Final Performance Evaluation of the Nuyok Resilience Food Security Activity in Uganda

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ACRONYMS

ANC	Antenatal Care
BHA	Bureau for Humanitarian Assistance
CAHW	Community Animal Health Worker
CBM	Community-based Monitor
COVID-19	Coronavirus Disease 2019
CRS	Catholic Relief Services
CU2	Children Under Two
CU5	Children Under Five
DCDO	District Community Development Officer
DDMC	District Disaster Management Committee
DiNER	Diversity and Resilience for Enhanced Nutrition
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DTAP	Data Treatment and Analysis Plan
EA	Enumeration Area
FFP	[USAID Office of] Food for Peace
FGD	Focus Group Discussion
FMNR	Farmer-Managed Natural Regeneration
HDDS	Household Dietary Diversity Score
IMPEL	Implementer-Led Evaluation & Learning Associate Award
IPTT	Indicator Performance Tracking Table
KII	Key Informant Interview
MAD	Minimum Acceptable Diet
MCA	Male Change Agent
MCG	Mother Care Group
MCH	Maternal and Child Health
MCHN	Maternal and Child Health and Nutrition
NRM	Natural Resource Management
PASP	Private Agriculture Service Provider
PBS	Population-based Survey
PDMC	Parish Disaster Management Committee
PE	Performance Evaluation
PHH	Post-harvest Handling
PICS	Purdue Improved Crop Storage

PLW	Pregnant and Lactating Women
PMG	Producer Marketing Group
PP	Percentage Points
PSP	Private Service Provider
RFSA	Resilience Food Security Activity
SDMC	Sub-county Disaster Management Committee
SILC	Savings and Internal Lending Committee
TANGO	Technical Assistance to Non-Governmental Organizations
TOC	Theory of Change
USAID	United States Agency for International Development
VDMC	Village Disaster Management Committee
VHT	Village Health Team
WASH	Water, Sanitation, and Hygiene
WUC	Water User Committees

EXECUTIVE SUMMARY

Activity Background

Nuyok, implemented by Catholic Relief Services (CRS), is one of two multi-year resilience food security activities (RFSAs) funded by the United States Agency for International Development (USAID) Bureau for Humanitarian Assistance (BHA). Nuyok began in 2017 and is implemented in the Karamoja region of Uganda. The RFSA was originally planned for 5 years (2017–2022) but was extended 1 year and ended in September 2023. Nuyok aims to enhance food and nutrition security for vulnerable populations in the Abim, Nakapiripirit, Napak, and Nabilatuk districts of Karamoja, focusing on pregnant and lactating women (PLW), children under 5 (CU5), and adolescent girls. It has four interrelated purposes that focus on:

i) Governance improvements and gender transformation,
ii) Building resilience to shocks and stresses,
iii) Building resilience of on-farm, off-farm, and non-farm livelihoods, including improving production for income and consumption, and
iv) Improving nutrition outcomes of PLW, CU5, and adolescent girls.

Nuyok layers (i.e., sequences and integrates) activities in gender transformation, environmental protection, and youth interventions within its programming.

Evaluation Objectives and Methods

Under the Implementer-Led Evaluation and Learning (IMPEL) Associate Award, Technical Assistance to Non-Governmental Organizations (TANGO) International conducted a mixed-methods performance evaluation of Nuyok. The evaluation aimed to assess the achievement of development outcomes, the effectiveness of targeting and technical approaches, and the sustainability of outcomes. It also identified unintended consequences, lessons learned, and best practices to generate insights for future activity design to enhance food and nutrition security and resilience capacities.

The evaluation utilized primary data collected through a population-based survey to measure change over time for standard and custom indicators, accompanied by qualitative data collection activities to provide context, understand participant perceptions, and gather insights from recipients and stakeholders. Data collection was performed by TANGO's local partner, the International Research Consortium of Uganda, which also collected data for the baseline study. Quantitative data collection for the final performance evaluation took place July 13–31, 2023, and targeted 840 households. Qualitative data collection took place August 10–21, 2023, and entailed 64 key informant interviews and 45 focus group discussions (FGDs) with diverse project stakeholders.

Quantitative results from the baseline and endline surveys were compared to assess achievement over time, investigate the effectiveness of targeting and the relationship between the RFSA's interventions, and intermediate and impact outcomes. Quantitative findings were corroborated with insights from

qualitative interviews, which offered valuable perspectives on program effectiveness, sustainability, and best practices. The following outlines the evaluation's principal findings and conclusions. Please note that the narrative describing the results of the quantitative survey only reports findings that are statistically significant at the 0.10 level, though it may include observations on noteworthy non-significant results.

Activity Participation

The household survey showed that 49.5% of respondents participated in Nuyok groups, trainings, or services, engaging in an average of 3.5 activities (out of a possible 48). Participation varied across groups, with Mother Care Groups (MCGs) having the highest involvement (23.7%), followed by Home Improvement Campaigns (21.5%), Savings and Internal Lending Committees (SILCs; 16.5%), and Water User Committees (WUC) (12.1%). Households participated most in water, sanitation, and hygiene (WASH) training (18.9%), kitchen/backyard vegetable gardens (16.8%), improved crop production practices (15.1%), SILC-related training (14.4%), improved Essential Nutrition and Hygiene Action practices (12.7%), and improved post-harvest handling and storage training (10.5%). In addition, about 10% of households received nutrition vouchers.

Overall Achievement

Food security. Survey results revealed no change from baseline to endline in the prevalence of moderate to severe food insecurity, which remained at over 90%. Lead farmers report mixed progress in food security, citing advances alongside ongoing issues such as drought and insecurity, which hindered agricultural gains. Household Dietary Diversity Scores (HDDS) reflect a generally poor food security status, albeit with slight improvement among participant households, as indicated by multivariate analysis associating Nuyok participation with higher HDDS. Dietary trends indicate increases in the consumption of certain food groups (eggs, seeds, and legumes), attributed partly to nutritional education efforts. Several FGDs demonstrate the perception that food provisioning has been scaled down in communities, leading people to strive for self-sustainability.

Economic and resilience outcomes. Poverty levels remained persistently high, and average per-capita daily expenditures and depth of poverty remained unchanged. However, participant households had higher daily per-capita expenditures than non-participant households (endline RFSA: $1.13, endline non-RFSA: $0.85), lower prevalence of poverty (endline RFSA: 80.4%, endline non-RFSA: 90.3%), and better depth of poverty (endline RFSA: 43.1, endline non-RFSA: 54.6). Absorptive and adaptive capacities increased (the latter substantially), mainly due to improvements in shock preparedness, access to savings, availability of humanitarian assistance, increased asset ownership, and exposure to education, training, and information. However, the ability to recover from shocks decreased slightly from baseline to endline, likely due to persistently high shock exposure.

Maternal and child health (MCH) and nutrition. The prevalence of underweight women of reproductive age remained stable (approximately four out of ten women), with multivariate models showing that

participation in health and nutrition groups was associated with a lower likelihood of underweight. Although the percentage of women consuming a minimally diverse diet (<16%) remained unchanged, those in participant households were more likely to consume targeted nutrient-rich foods compared to both non-participant households at endline (endline RFSA: 11.76%, endline non-RFSA: 6.4%) and the baseline (endline RFSA: 11.6%, baseline all: 6.7%). The contraceptive prevalence rate (<20%) showed no changes, except for an increase in usage of the lactational amenorrhea method. Antenatal care (ANC) visits increased (baseline all: 77.9%, endline all: 85.1%), reflecting improved health awareness and accessibility. Discussions among SILC members highlighted training on family planning methods and communication with husbands, emphasizing the importance of family planning, particularly in times of drought and food insecurity. Additionally, most of the target population recognized the health benefits of spacing pregnancies.

Child anthropometric data revealed no change in stunting (baseline and endline rates both approximately 35%), underweight (approximately 28%), and wasting (approximately 13%). There were no differences between participant and non-participant households in the prevalence of child malnutrition. The qualitative data does not contain information to explain these specific results, though most informants (albeit RFSA participants) mentioned improvements in children's diets, which is consistent with survey data. However, child anthropometry measures are influenced by various factors beyond dietary diversity. The lack of measurable changes in anthropometrics measures may be due to persistent adverse conditions, suggesting project efforts might have prevented further deterioration.

Exclusive breastfeeding remained relatively stable and high (over 70%). The prevalence of children consuming a minimum acceptable diet (MAD) improved (baseline all: 6.6%, endline all: 17.1%) due to improvements among children in participant households. This improvement is most evident in breast-fed children compared to non-breast-fed children in the same age range. For both age categories of breast-fed children (6–8 months and 9–23 months), this positive change is driven by improvement in minimum meal frequency; for the 9–23-month group, improvement in dietary diversity is an additional driver.

In gender decision-making regarding MCH, there were minimal changes between baseline and endline, except for a decrease in men making child health decisions alone and an increase in joint decision-making.

WASH. The percentage of CU5 with diarrhea increased to about 40% between the baseline and endline surveys, with significant worsening observed in poor households despite improvements in non-poor households. Additionally, the percentage of children with diarrhea treated with oral rehydration therapy declined notably, especially in poor households. In contrast, the qualitative data indicated a perception of improvement in diarrhea prevalence. Project interventions such as WASH initiatives, particularly borehole rehabilitation, were credited with enhancing access to safe water, although around half of households still lacked access, with disparities by wealth status. Nevertheless, access to basic sanitation remained scarce (<8%), with persistent open defecation practices, though participants showed slightly better access to basic sanitation, possibly influenced by Nuyok's Home Improvement Campaign. Access to handwashing stations with soap and water (<4%) remained extremely limited.

Livelihoods and Income. The percentage of men and women engaged in cash-earning opportunities increased from baseline to endline (baseline all: 47.4%, endline all: 66.8%), with participant households achieving higher rates. Stakeholders attributed the rise in cash earnings to crop diversification and alternative livelihood activities.

The use of agricultural financial services increased from baseline to endline (baseline all: 21.7%, endline all: 41.6%), primarily driven by improved utilization of agricultural savings mechanisms. Participant households had higher usage rates of agricultural financial services, including savings and credit. This rise reflects the project's success in enhancing farmer savings capacity through SILCs, facilitating financial literacy, and providing a safety net for shocks, thereby enabling members to invest in farming and acquire assets like property and livestock.

Participation in value chain activities (about one-third of households) remained consistent, with higher engagement observed among Nuyok participants. Qualitative interviews indicated that efforts to strengthen cooperative marketing capacity faced challenges. While overall adoption of sustainable practices did not change, specific practices like pest control and agro-forestry saw increased uptake. Participant households demonstrated higher usage rates, especially in crop-related practices. Multivariate analyses show a correlation between participation in Nuyok agricultural groups and increased adoption of project-promoted practices, ultimately leading to higher HDDS. Top of Form

Progress toward endline indicator targets. Nuyok met or exceeded several outcome targets: two WASH indicators, two gender indicators, one women's health and nutrition indicator, and one children's health and nutrition and resilience indicator. Overall, most indicators stayed the same and a few worsened between baseline and endline. These results should be interpreted considering the climate and global economic shocks such as drought, coronavirus disease 2019 (COVID-19), and the global price and supply chain disruptions that took place between 2018 and 2023.

Targeting

Nuyok's targeting strategy aimed to reach men, women, and youth, including specific vulnerable groups like PLW, adolescent girls, and CU5, as well as the poorest households and persons with disabilities. Stakeholders generally viewed the project's targeting positively and the survey revealed improvements in various indicators for poor households, indicating effective targeting and positive impacts.

