mulch, compost, planting spaces/intercropping, mixed, application of organic fertilizers, storage facilities, improved breed of animals, castration, deworming for animals, etc	***Probe for: use of mulch, compost, planting spaces/intercropping, mixed, application of organic fertilizers, storage facilities, improved breed of animals, castration, deworming for animals, etc***
practices_production		look for the information if people report increased production from those practices	2. Did you find an increase in production after adopting these practices?
	production_how_much	find how much increased in the production after applying improved practices from the crops and animals	***Probe for: how much increased and for what crops or animals***
			Peacebuilding
peacebuilding_activities		look for the information that talk about the peacebuilding in the communities, e.g. dialogue sessions, formation of peace committee, etc	1. What types of peacebuilding activities have you participated in?
	peacebuilding_trust	find the information that talks about the impact of those activities to build trust and social cohesion, e.g. people started working with other ethnic group, now they trust other ethnic groups	***Probe for: how did the program help to build trust and social cohesion in the communities?***
	peacebuilding_impact	look for the information that talks about the level of conflicts in the community, whether it is reduced or remain the same	***Probe for: what was the impact of peacebuilding activities in the community-level conflict?***

			Water and Sanitation
WASH_program		look for the information for WASH activities, e.g. awareness creation, provision of safe drinking water, construction of toilets, etc	1. What has the MYE Program done to improve access to WASH facilities/conditions in the communities?
	WASH_communities	look for the information that talks about how the communities were involved in those WASH activities, e.g. cost sharing the construction of toilets, organizing a committee, etc	***Probe for: how communities have been engaged in the efforts to improve WASH facilities/conditions in the communities***
	WASH_well	Construction of well or borehole	
			Other
Sentiment			
	Positive		
	Negative		
	Neutral		
	Mixed		
	Recommendation		
	Sustainability		

Annex 8: Baseline Indicators Values of Panel Data

Table A10: Baseline Indicators Values of Panel Data

Control	Treatment	Average	Indicators
22%	24%	22%	Percent of households with poor food consumption score
56%	54%	56%	Percent of households with acceptable food consumption score
22%	22%	22%	Percent of households with borderline food consumption score
58%	58%	58%	Prevalence of households with moderate Household Hunger Scale score
42%	42%	42%	Prevalence of households with severe Household Hunger Scale score
12%	8%	10%	Percent children 6–23 months receiving a minimum acceptable diet (MAD)
81%	75%	78%	Prevalence of exclusive breastfeeding of children under six months
32%	31%	32%	Percentage of households with access to sufficient seed to plant
27%	28%	27%	Percent of producers who have applied improved crop management practices
61%	56%	59%	Percent of producers who have applied improved livestock management practices
1.74	1.75	1.75	Average number of HH source of income
4.71	4.61	4.67	Ability to recover from shocks and stresses
1.98	1.94	1.96	Index of bridging social capital
0.66	0.65	0.66	Index of linking social capital
15%	12%	13%	Percent of households that believe the local government will respond effectively to future shocks and stresses
10%	12%	11%	Percent households participating in group-based savings or lending program
10%	9%	9%	Percent of farmers who used financial services in the past 12 months
11%	7%	9%	Percent female in a union who are members of a community group
6%	6%	6%	Percent male in a union who are members of a community group
36%	34%	35%	Percent respondents who said they interacted with people from different ethnic groups last week
76%	70%	73%	Percent respondents who interacted with their neighbor last week
4%	4%	4%	Percent of households with soap and water at a handwashing station on premises

Annex 9: CARB Theory of Change

Figure A2: CARB Theory of Change