Nuyok was praised for its widespread presence in communities, inclusive participant selection processes, and empowerment of community-based monitors, health center staff, and school administrators–approaches seen as enhancing community engagement and program effectiveness. Specific targeting approaches, such as separate registration for pregnant women and incentivizing participation in WASH activities, were also highlighted as effective in addressing unique needs and promoting community involvement.

Effective Pathways

The evaluation identified several pathways/approaches as effective for helping Nuyok achieve project outcomes:

Applying a local, participatory approach. Nuyok prioritized transparency, accountability, and community participation, involving local communities and governments in identifying service delivery gaps and implementing interventions. Collaboration with local structures like field agents, Village Disaster Management Committees (VDMCs), and Private Sector Service Providers fostered ownership and improved coordination, leading to timely and quality service delivery. Examples include joint monitoring with local governments, disaster planning with VDMCs, and community-led road rehabilitation projects.

Using influencers and community structures to promote change in gender roles and attitudes. Male change agents (MCAs), lead mothers, and MCGs effectively promoted equity in gender roles and attitudes by setting examples through behavior, sharing domestic work, and facilitating joint decision-making. Training and messaging strategies, including community dialogues and radio programs, supported these efforts. However, some men faced social stigma for helping with household tasks.

Working with established influencers. Collaboration with respected individuals such as elders and with MCAs facilitated positive behavior change and attitudinal shifts, particularly regarding gender roles. Integration of social behavior change communication into existing activities and events enhanced messaging effectiveness.

Working with producer marketing groups (PMGs) and input agents to support crop production and marketing. Nuyok promoted improved crop production and marketing through PMGs and input agents, which facilitated access to inputs and agronomic advice. Moreover, monitoring was well employed to ensure quality inputs and services, contributing to increased productivity.

Training and support for livestock health. Livestock Groups supported by Community Animal Health Workers (CAHWs) proved a good mechanism for promoting improved animal health and management practices, including preventive treatment against ticks and worms.

Encouragement for savings. The promotion of the use of SILCs as a savings vehicle was understood to increase usage of agricultural financial services. Active participation and endorsements from diverse leadership categories enhanced SILCs' success.

Multi-level support for WASH. Involvement of existing structures at all levels facilitated successful Home Improvement Campaigns for improved hygiene and sanitation. Encouraging community involvement in pit latrine construction proved effective in improving access to basic sanitation.

Village-level work to support disaster risk reduction (DRR) and disaster risk management (DRM). Bottom-up approaches involving VDMCs and conflict monitoring mechanisms effectively addressed disaster risks. Coordination with local government authorities enhanced joint action and information sharing.

Local approach to natural resource management (NRM) and farmer-managed natural regeneration (FMNR). Group-based NRM activities led by local political authorities facilitated easy monitoring and continuity. Nuyok was strategic in targeting youth for labor-intensive NRM activities.

Supporting localized conflict resolution. Empowerment of MCAs and lead mothers was viewed as facilitating quick conflict resolution and promoting social cohesion, improving community relationships and problem-solving capabilities.

Effectiveness and Efficiency of Interventions

Purpose 1. Purpose 1 interventions spanned DRR and DRM, infrastructure development, FMNR and NRM, SILCs, and conflict mitigation. While Nuyok's participatory approach in DRR and DRM activities effectively built disaster risk planning and management capacity, challenges included informal communication and poor coordination. Infrastructure improvements, particularly road rehabilitation, enhanced community resilience by improving access to markets and services. FMNR and NRM interventions were generally effective in managing climate and biological shocks, although staffing and timing issues were reported. Conflict mitigation training contributed to reduced conflict at household and community levels, with increased trust in governance structures noted. Governance support improved government responsiveness, although logistical challenges remained, and community-based monitors played a crucial role in monitoring governance and service delivery.

Purpose 2. Purpose 2 interventions were multifaceted, aimed at improving vulnerable households' livelihoods. While survey data indicate limited overall improvement in poverty reduction and the use of improved agricultural practices, qualitative findings reveal Nuyok's success in helping participant households diversify livelihoods and adopt sustainable practices. Capacity-building initiatives focused on promoting sustainability, with training provided for district officials and farmers in agriculture, gender, and governance. While the approach of using lead farmers had limitations, interventions like Diversity and Resilience for Enhanced Nutrition (DiNER) fairs and strengthening linkages between farmers and input agents showed promise. Promoting kitchen gardening and vocational training for youth also yielded positive outcomes. Despite delayed seed delivery and seasonal constraints, Nuyok improved farmers' access to agricultural and veterinary services, with initiatives like the establishment of ponds for livestock watering proving effective. Although challenges during lean seasons persisted, SILCs were crucial in supporting household resilience. Additionally, Nuyok's efforts to promote gender equity were evident in improved household decision-making and resource ownership. Close coordination with local governments facilitated local ownership of interventions, contributing to their effectiveness.

Purpose 3. Purpose 3 aimed to improve the nutrition and health of PLW, adolescent girls, and children under 2 (CU2), as well as enhance WASH practices. While household survey data showed limited improvement in malnutrition rates, qualitative evidence indicated perceived reductions in malnutrition among CU5, PLW, and at household level. Effective strategies included integrated training sessions on nutrition and agriculture, promotion of kitchen and perma-gardens, and layered interventions that addressed multiple aspects of household well-being simultaneously. Furthermore, initiatives like the

Village Health Teams and outreach campaigns contributed to improved health practices and increased awareness of nutrition-related issues. Subsidized seeds and nutrition vouchers facilitated access to diverse foods, although challenges such as limited sanitation infrastructure and a reliance on humanitarian assistance during droughts persisted. Despite some obstacles, interventions like borehole rehabilitation and hygiene education contributed to increased access to safe water and improved hygiene practices.

Sustainability of Outcomes

Community and institutional capacity. Interviews with various stakeholders suggested that the knowledge and capacity built through Nuyok-supported trainings are likely to be sustained and utilized to maintain positive outcomes. While trainings improved awareness of policies and reduced role conflicts among officials, challenges such as confusion regarding the continuation of monitoring activities post-project exist. Despite uncertainties, stakeholders expressed optimism about the sustainability of positive behavior changes, particularly in gender norms, citing reduced gender-based violence and increased harmony in households. However, there is variability across districts, and complexity around the durability of positive shifts in gender relations given longstanding cultural norms.

Resilience to shocks and stresses. Interlinked disaster management committees from village to district levels are expected to sustain improvements in disaster preparedness, aided by government budget allocations and directives mandating the establishment of committees and disaster management plans at the village level. The sustainability of FMNR sites hinges on farmers' recognition of their value for grazing, water diversion, and income generation from fruit tree sales. However, challenges such as deforestation for charcoal and the cost of fruit tree seedlings pose threats to the sustainability of these initiatives.

Livelihoods. Structures such as agricultural village agents and CAHWs are expected to continue, with livestock farmers expressing interest in investing in CAHW services. SILCs are likely to carry on due to their alignment with the government's Parish Development Model, promoting enterprise growth, household income, and access to loans. Linkages with input dealers ensure sustainable access to agricultural inputs, with communities motivated to continue using improved seeds and agricultural practices because they see how they benefit productivity and income. However, challenges such as climate change and financial constraints may hinder the sustainability of these efforts, underscoring the need for continued support and resources.

Maternal and child health and nutrition (MCHN). Strategies such as improving dietary diversity and maintaining kitchen gardens are often viewed as sustainable due to their benefits in reducing household expenses and improving food availability. However, harsh weather conditions threaten the sustainability of initiatives like kitchen gardens. Home Improvement Campaigns focusing on sanitation and hygiene are ongoing, but poor soil durability hinders the establishment and sustainability of latrines. Despite challenges, communities are motivated to contribute to water user fees for boreholes, reflecting the high value placed on safe water accessibility. Districts prioritize health outreach programs, but the lack of resources threatens sustainability, requiring support from other recipients. The commitment and

recognition of community volunteers like MCAs suggest a promising avenue for sustainability. However, ongoing support and coordination with local government structures are deemed necessary for their continued success beyond the project's duration.

Unintended Consequences

Several unintended consequences emerged from project activities. Positive outcomes included enhanced social cohesion and peace in communities through group interactions fostered by various project-supported committees. However, certain livelihood activities inadvertently increased security risks, such as improving livestock health, which attracted livestock raids, and providing in-kind inputs, which were subject to theft. SILCs became targets for robbers, prompting the need for peace meetings and security measures. Despite promoting gender equity, some women faced domestic violence due to their spouses' misconceptions about their financial benefits from the project, while others exhibited defiance toward their husbands, leading to marital discord.

Lessons Learned and Recommendations

The following are key approaches, principles, and practices deemed effective in Nuyok implementation. The evaluation team recommends continuing to apply and reinforce these lessons in future projects.

Engage and collaborate at the community level: Collaborate with local government, community elders, and community-based structures like community-based monitors, MCAs, SILCs, and VDMCs to foster community ownership and successful project outcomes. Work through elders to promote more equitable gender practices due to their respected status.

Promote systems for accountability: Enhance communities' knowledge of government services and accountability mechanisms to ensure effective follow-up and monitoring. Promote community-level monitoring and checks and balances through systems like community-based monitors, cascading them to all villages for effective non-governmental organization program monitoring.

Layer interventions: Combine various project interventions strategically to provide participants with a comprehensive service package. Integrating governance and gender equity dimensions as cross-cutting themes is essential.

Use a simplified Theory of Change (TOC), and make sure implementers understand it: Utilize a simplified TOC to facilitate integration across project purposes and ensure a common understanding among implementers. Ensure staff comprehend how activities under different purposes support each other for collaboration across sectors.

Continue to integrate mindset change in programming: Continue sensitization efforts to change community attitudes towards self-reliance. Emphasize peer-to-peer approaches like MCAs and MCGs, as well as continuous advocacy through platforms like radio talk shows and barazas, to drive mindset change effectively.

Security is key: Address security challenges directly to enable successful and sustainable developmental interventions. Peace and security are fundamental for achieving and maintaining development gains, necessitating ongoing efforts to resolve conflicts and maintain a peaceful environment.

1. INTRODUCTION

1.1 Background

The United States Agency for International Development (USAID) Bureau for Humanitarian Assistance (BHA) supports multi-year resilience food security activities (RFSAs) around the world that improve and sustain the food and nutrition security of vulnerable populations. In 2017, BHA[1] funded two RFSAs in the Karamoja region of Uganda: Nuyok, implemented by Catholic Relief Services (CRS) and partners, and Apolou, implemented by Mercy Corps and partners. The RFSAs were originally planned for 5 years (2017–2022), but both were extended 1 year.

Under the Implementer-Led Evaluation and Learning (IMPEL) activity to improve the design and implementation of the USAID BHA RFSAs, Technical Assistance to Non-Governmental Organizations (TANGO) International conducted mixed-methods performance evaluations (PEs) of the BHA RFSAs in Uganda. The purpose of the evaluations is to measure the performance and development outcomes of Apolou and Nuyok. This is a report on the PE of the Nuyok RFSA.

1.2 Country Context

Karamoja is chiefly an agro-pastoral and pastoral region. Livelihoods and food security are highly sensitive to weather variation beyond "normal" seasonal cycles and are especially subject to severe and prolonged weather shocks. Karamoja has experienced repeated climate challenges throughout the Activity period. Recipient annual monitoring reports and secondary sources indicate that drought and variable rain both preceded and coincided with Activity start-up (2017/2018) and intensified in recent years (2022/2023); moreover, the region has very few water holding structures so in times of heavy rains and flooding, water is not harvested and stored and is therefore lost.[2] Persistent drought, variable rain and pest infestations (e.g., armyworm, desert locusts) resulted in multiple crop failures between the baseline and endline periods.[3] In July 2022, all nine districts of Karamoja had an IPC classification of crisis level or worse (Cullis & Arasio, 2022).

In July 2023, immediately prior to endline data collection, FEWS NET predicted Crisis (IPC Phase 3) outcomes in Karamoja for the near period, with the worst-affected households characterized as emergency level (IPC Phase 4). In July, cumulative rainfall was 45 to 75% of the long-term average. Staple food prices in Karamoja remained high, consistent with national trends: nationally, June 2023 staple prices were 24 to 42% higher than June 2022 and 19 to 115% above the five-year average prices, limiting food access. FEWS NET cited continuing insecurity as the main factor disrupting livelihoods and driving migration to cities, with poor household purchasing power and deteriorated coping capacity contributing to limited food consumption and dietary diversity (FEWS NET, 2023).

[1] In 2020, BHA was formed by merging FFP with the Office of Foreign Disaster Assistance to streamline USAID humanitarian responses. Funding for the RFSAs was initially provided by FFP.
[2] Information regarding water holding structures provided by CRS in comments on an earlier report draft.
[3] e.g., 2020 has been described as a "bad year" with little rainfall (Wasonga and Arasio, 2023). See also Cullis and Arasio (2022).

The coronavirus disease 2019 (COVID-19) pandemic exacerbated the situation. As of March 2023, Uganda had over 170,000 confirmed cases of COVID-19, with cases peaking in August 2021, and over 3,600 deaths.[4] Pandemic containment measures started in March 2020 and had deleterious downstream effects on rural livelihoods in Karamoja, exacerbating already-high food insecurity and malnutrition. Tufts University carried out a series of assessments on the impacts of the pandemic in Karamoja's three main livelihood zones after the lifting of COVID-19 restrictions. The assessments noted the difficulty of differentiating the impacts of those measures from the drought-induced poor harvest of 2020 (Arasio & Ayele, 2022).[5] After the lifting of pandemic restrictions, at the time of Tufts' second assessment (mid-2021) communities' top concern was insecurity, along with hunger and COVID-related farming constraints such as reduced access to agricultural inputs and livestock services and constraints to land preparation and crop planting. Communities "depicted the situation during COVID-19 as worse than a good agricultural year but not as bad as a drought year." Livestock raids and theft—already on the rise between October 2019 and February 2020—intensified when COVID-19 control measures were instituted (Cullis & Arasio, 2022). The Tufts report describes the factors contributing to raids and increased insecurity as, "reduced presence of security personnel because of their involvement in COVID-19 response activities; COVID-19-related movement restrictions and health guidelines that prevented communities from recovering stolen livestock; and the disruptive impacts of the COVID-19 lockdown on livelihoods and incomes." Insecurity remained high after restrictions were lifted due to a lack of trust in and capacity of security services; misalignment of externally driven peace dialogues with traditional systems, and the failure of the former to address specific causes of conflicts; and the need to address unemployment of youths, who are among the primary actors in thieving and raiding (Arasio & Stites, 2022).[6]

The Tufts study had important findings on food security and nutrition. It described the period during and immediately after COVID-19 restrictions as "a major food crisis" because of reduced home production (due to the poor harvest in 2020, locusts, and loss of livestock due to disease, raids, and theft), an increase in demand for purchased maize (concurrent with a reduction in supply), and food price increases that were higher and more prolonged than normal. The report also highlighted seasonal and inter-district variations in child malnutrition within the region, noting that child malnutrition was low when high-protein crops such as groundnuts and cow milk were available, but high when those food resources are unavailable. The study found communities to be knowledgeable of the signs of malnutrition and a healthy diet; rather, "the principal impediment to improved child nutrition is not ignorance or misinformation but rather a lack of the necessary resources."

[4] Johns Hopkins University Coronavirus Resource Center. Based on data collected from January 22, 2020 to March 3, 2023: https://coronavirus.jhu.edu/region/uganda consulted 9/21/23. The JHU statistics are consistent with those reported by the Government of Uganda Ministry of Health https://www.health.go.ug/covid/ consulted November 7, 2023.

[5] The main livelihood zones were represented in the Tufts assessment by Amudat District (predominantly pastoralist but with some emerging crop production), Moroto District (predominantly agro-pastoralist), and Abim District (with high dependence on crop production, but also using livestock).

[6] Other actors identified by communities and government officials include "community members (youth, seers, and enemies within), security sector actors (Uganda People's Defence Force [UPDF] and Local Defence Units), private sector animal traders, and unspecified outside visitors" (Arasio & Stites, 2022).

Following a period of relative peace, stability, and development in Karamoja from 2009–2019, there has been a resurgence of livestock theft and raiding, primarily of cattle, but also small ruminants (Arasio & Stites, 2022). Cattle raiding is embedded in traditional Karamojong cultural systems as a means of restocking animals after drought, animal epidemics, and raids—as well as for redistributing wealth, with social status connected to one's raiding and livestock holdings (Stites, 2022). However, in recent decades, cattle raiding has become a commercial business supported by livestock traders and others who profit from the purchase of stolen livestock, with devastating consequences for individual livestock owners. The region's renewed conflict and insecurity have multiple interrelated causes, including worsening hunger, greed for livestock, youth idleness, and intertribal conflict, including conflict with the Turkana of Kenya over grazing rights and raiding. Communities cite weak military action as the top contributor to the escalation of conflict, including "weaknesses in past disarmaments and in military actions as well as malevolent actions on the part of the security forces, such as the indiscriminate impounding of animals," (Arasio & Stites, 2022).

In recent years, the instability brought about by widespread raiding has been devastating, leading to a breakdown in local markets, governance systems, and health care and education systems (Stites, 2022). The insecurity in Karamoja has resulted in the loss of thousands of livestock, the inability to safely access fields/crops or graze animals (Cullis & Arasio, 2022), and human injury and death—primarily among young men due to their roles as protectors and raiders, and boys working as herders (Arasio & Stites, 2022). Insecurity restricts access to good quality rangeland, which goes unused while accessible areas are overgrazed. Conflict is noted as driving the declines in forage resources and access to grasslands since at least 2017, along with decreasing rainfall and increasing and unregulated settlement and farming (Egeru et al., 2023). A recent study found that "access to productive rangeland was further hindered by disarmament strategies that include the forced containment of livestock near military barracks, cessation of livestock mobility, and localized land degradation," (Egeru et al., 2023). Communities view insecurity as the top hazard affecting food security (Cullis & Arasio, 2022).

Another critical factor in the food security context is the strong influence of traditional knowledge and practices on all aspects of life in rural Karamoja, affecting the way communities view and act on matters such as conflict, gender roles, the place of elders and youth in community life, livelihood decisions, management of community resources, and other areas central to community well-being. Traditional systems are well established, for example, with regard to the ownership, management, and payment relating to water and rangeland resources (Egeru et al., 2023), and to early warning information/weather forecasting (Wasonga & Arasio, 2023); the effectiveness of latter is challenged by climate change, which reduces the predictability of the indicators used by traditional systems.[7] This socio-cultural context underlines the importance of early and meaningful dialogue and consultation with communities when new concepts, practices, governance systems/committees, etc., are introduced in any sector, to integrate external proposals with existing local norms and systems. As one study noted, "…pastoral and agropastoral systems rely on indigenous technical knowledge, practices, and beliefs (ecological, cultural, and spiritual) to guide decisions concerning resource use and management, as well as responses to shocks," (Wasonga & Arasio, 2023).

[7] Information regarding the challenges of traditional early warning systems provided by CRS in comments on an earlier report draft.

The socio-cultural context influencing gender roles and decision-making is also important to understand because of its impact on women's and children's health and nutrition. In Karamojong society, females' strong domestic and reproductive role has a strong influence on the opportunities and decisions available to them from a young age. Cattle are given as "bride wealth" to a girl's family when she marries; refusing to marry is perceived as disgraceful and as denying the family wealth. This pressure, as well as related traditions that look to girls as a source of labor and wealth, drive early sexual debut and adolescent pregnancy and explain the low use of post-natal care and family planning because of girls' limited agency in these areas. Grandmothers have been described as highly influential actors on the sexual and reproductive health of pastoral adolescent girls given their role in supervising and advising girls on their relations with men (Achen et al., 2021).

The influence of gender has also been found to play a role in market decisions that can impact the food and nutrition security of households. A 2018–2019 study using data from the Apolou Activity found notable baseline-endline increases in the percentage of men who said that their female spouse goes to the market, as well as in the percentage who reported that their female spouse usually makes decisions about market purchases, with women reporting change in the same direction. However, there were differences across the study population based on wealth type: "The greater the animal wealth of the household, the significantly less likely the male respondent was to report that his female spouse went to the market or made decisions about market purchases. Households characterized by animal wealth are more likely to pursue pastoral livelihoods, and these findings imply that decision-making around livestock (including purchase and sale) remains largely in the hands of men," (Stites, 2021).

Finally, the low education and literacy levels in Karamoja, and associated gender disparities, are worth noting because they can affect access to information and the ability to make informed choices, impacting households' food and nutrition security. The sub-region's net primary enrollment rate in 2019/2020 was 42.1%—the lowest in the country and dramatically lower than the national average of 80%. Secondary school net enrollment rate is 12.1%, versus a national average of 27.3%. While girls' and boys' enrollment are generally on par, girls' dropout rate is substantially higher and their attendance is lower. Karamoja's literacy rate is 40.3% for males over 10 years of age and 22.6% for females. A recent study cited the main factors hindering girls' lower education as the financial cost: school fees, lost income from girls' labor and potentially diminished bride wealth, and "reputational risks" related to an association between education and prostitution and to early pregnancy by men who the girl's family has not approved (Stites et al., 2022).

1.3 Activity Description

Nuyok seeks to improve and sustain the food and nutrition security of 181,053 vulnerable people in the Abim, Nakapiripirit, Napak, and Nabilatuk districts of Karamoja,[8] and targets women, men, and youth. It has four interrelated purposes that focus on: i) governance improvements and gender transformation; ii) building resilience to shocks and stresses; iii) building resilience of on-farm, off-farm, and non-farm

[8] Since the 2018 baseline, a national redistricting process has resulted in the Nakapiripirit District splitting into two districts, Nakapiripirit and Nabilatuk. The study will refer to the original districts for the endline analysis and for baseline-endline comparison purposes.

livelihoods, including improved production for income and consumption; and iv) improving nutrition outcomes of pregnant and lactating women (PLW), adolescent girls, and children under five (CU5). Nuyok layers (i.e., sequences and integrates) activities in gender transformation, environmental protection, and youth interventions into its programming.

The Nuyok theory of change (TOC) is as follows:[9]

"Karamoja is a complex environment that has experienced recent and dramatic social and economic changes and suffered for decades from marginalization…To respond effectively and sensitively, the Nuyok team will cultivate trust and equitable relationships with official and traditional leaders.

If trust is built, then leaders will be open to sensitization on delicate issues, such as inclusive leadership and accountability (SP F.1) and gender (SP F.2). If leaders are open, aware, and supported, then they will analyze their situation and increase their commitment to change. If leaders are committed to change and have the capacity, they will mobilize people to act and change their behaviors. These causal statements underlie the motivations required for sustainable change.

If individuals, households, communities, and institutions can access quality resources (inputs and services)—and are linked to each other—then they can improve their health and livelihoods.

If people are well-nourished and healthy (P3), and they have diversified livelihoods (P2), and if communities protect and improve their physical environment and live in socially-cohesive groups (P1), then the absorptive capacities of people and communities will increase, the risk of shocks and stresses will be minimized, and permanent negative impacts avoided.

If people, communities, and institutions can gather information, analyze it, and plan within a changing environment, their adaptive capacities will increase. The activities associated with this causal statement are embedded in learning at the community, sub-county, and district levels based in planning, monitoring, and analysis (SP F.1).

If institutions can perform their operational and technical functions, then they achieve optimal organizational performance, which has a cascading effect and produces an authentic, meaningful shift in participants' lives. This causal statement underlies the transformative capacity being built at official district and sub-county levels as well as in traditional governance structures (SP F.1) to create the enabling environment for systemic change.

[9] As summarized in the main narrative of the Catholic Relief Services project proposal submitted in response to USAID/FFP FY17 Request for Applications for Development Food Security Activities in Uganda. April 12, 2017.

2. EVALUATION DESIGN

2.1 Evaluation Objectives

The purpose of this evaluation is to measure the performance and development outcomes of the Nuyok Activity. The evaluation's scope of work outlines four overarching objectives:

- Evaluate the RFSA's performance in achieving its goals, strategic objectives, and intermediate results.
- Assess the performance of activity management, systems, and processes established by the RFSA including the sustainability strategy and its implementation, and strategies to improve gender equality, environmental considerations, and conflict sensitivity.
- Evaluate the effectiveness of technical interventions in achieving activity outcomes.
- Identify unintended consequences, lessons learned, and best practices that BHA and the Mission may consider in the design and development of future activities to achieve food and nutrition security and strengthen household and community resilience capacities.

2.2 Evaluation Questions and Sub-Questions

The evaluation questions and sub-questions for the two Ugandan RFSAs are presented by category below. These questions are reflected in the evaluation matrix in Annex 2, which describes the data sources, data collection methods, and data analysis methods for each question.

Overall Activity Achievement

1. To what extent have the interventions of the two RFSAs met their goals, purposes, and desired outcomes; and what factors promoted or inhibited their achievement?
   1.1. Did interventions reach the poorest and most vulnerable households within the target population areas (landless, land poor, women and girls including divorced and widowed older females in female headed households, adolescent girls and boys (youth), and persons with disabilities)?
   1.2. Based on available evidence, what were the most effective pathways to achieving outcomes among the priority interventions?

Effectiveness and Efficiency of Interventions

2. In each technical sector addressed by the activities (maternal and child health and nutrition; agriculture / livelihoods; early warning systems / disaster risk / resilience, and governance), what were the most effective and most efficient implementation methods and approaches among those selected by recipients?
   2.1. What are the strengths of and challenges to the activities' overall implementation approach, management, communication, and collaboration? What steps were taken by the recipients to address challenges?
   2.2. Who was targeted by and who benefited from each activity's intervention activities, and how effective was/were the selected targeting approach(es) in achieving its respective goals?

2.3. How are the quality, frequency, effectiveness, and suitability of the services provided by the activity perceived by the beneficiaries and their communities? Are there major differences in these perceptions of service delivery across key beneficiary sub-groups, and what are the reasons why?

Sustainability of Outcomes

3. Based on the evidence, what interventions and outcomes are likely to be sustained, and why?
   3.1. What processes, systems, and institutional arrangements (especially linkages and coordination with other United States Government and non-United States Government investments) were made by the recipients or members of the target population to sustain the necessary and critical services required to achieve and sustain activity outcomes?
   3.2. What is the level of motivation of the service providers to continue providing services after the activity ends, and of the beneficiaries to receive and pay (or invest time) for these services?

Unintended Consequences, Lessons Learned, and Best Practices

4. What are the positive or negative unintended consequences of each of the activities, if any, and how were these consequences identified and taken into account by the recipients?
5. What key lessons learned and best practices should inform future activities in Karamoja, and possibly in the country?

2.3 Evaluation Approach

The evaluation utilized a mixed-methods design that integrated data from multiple sources to address the evaluation questions. It drew on primary data collected via:

- A population-based survey (PBS) to measure current status and change over time for 54 BHA standard indicators and two custom indicators;
- A companion qualitative data collection effort to provide context for and understanding of participant perceptions of project achievements, changes (expected or unexpected) in key outcomes and explanations for these results. Qualitative data also provided additional information from the recipients and related stakeholders on project effectiveness, sustainability, challenges, unintended consequences, and lessons learned. The mixed-methods design utilized data collection protocols to collect primary qualitative data from RFSA participants and other key stakeholders via key informant interviews (KIIs), focus group discussions (FGDs), and during field observations.

The evaluation team also reviewed recipient documents to help interpret findings and provide support for recommendations.

Systematic integration of the quantitative and qualitative findings occurred throughout the data analysis and report-writing processes to triangulate and contextualize findings and identify areas for further inquiry.

TANGO subcontracted the International Research Consortium of Uganda to lead and conduct data collection in the field. This involved the management, logistics, training and oversight of field personnel who administered the PBS tool and qualitative data collection tools to key informants and focus groups in selected communities. International Research Consortium of Uganda, in coordination with TANGO,

oversaw field-level systematic data quality assurance processes for both quantitative and qualitative data. International Research Consortium of Uganda also managed the process of obtaining the necessary Institutional Review Board approval in Uganda and appropriate permissions, approvals, and community entry protocols to conduct interviews in communities, and performed preliminary analysis of the qualitative data.

TANGO was responsible for overall management of the evaluation, including evaluation and tools design, training, quality assurance during fieldwork, data processing, integrated analysis of PBS and qualitative data, and the creation and quality assurance of all client deliverables.

Training and data collection exercises were as follows (all dates are 2023):

- Listing training: June 1–3
- Listing exercise: June 5–15
- PBS training of trainers: June 19–24
- PBS training and anthropometry training: June 26–July 6
- PBS survey pilot: July 10–12
- PBS pilot debrief, survey adjustments, and deployment planning: July 11–12
- PBS data collection: July 13–31
- Qualitative training and pilot: August 7–9
- Qualitative data collection: August 10–20

The remaining subsections describe the specific data sources and data collection and analysis methods corresponding to the qualitative and quantitative components of the evaluation, as well as limitations and information on the dissemination of results.

2.4 Quantitative Methodology

2.4.1 Overview

The endline PBS serves as the second phase of a pre-post survey cycle for the Nuyok RFSA award. The primary purpose of the PBS is to provide population-level estimates on BHA resilience and custom indicators; endline results are compared with baseline estimates to assess performance. The pre-post design allows for the determination of statistically significant change in indicators; however, it does not allow statements to be made about attribution or causation relating to program impact.[10]

The endline PBS utilized the baseline questionnaires, except for some updates to Module CC and the inclusion and customization of Module P on RFSA interventions.[11] The questionnaire was translated and

[10] For full details on the evaluation methodology, please refer to the Evaluation Protocol (Annex 9) and the Data Treatment and Analysis Plan (Annex 10).

[11] Module P (participation in RFSA interventions) was adapted from BHA's standard module after consulting with the recipients to ensure the module captures the primary mechanisms through which the RFSA engaged with households. It includes questions on key interventions, particularly community group participation, training, and direct service provision. This module was further contextualized during the enumerator training.

administered in three local languages (Karamojong, Pokot, & Leb Thur).[12] Annex 3 (Methodology) details the topics covered in the 15 survey modules. The text of the modules is given in the Evaluation Protocol (Annex 9; within the protocol, see Annex C1 Main Questionnaire; Annex C2 Resilience Questionnaire; Annex C3 Module L – Gender and Household Decision-making). The data were collected using computer-assisted personal interviewing on tablets loaded with the CSPro data entry application and programmed with the PBS questionnaires.

2.4.2 Indicators Measured

The PBS collected data to measure 54 BHA indicators including food security and poverty indicators, anthropometric measurements for all CU5 and non-pregnant women 15–49 years of age, and two custom indicators. Additional questions were included to capture participation in RFSA-specific interventions (Module P). The baseline indicators were calculated using the 2015 edition of the USAID Office of Food for Peace (FFP) Indicator Handbook (FANTA III, 2015), which BHA updated in 2021 (USAID, 2021). For consistency, TANGO calculated the endline indicators using the methodology described in the 2015 FFP Indicator Handbook. The full list of indicators is provided in the Evaluation Protocol (Annex 9). See FANTA III for indicator definitions and calculations used in this study (2015).

2.4.3 PBS Sampling Approach

2.4.3.1 PBS Sample Design

The PBS utilized a cross-sectional design and was conducted among a sub-sample of clusters surveyed at the 2018 baseline,[13] resulting in a cluster panel.[14] The target sample for the endline PBS is representative of all households in the activity area. However, the sampling frame for the endline survey excludes inaccessible and insecure baseline clusters, baseline clusters that did not ultimately receive any interventions, and baseline clusters in which major interventions ceased or discontinued within 2 years after the start of activity implementation. See Annex 3 for details on the steps taken to finalize the sampling frame and conduct the first-stage selection of endline clusters.

2.4.3.2 PBS Sample Size

The baseline sample size was calculated to ensure adequate statistical power to test for differences in the prevalence of stunting among CU5 (0–59 months) because stunting is a key measure of food insecurity. The target sample size for the endline survey uses the same criteria and formula as the baseline (comparative proportions) but is derived using actual estimates from the 2018 baseline survey

[12] The endline survey employed translated versions derived from the baseline, which had undergone prior piloting and vetting. These translations were subsequently refined to align with modifications made to the English questionnaire, specifically incorporating adjustments related to Module CC and the integration and customization of Module P pertaining to RFSA interventions.

[13] For details on the baseline sampling approach, refer to ICF Macro, Inc. 2019.

[14] Although a household panel design would reduce variation at the household level, thus reducing the sample size requirements, the benefits of a household panel are offset by two associated challenges: logistical challenges locating households from the baseline and the need to resample due to attrition; and difficulty conducting subgroup analyses and further disaggregation of indicators due to substantially smaller sample sizes of a household panel design. Furthermore, the household panel design would not hold for individual-level indicators because certain household members for whom the baseline survey collected data on (e.g., women 15-49 and CU5) would have “aged out” of the target sample at endline.

for the following input parameters: 1) prevalence of stunting; 2) design effect; and 3) household size and proportion of CU5 for estimating the number of children per household.[15] This resulted in a final sample of 840 households from 28 clusters in the Nuyok area (see Table 1, and table note regarding rounding).[16]

The sample size for the endline survey was calculated based on the number of children needed to detect an 8% reduction in stunting over the life of the program (between baseline and endline). The prevalence of stunting at baseline was 35.7% in Nuyok.[17] Using these parameters with design effect for prevalence of stunting at 1.44, the number of children needed at endline is 601. Inflating to the household level yields a sample size of 827 households (assuming an average household size of 5.4, a percentage of children under five of 19.4,[18] and a 5% non-response rate).

Table 1: Endline PBS Sample Size, Nuyok Final Performance Evaluation

	Indicator	Estimate of proportion, timepoint 1	Estimate of proportion, timepoint 2	Design effect	Avg # CU5 per Household *	# CU5 needed	# Households needed	# Households needed with a 5% non-response adjustment	Total # of clusters **
Baseline 1	Prevalence of stunting	0.360	0.280	2.0	0.98	829	1,157	1,230	45
Endline 2	Prevalence of stunting	0.357	0.277	1.44	1.064	601	786	827	28

NOTE: Assumptions for all calculations: one-sided test, alpha=0.05, beta=0.80, households per cluster=30, and a minimum 8 percentage point reduction in stunting per the baseline protocol.

** Estimated household size is given as 5.4. Estimated proportion of CU5 is given as 0.197.*

***Number of clusters was rounded up to arrive at 30 households per cluster, resulting with slightly higher final sample sizes (28 * 30 = 840 households).*

Sources: Input parameters for the baseline PBS are based on the 2011 Uganda Demographic and Health Survey; see Uganda Joint Baseline/Endline PBS Protocol. Input parameters for the endline PBS are based on the 2018 baseline survey of the BHA RFSAs in Uganda.

Quantitative Data Analysis

TANGO calculated endline estimates for all BHA and custom indicators according to the procedures outlined in the Data Treatment and Analysis Plan (DTAP) (Annex 10) approved by BHA prior to the start of data analysis. The general approach of data analysis was the following:

[15] The baseline sample size was derived using estimates from the 2011 Uganda Demographic and Health Survey for the two input parameters to the sample size calculation: 1) prevalence of stunting in rural households, and 2) number of children per household.

[16] The target sample size for the Uganda endline PBS is substantially smaller than that of the baseline PBS because: (1) the design effect parameter used to calculate the endline sample size is lower compared to baseline; and (2) the average number of children per household used in the sample size calculator was higher for endline compared to the one considered for baseline.

[17] These parameters were obtained from the 2018 FFP baseline survey in Uganda.

[18] Ibid.

Data cleaning: TANGO cleaned and analyzed the household survey data using Stata 18 data analysis and statistical software. To uphold consistency in data cleaning procedures and ensure comparability of endline estimates with the baseline, TANGO utilized syntax files derived from the baseline.

Endline point estimates: Point estimates and variance estimations were derived using Taylor series expansion and considered the design effect associated with the complex sampling design; 95% confidence intervals are provided for all indicators (see Annex 6, Table A6.1). To ensure comparability of endline estimates with the baseline, TANGO utilized syntax files derived from the baseline. A few baseline indicators were recalculated to ensure better alignment with existing guidance (see DTAP in Annex 10).

Comparison of baseline and endline indicators: The endline estimates for all indicators were statistically compared with baseline estimates to detect the average (mean or proportion) change in indicator values. The baseline and endline datasets were added before running the test of comparisons of means (or proportions). Differences are considered statistically significant at $p<0.10$ level to maintain consistency with the threshold applied in the baseline study. Annex 6, Table A6.2 illustrates the results of the baseline-endline comparison of indicator estimates. The findings are color-coded for clarity: changes that are statistically significant and in the expected direction (e.g., an increase in daily per capita consumption expenditures) are highlighted in green. Conversely, changes that are statistically significant but not in the expected direction (e.g., a decrease in dietary diversity) are shaded purple. Additionally, statistically non-significant changes are indicated in grey for easy reference.

Bivariate and multivariate analyses: TANGO conducted additional analyses to explore associations of select outcome indicators with different interventions, project-promoted practices and population characteristics. All bivariate analyses followed preliminary calculation of the endline indicators; statistical differences of means (or proportion) were calculated i) between poor and non-poor households at baseline and endline[19]; ii) between participant and non-participant households at endline; and iii) between participant households at endline and all households at baseline. Tables of comparisons were presented to BHA for approval prior to the start of multivariate analysis. Multivariate analysis included examination of relationships between recipient activities and food security, agricultural practices and food security, recipient activities and agricultural practices, recipient activities and women's nutrition and gender decision-making and women's nutrition. Annex 8 presents the findings from these analyses.

Sampling weights: Sample weights were calculated for endline indicators and adjusted to compensate for household and individual non-response. Endline sample weights were also calculated to account for the cluster panel design. Refer to the DTAP (Annex 10) for a detailed explanation of the sampling weights calculation methodology.

Missing data: Missing data points were excluded from calculations for BHA and program-specific indicators (i.e., they were excluded from the denominator and numerator). "Don't Know" responses were re-coded to the null value and included in the denominator. In other words, "Yes," "No" and

[19] Households with daily per capita expenditures below $1.90 (2010 USD, 2011 PPP) are considered poor.

"Don't Know" responses were included in the denominator, but only "Yes" responses were counted in the numerator.

Sharing preliminary results. Before activity closeout, preliminary quantitative survey results were shared with BHA and project staff for their initial review. A remote review session was held to ensure an opportunity for project staff and the evaluation team to raise and discuss any questions to help understand and interpret the findings.

2.5 Qualitative Methodology

2.5.1 Overview

The qualitative component of the evaluation considered questions around program achievement, effectiveness, and sustainability, including strategies to strengthen gender equality, address environmental issues, and improve conflict sensitivity. Qualitative data were collected to help interpret the PBS results, address evaluation questions that cannot be answered quantitatively, and to provide insights into factors contributing to the achievement of RFSA goals, challenges, unintended consequences, lessons learned, and best practices. Qualitative methods included KIIs, FGDs, and document review.

2.5.2 Qualitative Data Collection Activities

Primary data collection was guided by the evaluation questions, which are reflected and expounded in qualitative tools (topical outlines) organized by project purpose/sector, stakeholder category, and interview type (i.e., KII vs FGD). Qualitative interviewers were assigned to conduct specific KIIs and FGDs based on their technical specialties, language competencies, and gender. The interviews and discussions were conducted in English, Karamojong, Pokot, or Lethur, as appropriate. The tools are provided in Annex D1 of the Evaluation Protocol (Annex 9).

The evaluation team conducted 64 KIIs (47 female and 22 male participants)[20] and 45 FGDs (243 female and 168 male participants). Some FGDs were single sex (conducted by facilitators of the same sex to the extent feasible); other FGDs were mixed. Participants included the following categories of informants:

NUYOK KIIs:

- **Project staff (Caritas Moroto and Caritas Kotido Diocese):** project coordinators and staff working in agronomy, business development services, community planning, DRR, gender, health and nutrition, health systems strengthening, WASH, livelihoods, monitoring, evaluation and learning, natural resource management (NRM), and resilience
- **CRS staff:** managerial staff and technical advisors
- **Government:** officials at district and sub-district level: agriculture officers, agriculture extension officers and heads of agriculture; community-based monitors; District Community Development Officers (DCDOs); District Health Officers; Subcounty Chiefs; Health Assistants; WASH Officers
- **Others:** Savings and Internal Lending Committee (SILC) members and leaders

[20] Total interview count differs from the sum of female + male KIIs because some KIIs involved two people.

NUYOK FGDs:

- **Group members:** Home Improvement Campaign clusters, SILCs (members and leaders), Water User Committees (WUCs)
- **Others:** female and male household heads, farmers/lead farmers, livestock producers, youth (M/F), male change agents (MCAs), Mother Care Groups (MCGs), maternal and child health and nutrition (MCHN) participants, lead mothers

See Annexes 4 and 5 for detailed lists of KIIs and FGDs conducted.

2.5.3 Qualitative Data Analysis

Document review. The desk review began in the inception phase continued throughout data collection, analysis, and reporting. Documents were reviewed with reference to the evaluation questions, thematic focus areas, and emerging hypotheses, with relevant references incorporated into the report for context, comparison, and triangulation.

Primary qualitative data. The main bases for the analysis of primary qualitative data were: i) KII and FGD notes (one Microsoft Word file per KII or FGD); ii) summary notes using an Excel template structured to align with the topical outlines; and iii) International Research Consortium of Uganda's summary report of key themes identified in the findings. The individual notes were shared regularly among team members for discussion and iterative analysis during data collection and finalized following the completion of this phase. An Excel matrix was used to facilitate the consolidation and comparison of findings across informants for any given evaluation question or sub-question (as reflected in detailed interview questions from the topical outlines), and to identify patterns and outliers. The individual note files were consulted for additional details on topics of interest and utilized as a source of respondent quotes.

Integration and validation of quantitative and qualitative findings. Upon completion of the analysis of the PBS data, the qualitative team reviewed the results and used the information as a reference point for analyzing what was learned during the qualitative study. The team sought to contextualize and, where possible, explain the survey results with reference to the qualitative data. Information from the desk review was incorporated into the analysis for additional context. Throughout this process, the qualitative and quantitative analysts communicated regularly with each other and the field team to discuss and reflect on emerging findings and to help explain those findings from their different analytical viewpoints.

The draft reports were circulated for comment to BHA and CRS and additional stakeholders they advised. Virtual briefing sessions were organized with USAID/Uganda, relevant Uganda government agencies, and CRS to present, validate, and further contextualize results. The evaluation team finalized the reports after consideration of input from the briefings and stakeholders' written review.

2.6 Limitations

The evaluation team encountered limitations that may have affected data quality and analysis. This section discusses these limitations and mitigation efforts.

Security risks. At the evaluation design stage, it was anticipated that the high insecurity in Karamoja would require schedule adjustments to maximize the safety of survey team personnel, visited communities, and other individuals involved in the evaluation. As a proactive security measure, insecure clusters were removed from the sampling frame based on input from the recipient. Permission to access the study communities was secured after obtaining approval from the offices of the Chief Administrative Officers for the targeted districts and from the USAID BHA Office in Uganda. During fieldwork, the team followed risk mitigation measures established in the Evaluation Protocol such as no night driving, adhering to standard driving speeds, carrying spare tires, and maintaining frequent communication with International Research Consortium of Uganda supervisors. International Research Consortium of Uganda continuously assessed the security situation to be able to adapt plans accordingly. This included informing local security officials including the Resident District Commissioner, District Internal Security Officer, Gombolola Internal Security Officer, and barracks commanders about the enumeration area where the team was scheduled to work and requesting guidance on security matters in the area.

The PBS survey teams faced security risks travelling within Karamoja, especially in some parts of Nabilatuk and Nakapiripirit districts. The survey teams were thus advised to restrict their movement to between 9 am and 3 pm. This made it difficult to reach the target of interviewing at least two households per day per enumerator, an already-challenging target given the long distances between the lodgings and clusters. Nevertheless, with some scheduling adjustments, the survey teams completed the overall target number of surveys. During the qualitative data collection phase, the researchers also followed the advice given by the security teams on the ground and faced no security challenges.

For future evaluations, it is important to note that providing incentives for participation can heighten tensions (community members in this evaluation were given a bar of laundry soap as compensation[21]). The survey team encountered this situation in Kotido District, visited by the research team for the concurrent evaluation of the other RFSA, where a community of warriors demanded and were given soap before they allowed the team to proceed with the survey in the community.

CSPro error affecting Module L data. In the data analysis phase, an issue was identified with endline data for Module L (Gender – Household Decision-Making, Access to Credit and Group Participation) that led to data loss and thus a smaller sample size. This error impacts the comparability of some endline resilience indicators with baseline estimates. Roughly one-half of the households do not have endline data for male or female respondents for Module L. Although field teams interviewed all members in all households eligible for the module, a CSPro programming error resulted in only data for men and women in households with children under 2 (CU2) being retained. The survey team revised the code to adapt to a new version of CSPro at endline; this error occurred under these circumstances and not during the baseline. The analysis was revised to mitigate the impact of this data loss and enable comparability of the baseline and endline using the full sample, as intended; ultimately, a comparison of the full sample of households at baseline to only the subsample of households with CU2 was necessary

[21] This evaluation was subject to review and approval by the Mildmay Uganda Research Ethics Committee, which requires evaluation participants to be compensated for their time. All participants were given a bar of White Star laundry soap to satisfy this requirement.

for only one of the principal resilience indicators. The methodological revisions performed on the data, including their implications for analysis, are detailed in Annex 3.

Self-reporting of livestock. A challenge potentially affecting data reliability was that activity participants may have been reluctant to truthfully report their livestock ownership because they feared being targeted for livestock theft. While a certain level of underreporting livestock is likely present, survey enumerators were trained to observe and probe appropriately to minimize underreporting and optimize the accuracy of asset data.

Additional limitations[22]. Other possible limitations for this evaluation include: i) potential sampling bias related to removing some baseline clusters from the endline sampling frame due to insecurity and programming factors; ii) limitations related to respondent recall; iii) selection bias in qualitative interview respondents; iv) inability to observe activities or speak with all desired stakeholders given the coincidence of the data collection period with project closeout; and v) the implications of the lack of valid counterfactual for attribution of results. Please refer to the Evaluation Protocol (Annex 9) for a full description of these limitations and the measures taken to mitigate them.

2.7 Dissemination of Report

The final evaluation report will be disseminated to USAID, Nuyok implementers, and national-level stakeholders. District government officials and local civil society organizations will receive the study reports and be requested to share the study findings with project communities and with sub-counties and parishes. BHA will upload the final reports and other materials to online platforms per BHA protocols.

TANGO also provided preliminary aggregate results from the endline evaluations of the two RFSAs in Uganda (Nuyok & Apolou[23]) to a resilience learning event regarding humanitarian, development, and peace investments in the Karamoja region. The event was held in early September 2023, during the initial stage of data analysis.

[22] Despite a slight disparity in the timing of the baseline and endline surveys, both surveys were conducted during the end of the typical lean season in the Karamoja region, which spans from March to July. Data collection for the endline survey took place from July 13 to July 31, 2023. Fieldwork for the baseline PBS took place from June 7 to July 6, 2018. Given this relative alignment, seasonal variations are not expected to influence the comparability of results.

[23] The two RFSA final performance evaluations were conducted concurrently by TANGO and International Research Consortium of Uganda.

3. FINDINGS

This section begins with a brief overview of participation in RFSA activities. The remaining subsections are organized by the broad topics of evaluation questions detailed in Section 2.2.

Please note that the narrative describing comparative results of the quantitative survey reports only those results that are statistically significant at the 0.10 level, though it may include observations on noteworthy non-significant results. The tables in the statistical annexes indicate p values for all analyses.

3.1 Activity Participation

Overall, 49.5% of surveyed households reported participating in one or more Nuyok interventions, averaging 3.5 per household (out of a possible 48). Households participated, on average, in 1.7 out of 22 groups and 1.8 out of 26 trainings or services. Of groups or activities with more than 10% of households reporting participation, participation was highest in MCGs (23.7%), followed by 21.5% participating in Home Improvement Campaigns, 16.5% in SILC groups, and 12.1% in WUCs. Of trainings or services, participation was highest in WASH (18.9%), kitchen/backyard vegetable gardens (16.8%), improved crop production practices (15.1%), SILC-related training (14.4%), improved Essential Nutrition and Hygiene Action practices (12.7%), nutrition vouchers (10.8%) and improved post-harvest handling and storage training (10.5%).[24]

3.2 Overall Activity Achievement

This section reviews activity achievement by comparing baseline and endline indicator estimates and drawing on perceptions of diverse stakeholders from FGDs and KIIs.

3.2.1 Foundational Purpose: Communities and institutions capacity to improve food and nutrition security improved

The baseline and endline surveys were conducted during the typical lean season in Karamoja.[25] Food security (as measured by the Food Insecurity Experience Scale with a 12-month recall) suggests high levels of food insecurity at both baseline and endline, with the moderate and severe food insecurity prevalence of approximately 95%. This indicator increased for households consisting of an adult female without any adult males (baseline all: 94.1%, endline all: 97.0%). While this indicator may be biased upward toward higher insecurity compared to other experiential food security indicators with shorter recall periods, the results nevertheless point to persistently high levels of food insecurity.[26]

[24] See Annex 6, Table A6.6 for complete tabulation of activity participation.
[25] As noted in Section 2.6, despite a slight disparity in the timing of the baseline and endline surveys, both surveys were conducted during the end of the typical lean season in the Karamoja region. Given this relative alignment, seasonal variations are not expected to influence the comparability of results.
[26] See Annex 6, Tables A6.2 and A6.3 for detailed results.

Lead farmers report advances in food security as well as persistent challenges. One lead farmer FGD in Napak District reported that Nuyok's impact on food security was low due to the drought, which they explained negatively affected the gains throughout the course of the project. The farmers said that drought remains a challenge, explaining how the cultivation season begins in March and ends in May, leaving the rest of the year dry—a situation that poses a risk to continued food production. Similarly, a lead farmer interviewed in Nakapiripirit said drought is intense in the area, with some crops visibly wilting, e.g., bean crops drying; it was only drought-resistant crops like sorghum that were doing fairly well. A lead farmer FGD in Abim relayed that the main challenge is the insecurity on the hilly areas where the raiders come and steal the farmer produce or even kill the farmers. Insecurity remains a challenge with farmers complaining that thieves steal their produce and, at times, the warriors interfere with their cultivation activities. They said floods also destroy the crops and the cost of labor is deemed high.

DIET DIVERSITY

The traditional norms of not allowing expectant mothers to eat liver or chicken, were also done away with through MCA efforts (FGD with HIC). "After the dietary diversity training, women now know the importance of eating a variety of foods, so men give them money to buy other different food items," states a member of a Water User Committee FGD in Abim, and continues, "Households now eat balanced diets as a result of the kitchen gardens that every household is maintaining and the training on what a balanced diet is, not just eating meat every day." Nutritious foods are now decided collectively by household members to "boost the nutrition and good health of our children."

The subjective assessment of some lead farmers was that food security had increased and they attributed this to Nuyok activities. In Abim, a lead farmer FGD conveyed that food security has increased because farmers grow a diversity of food and cash crops (separate gardens) with Nuyok's interventions. They explained how farmers now grow maize, groundnuts, *sim sim* (sesame), beans and rice; before Nuyok they only grew sorghum. They now sell to markets in Kotido District, and farmers also have kitchen gardens in their backyards. They sell these vegetables to the Morulem market in Abim District and consume them at home.[27]

The HDDS estimates, like those for the Food Insecurity Experience Scale, also reflect a general state of poor food security. The HDDS remained low at endline but improved slightly since baseline (baseline all: 3.1, endline all: 3.5). At endline, participant households have higher average HDDS than non-participant households (endline RFSA: 3.7, endline non-RFSA: 3.2). HDDS also improved, on average, for participant households (endline RFSA: 3.7, baseline all: 3.1).[28] A multivariate equation estimating relationships between participation in Nuyok activities and HDDS supports the finding from bivariate quantitative analysis that HDDS is higher for participant households. The equation shows that participation in Nuyok training activities is associated with higher HDDS.

[27] See Section 3.3.1 for discussion of road rehabilitation cash-for-work projects that opened more remote areas to markets.
[28] See Annex 6, tables A6.2, A6.3, and A6.4 for HDDS results. Multivariate equation results are in Annex 8, Table 1.

The most prevalent HDDS food groups consumed by households at endline are cereals and grains (endline all: 68.5%), coffee/tea or condiments (endline all: 76.3%), vegetables (endline all: 66.3%), and seeds or legumes (endline all: 42.6%). For these most-prevalent food groups, consumption increased sharply between baseline and endline for seeds and legumes (baseline all: 24.9%, endline all: 42.6%) and coffee/tea or condiments (baseline all: 57.2%, endline all: 76.3%). Consumption remained unchanged for cereals and grains (approximately 62–69%) and vegetables (approximately 61-66%). Regarding less-consumed food groups, egg consumption increased (baseline all: 1.6%, endline all: 4.1%) and roots and tuber consumption declined (baseline all: 21.5%, endline all: 8.4%) between baseline and endline.[29]

The qualitative data shed some light on the positive quantitative findings about dietary diversity. Some FGDs reported changes in diet due to information provided by MCGs. A Home Improvement Campaign FGD in Napak District explained that nutrition training was essential because it changed individual knowledge on food types and their values in the body, particularly for pregnant mothers. The men also described the importance of certain foods for their pregnant wives.

Most importantly, qualitative findings suggest the diet of everyday meals made in the household has changed: for instance, participants in another Home Improvement Campaign FGD said they now eat greens, beans, and sometimes potatoes, in addition to meat. WUC members in a FGD in Napak attributed such feeding improvements to regular training conducted by Nuyok project staff and the structures of MCGs, where information was provided on how to cook and eat different kinds of foods to build the health of the body.

One sub-county health assistant interviewed believes that some people have abused the food rations and that is why the malnutrition levels within the district do not change year after year: “When parents get the ready-to-use therapeutic food, they sell it and buy alcohol or other household items.” The respondent felt that this behavior affected participation in project activities because he thinks some people were not incentivized to change their practices. His impression was they refused to attend the trainings on how to set up gardens and have balanced diets because they were aware they would receive food provisions and supplementary feeding. This sentiment was echoed by a health official in a different district who said food provisioning encourages some parents to keep their children underfed so they are retained in the program. His understanding was that many community members are more reluctant to take on new ideas that could potentially improve their livelihoods because they are sure they will receive free food on a monthly basis.

Discussions in several FGDs demonstrate the perception that food provisioning has been scaled down in communities. Lately, people have tried to sustain themselves without outside assistance because the food distributions are short-term and only happen where there is famine. They considered the supplementary feeding programs as treatment for malnutrition, and that, as such, there is no misuse. As explained by a health officer in Napak District, “Although some of the people assume this food is misused, I don’t think it is enough to even be sold. We had GAM [global acute malnutrition] rates of 17% last year but now we are at 9.4%. This decline can only mean that people are taking on the trainings, and

[29] See full results for food group consumption in Annex 7, Table A7.3.

also doing what is expected of them; otherwise, people enrolled in the nutrition program would still be very many." He felt these conditions did not affect the implementation of the project.

3.2.2 Purpose 1: Community resilience to shocks and stresses improved

This section highlights the main findings on shock exposure, coping strategies, and the three resilience capacities, as well as resilience indicators related to livelihood engagement, group-based finance, the ability to recover from shocks and stresses, and social capital.

Shock exposure[30]

Perceived shock exposure in the Nuyok implementation area, already high at the time of the baseline survey, remained at similar levels at endline. The average number of reported shocks remained around 5.5 while perceived shock severity, as measured by the shock exposure index, declined slightly (baseline all: 31.9, endline all: 28.7). Exposure to conflict increased sharply (baseline all: 24.8, endline all: 59.5), as did economic shocks (baseline all: 58.7%, endline all: 81.3%). Exposure to climate shocks was nearly universal—at 95% or higher in both surveys—and exposure to biologic shocks such as pests and diseases was high (74% or more, with no statistically significant change between baseline and endline).

Drought was the most prevalent shock reported at endline, increasing sharply from baseline (baseline all: 61.3%, endline all: 83.1%). This contrasts with the most widely reported shocks at baseline—excessive rains (baseline all: 86.6%, endline all: 23.6%) and flooding (baseline all: 72.1%, endline all: 15.6%)—both of which also had diminished by the time of the endline survey. Reports of variable rain (early or late) increased between baseline and endline (baseline all: 32.0%, endline all: 45.1%). These survey results describe a changing weather environment in which 2017/2018 was characterized by heavy rains and flooding shifting to drought and untimely rains in 2022/2023. They are consistent not only with the qualitative findings, but with Nuyok annual monitoring reports and secondary sources such as FEWS NET,[31] which suggest that drought and variable rain were not limited to only the 2017/2018 and 2022/2023 periods, but that persistent drought, variable rain, and pest infestations resulted in multiple crop failures occurring between the baseline and endline.

Survey respondents indicated increasing food prices (baseline all: 57.8%, endline all: 76.3%) as the most common shock at endline after drought. This sharp increase was likely driven by the multiple crop failures and poor growing season in the year leading up to the endline, as noted above; the increase in global food prices associated with the war in Ukraine was also likely a compounding factor.

Exposure to crop disease, weeds, and crop pests signal an extremely challenging crop production environment at both baseline and endline. The incidence of crop disease remained elevated at endline, increasing slightly since baseline (baseline all: 41.4%, endline all: 50.9%). Exposure to weeds, also relatively high at baseline, grew slightly between baseline and endline (baseline all: 40.7%, endline all: 50.8%). Crop pests, a frequently cited shock at baseline, was less prevalent, yet still reported by 1 in 4 households at endline (baseline all: 45.9%, endline all: 26.6%).

[30] See Annex 7, Table A7.20 for complete results from the shocks module.
[31] See also Wasonga and Arasio (2023) and Cullis and Arasio (2022).

Exposure to several conflict shocks that were uncommon at baseline increased significantly by endline. Nearly 40% of households surveyed at endline reported experiencing livestock theft (baseline all: 4.9%, endline all: 39.3%), up from less than 5% at baseline. As noted in the limitations section, actual rates may be higher, as respondents may be reluctant to report livestock assets for fear of raids. Levels of theft or destruction of other (non-livestock) assets also grew (baseline all: 7.9%, endline all: 27.3%). Reports of gender-based violence (GBV) remained at approximately 8%, unchanged between baseline and endline (see detailed discussion below).

The endline survey found several statistically significant differences between participant and non-participant households in reported exposure to specific shocks, mostly ones that disproportionally impact livestock and crop producers.[32] Shocks reported more frequently by participant households at endline are variable rain (endline RFSA: 52.6%, endline non-RFSA: 37.5%), crop disease (endline RFSA: 58.2%, endline non-RFSA: 43.2%), weeds (endline RFSA: 58.1%, endline non-RFSA: 43.3%), livestock theft (endline RFSA: 46.1%, endline non-RFSA: 32.0%), and livestock disease (endline RFSA: 26.2%, endline non-RFSA: 9.7%). The higher reported incidence of these shocks among participant households could reflect their greater participation in crop and livestock production relative to non-participant households, i.e., crop and livestock producers are more sensitive to these kinds of shocks because of their direct impacts on their livelihoods and are thus more likely to report them.[33]

Exposure to GBV. FGD and KII findings across all program districts suggest increased respect within couples, which reportedly led to reduced cases of GBV. For instance, male and female community-based monitors (CBMs) in Nakapiripirit reported decreased GBV because women have access to some money and resources to buy small household items. They said that in the past, men in Karamoja used to "beat their wives with wires until she bled," and now some men have apologized to their wives for how they used to treat them; as a result, peace and harmony both in the households and the entire community have reportedly improved. Similar sentiments were widely reported. An individual in an MCA FGD in Abim commented, "Nowadays one can find a couple sitting together, laughing and discussing home affairs. But before Nuyok came, men just had no common business with women, may be when they wanted sex, which would not have been politely requested." Similar comments about more consultative and harmonious male-female domestic relationships were prevalent throughout the qualitative data, including some comments about reduced hitting. These positive changes were attributed to the influence of MCAs, who discussed positive gender attitudes and practices with fellow men and modeled positive gender practices in their families.

[32] When interpreting data from the shocks module, one should keep in mind that results presented are snapshots of shock exposure in the 12-month periods preceding the baseline and endline surveys, respectively. The endline quantitative survey does not ask shock exposure questions with longer recall periods that might allow for understanding of household shock exposure in the four-year period between implementation of the baseline survey up to 12 months prior to the endline survey. Annual monitoring and secondary reporting suggest persistent exposure to climate shocks affecting crop harvests and livestock production, increasing conflict and impacts from COVID-19, including illness, market closures and transportation restrictions. While not fully measured in quantitative data related to shock indicators, the cumulative effect of these shocks would have impacted endline results of key outcome indicators, including those related to food security and MCHN.

[33] At endline, 73.5 percent of participant households were engaged in "farming/crop production and sales" vs. 55.1 percent of non-participant households. Similarly, a higher percentage of participant households were engaged in "livestock production/fattening and sales" compared to non-participants (RFSA: 26.6 percent, non-RFSA: 11.1 percent). See Annex 7, Table A7.19 for livelihoods results. See further discussion of livelihoods below under *Other Resilience Indicators.*

Nonetheless, quantitative survey results show higher reporting of GBV for participant households at endline compared to non-participants (endline RFSA: 10.5%, endline non-RFSA: 4.8%). A possible explanation for these results is that because of the awareness-raising around positive gender norms that ensued between baseline and endline, endline respondents had a more comprehensive understanding of what constitutes GBV, i.e., the result may be interpreted as under-reporting of GBV at baseline and a correction at endline, rather than a true increase in GBV prevalence.

Coping strategies[34]

Reported use of coping strategies in the previous 12 months appears to be low or underreported based on comparisons with responses to other questions in the survey. For example, 91% of households report going an entire day without eating (12-month recall), but only 23% report reducing food consumption to cope with shocks. In addition, 28% report receiving humanitarian assistance in the past 12 months (food or cash), but only 12% report utilizing food or cash emergency aid as a coping strategy. These responses appear inconsistent, but it is possible that households did in fact engage in a number of these strategies at high rates one or more times in the past year: given both the long recall period and the normalization of these strategies in answering endline survey questions respondents may not necessarily have remembered them as, or considered them to be, coping strategies.

The most frequently reported coping strategies at endline were reducing food consumption (endline all: 23.4%), taking up new work (endline all: 21.3%) and receiving emergency food aid. Of these three strategies, only the last showed a statistically significant difference from baseline (baseline all: 0.0%, endline all: 10.9%).

Livestock sales was the most frequently reported livestock-based coping strategy at both baseline and endline, with approximately 8% of households reporting that they sold livestock for this reason. The only other strategies utilized by more than 5% of households at endline were reducing non-essential expenses, taking out a loan from a microfinance institution or village savings group, sending children or an adult to stay with relatives, and sending livestock to search for pasture. Nevertheless, the prevalence of these strategies remained below 10% at both baseline and endline. The only strategy used more frequently by participant households at endline compared to non-participant households was receiving food on credit (endline RFSA: 6.2%, endline non-RFSA: 2.8%.

Resilience capacities[35]

Absorptive capacity. The absorptive capacity index (scaled 0–100) is comprised of eight sub-indicators and measures the ability of households to prepare for, cope with, and mitigate the impact of shocks and stressors on well-being outcomes.

The absorptive capacity index increased between baseline and endline (baseline all: 20.8, endline all: 26.4).[36] Based on their factor loadings, [37] shock preparedness and mitigation, asset ownership and access to savings are the strongest contributors to absorptive capacity. Access to agricultural insurance

[34] See Annex 7, Table A7.21 for complete results on coping strategies.
[35]See Annex 7, Table A7.22 for complete results on resilience capacities.
[36] See Annex 7, Table A7.22 for mean values of the sub-indicators that comprise the absorptive capacity index.
[37] Factor loadings represent the correlation of the sub-indicators with the overall index. Factor loadings greater than 0.30 to 0.40 are generally considered to have a sufficiently strong association with the index. (Hair, Anderson, and Black, 2014).

and availability of humanitarian assistance have slightly lower weighting in the index but are still influential. Bonding social capital and access to remittances have the relatively least influence on the index.

Improved shock preparedness and mitigation (baseline all: 0.6, endline all: 0.8, scale: 0–4), access to savings (baseline all: 23.6%, endline all: 35.9%), availability of humanitarian assistance (baseline all: 11.5%, endline all: 28.3%), and increased levels of asset ownership (baseline all: 8.3%, endline all: 9.4%) account for nearly all of the increase in the absorptive capacity index. An increase in bonding social capital (baseline all: 2.4, endline all: 2.7, scale: 0–6), also contributed to higher absorptive capacity but to a lesser degree.

Absorptive capacity, as measured by the index, was significantly higher for participant households compared to non-participant households at endline (endline RFSA: 30.6, endline non-RFSA: 22.3). The principal drivers of this difference were higher shock preparedness and mitigation, asset ownership, access to savings, and availability of humanitarian assistance (see Financial Services subsection below, which discusses links between improvements in savings relative to Nuyok financially-based initiatives).

Adaptive capacity. The adaptive capacity index (scaled 0–100) is comprised of 10 sub-indicators and measures the ability of households to manage resources and make pro-active and informed choices to better adapt to future shocks.

This index increased between baseline and endline (baseline all: 39.7, endline all: 45.1).[38] Based on their factor loadings, exposure to information, asset ownership, and education and training are the strongest contributors to adaptive capacity. Livelihood diversification, aspirations, and confidence to adapt, and linking social capital have marginally lower influence on the index, but still have relatively high weights. Access to finance, adoption of agricultural practices, and bridging social capital have the least influence.

Significantly higher exposure to information, as well as higher asset ownership and improved education and training account for nearly all the increase in the adaptive capacity index between baseline and endline. An improvement in access to financial resources contributed to the increase observed in the adaptive capacity index, but only slightly, due to its lower relative weight in the index.

Adaptive capacity was significantly higher for participant households compared to non-participant households at endline (endline RFSA: 51.3, endline non-RFSA: 39.0). While all adaptive capacity sub-indicators were higher for participant households compared to non-participant households, the principal drivers of the difference in overall adaptive capacity between participant and non-participant households at endline were higher exposure to information, asset ownership, education and training, livelihood diversity, and linking social capital.

Transformative capacity. Transformative capacity (scaled 0–100), comprised of 10 sub-indicators, reflects system-level resources, governance, and institutions that lay the foundation for promoting household capacity to respond to shocks and stressors.

[38] See Annex 7, Table A7.22 for mean values of the sub-indicators that comprise the adaptive capacity index.

The transformative capacity index remained unchanged between baseline and endline (approximately 36 to 42).[39] Based on their factor loadings, access to infrastructure, livestock services, basic services, and markets are the strongest contributors to transformative capacity. Access to agricultural extension has a marginally lower influence on the index, while linking social capital, engagement in collective action, and access to formal safety nets have the least influence.

Most transformative capacity sub-indicators did not change between baseline and endline. Exceptions include slight improvements in access to agricultural extension and access to formal safety nets.

Transformative capacity, as measured by the index, was higher for participant households compared to non-participant households at endline (endline RFSA: 47.7, endline non-RFSA: 40.9). The estimate of the transformative capacity index for participant households is also higher than the estimate for baseline households (baseline all: 36.2; endline RFSA: 47.7). Better access to infrastructure accounts for the majority of this difference. Better access to agricultural extension also contributed to higher transformative capacity for participant households. Higher linking social capital and engagement in collective action only contributed modestly due to their lower relative weights in the index.

Other resilience indicators[40]

Livelihoods. Households in the Nuyok implementation area reported engaging in a broad range of livelihoods; however, on average, households engaged in approximately three livelihoods at both baseline and endline.[41] At endline, participant households reported engaging in more livelihoods, on average, than non-participant households (endline RFSA: 3.9, endline non-RFSA: 2.8).

The most common livelihoods reported at endline are crop production and agricultural wage labor. Engagement in both remained unchanged between baseline and endline at approximately two-thirds and one-half of households, respectively. Engagement in several specific livelihoods grew between baseline and endline, particularly for Nuyok-participating households. Sales of wild/bush products (including firewood and charcoal) was also a significant source of income and/or food at endline, growing significantly from baseline levels (baseline all: 39.6%, endline all: 53.2%), with no significant endline differences between participant and non-participant households. Participant households reported engaging in crop production (endline RFSA: 73.5%, endline non-RFSA: 55.5%) and agricultural wage labor (endline RFSA: 63.2%, endline non-RFSA: 49.7%) at endline more often than non-participant households, and also compared to households at baseline.

The qualitative data pointed to changes in the mindset on gender roles, which are critical to achieving diversified livelihoods. As explained by a Development Officer, Nuyok used MCGs and MCAs to promote gender equity in community members' attitudes and practices around paid and unpaid work. For instance, men started to help their wives with garden work due to sensitizations by MCAs and through MCGs. Prior to Nuyok, garden work in most parts of Karamoja was stereotypically performed only by women.

[39] See Annex 7, Table A7.22 for mean values of the sub-indicators that comprise the transformative capacity index.
[40] See full results for other resilience indicators in Annex 7, Tables A7.19 and A7.22, and Annex 6, Tables A6.2, A6.3 and A6.4.
[41] See Annex 7, Table A7.22.

Gifts/inheritance and humanitarian assistance were also frequently reported at endline, with between one-fifth and one-fourth of households receiving this kind of support. Receipt of gifts or inheritance did not change between baseline and endline (about 22%), while receipt of safety net food and/or cash assistance increased (baseline all: 10.6%, endline all: 25.1%). The increase in reported receipt of humanitarian assistance was driven by participant households, who reported receiving safety net food/cash assistance at roughly double the level of non-participant households at endline (endline RFSA: 34.9%, endline non-RFSA: 15.8%).

Engagement in livestock production as a livelihood did not increase between baseline and endline, remaining between 15 and 18% for households. However, participant households reported livestock production as an income/food source more frequently than non-participant households at endline (endline RFSA: 26.6%, endline non-RFSA: 11.1%) and compared to households at baseline.

Other livelihoods reported as food/income sources by more than 10% of households at endline are non-agricultural wage labor (baseline all: 32.4%, endline all: 22.7%), petty trade of own-produced products (baseline all: 17.4%, endline all: 12.0%), and petty trade of other products (baseline all: 6.4%, endline all: 15.0%)—all three showing statistically significant change since baseline (the first two decreasing and the last increasing)—and remittances, which remained unchanged at approximately 8 to 12%. Percentage engagement was higher at endline for participant households compared to non-participant households for non-agricultural wage labor (endline RFSA: 27.2%, non-RFSA: 18.4%), petty trade of other products (endline RFSA: 19.5%, non-RFSA: 10.7%) and petty trade of own-produced products (endline RFSA: 17.0%, endline non-RFSA: 7.2%). Of these three livelihoods, only petty trade of other products was higher for endline participant households compared to baseline (baseline all: 6.4%, endline RFSA: 19.5%). A less-frequently reported livelihood source more prevalent for participant households compared to non-participant households is honey production (endline RFSA: 7.2%, endline non-RFSA: 2.1%).

Group-based finance. Households reporting participation in group-based financial services grew sharply between baseline and endline (baseline all: 26.4%, endline all: 46.4%). While the comparability of baseline and endline estimates for this indicator was impacted due to data loss at endline,[42] the improvements observed are consistent with improvements seen in other indicators and sub-indicators related to access to financial services not impacted by data loss between baseline and endline, including the percentage of farmers using financial services[43] and the percentage of households with access to savings.[44] At endline, households participating in Nuyok activities more frequently reported participation in group-based finance compared to non-participating households (endline RFSA: 55.9%, endline non-RFSA: 36.7%). Participant households' estimates at endline are also higher than baseline estimates for this indicator (endline RFSA: 55.9, baseline all: 26.4).

[42] The endline estimate only includes data from households with CU2 while the baseline result was an estimate from data collected from all households eligible for the resilience module (i.e., it includes households with no children and households with children over two years of age). This limitation is further explained in the methodology annex.
[43] See Section 3.2.3 (sub-section on Agricultural Indicators) and Annex 6, Table A6.2.
[44] Access to savings is a sub-indicator of the adaptive capacity index. See results in Annex 7, Table 7.22.

Ability to recover from shocks and stresses index.[45] This index estimates the capability of households to recuperate from typical types of shocks and stressors. The estimate declined slightly between baseline and endline (baseline all: 4.1, endline all: 3.7; range: 0–6).[46] There was no difference reported for this indicator between participant and non-participant households at endline: households' ability to recover at endline may have been impacted by persistently high shock exposure.

Social capital index. This index measures households' capacity to rely on social networks for support dealing with the impact of shocks and stresses. The index increased between baseline and endline (baseline all: 55.4, endline all: 60.9). Estimates of the social capital index were slightly higher for participant households compared to non-participant households (endline RFSA: 63.0, endline non-RFSA: 58.7), and the estimate for participant households was higher than the baseline estimate. These differences are relatively small in magnitude and the qualitative data do not offer precise insight into this change; the information from the KIIs and FGDs on SILCs, MCGs, etc. is mostly outcome based—that is, there is no direct discussion of social capital being fostered in these activities; rather, the discussions are around the outcomes of savings and having food from gardens, but not social networks themselves.

3.2.3 Purpose 2: Vulnerable households' livelihoods sustainably improved

This section outlines the key findings pertaining to poverty, agriculture, and cash-decision-making indicators relevant to Purpose 2, which focuses on the sustainable enhancement of livelihoods for vulnerable households.

Poverty[47]

The measurements of household consumption expenditures suggest high rates of poverty for households in the Nuyok implementation area;[48] the results show no statistically significant baseline-endline changes. Average per-capita daily expenditures were unchanged between baseline and endline and were equivalent to approximately $1 United States Dollar (USD). However, at endline participant households reported higher per-capita expenditures than non-participant households (endline RFSA: $1.13, endline non-RFSA: $0.85). Analysis of the change in expenditures for households below the poverty line (poor households) showed unchanged per-capita daily expenditures, whereas per-capita daily expenditures for households above the poverty line (non-poor households) decreased (baseline non-poor: $3.54, endline non-poor: $2.54).

Similarly, while the average prevalence of poverty (about 86%) and depth of poverty (about 50%) also did not change significantly, participant households reported lower prevalence of poverty (endline RFSA: 80.4%, endline non-RFSA: 90.3%) and better depth of poverty (endline RFSA: 43.1, endline non-RFSA: 54.6) compared to non-participant households at endline. In terms of change over time, depth of

[45] See full results in Annex 7, Table A7.20.
[46] The ability to recover from shocks and stresses index adjusts for differential shock severity exposure, whereby values of 2 or below represent relative pessimism regarding recovery from retrospective and prospective shock exposure. Values approaching 4 represent expectations of relative stability in recovery (i.e., ability to meet food/income needs is the same), while values approaching 6 represent relative optimism.
[47] Annex 6, Tables A6.2. A6.3, A6.4, A6.5 present the detailed results on poverty and expenditures.
[48] As noted in the DTAP, poverty prevalence is defined as the percentage of people living on less than USD 1.90/day (2011 PPP).

poverty (baseline all: 53.0, endline RFSA: 43.1) was also lower for endline participant households compared to baseline households.

Agriculture[49]

Crop production. The top three crops raised by farmers in the year before the endline survey were sorghum (endline all: 69.4%), legumes (endline all: 38.0%), and maize (endline all: 35.7%). The proportion of farmers growing sorghum at endline was lower than baseline (baseline all: 85.9%, endline all: 69.4%); this decrease was driven by lower production by both male (baseline male: 84.0%, endline male: 66.3%) and female farmers (baseline female: 87.4%, endline female: 72.1%). The proportion of farmers growing legumes and maize was unchanged, at approximately 40% for both crops.[50]

The percentages of female farmers raising oilseeds (baseline female: 30.2%, endline female: 21.1%) and vegetables (baseline female: 7.8%, endline female: 1.8%) was lower at endline. There were no material differences in the types of crops raised between male and female farmers at baseline; however, female farmers were less likely to raise maize (endline male: 39.8%, endline female: 32.1%) and millet (endline male: 13.7%, endline female: 7.1%) compared to male farmers at endline and more likely to raise sorghum (endline male: 66.3%, endline female: 72.1%).[51]

Livestock production. Besides pig production, which increased between baseline and endline (baseline all: 2.5%, endline: 10.7%), there were no differences observed in production for other types of livestock between baseline and endline. At endline, the most frequent types of livestock raised by livestock producers were goats (endline all: 53.8%) and cattle (endline all: 46.5%). Rates of production of all other types of animals was low (endline: 0–13.2%).[52]

A FGD with livestock producers in Napak District reported that the use of Herd Health Days, which focused on prevention and treatment of livestock disease, improved livestock health and productivity across all districts, raising income levels. Focus group discussants stated that Nuyok trained selected community members to assist farmers on modern animal husbandry practices, especially on Herd Health Days, which were easily accessed by farmers; the livestock producers said that due to these efforts, most farmers learned how to regularly spray and deworm their animals. In a FGD in Nakapiripirit District, some livestock producers noted restrictions on conducting additional processing for livestock, hindering their ability to access the market freely, unlike conditions before Nuyok. As one producer in a Napak FGD described, “You can’t just sell meat in the town market, you have to give it to a specific butcher. The process is more complicated than it used to be.”

Interventions on farm activities successfully reached most women (including widowed) and people with disabilities. However, there was little evidence that the interventions had a major impact on girls and youth. In most of the KIIs and FGDs, the impact on youth and girls was rarely mentioned. For example, an extension officer in Nakapiripirit stated, “The youths were the least adopters of the agricultural practices because of their focus on quick income earning opportunities like boda boda/motorcycle hire.”

[49] See Annex 7, Tables A7.4 through A7.11 for complete results on agricultural practices.
[50] See results in Annex 7, Table A7.4.
[51] See results in Annex 7, Table A7.5.
[52] See details in Annex 7, Table A7.6.

Land ownership. The percentage of respondents owning land increased for both male and female farmers (baseline male: 75.5%, endline male: 90.2%; baseline female: 75.0%, endline female: 86.0%). The percentage sharing land decreased for both male (baseline male: 9.4%, endline male: 1.4%) and female farmers (baseline female: 11.8%, endline female: 6.5%).[53] The qualitative data offer some explanation regarding the difficulty of accessing land: for example, one farmer in a FGD pointed out the high cost of hiring land for demonstration plots. A lead farmer in a FGD in Nakapiripirit District complained, "One needs 200,000 Ugandan shillings to rent an acre in a year; that is too expensive."

Sustainable agricultural practices.[54] The proportion of farmers practicing at least three sustainable crop, livestock and/or NRM practices promoted by Nuyok was unchanged from baseline to endline (approximately 35 to 40%). The proportion of farmers practicing at least three sustainable crop practices (specifically) declined (baseline all: 34.1%, endline all: 22.6%), while the usage of three sustainable livestock or NRM practices remained unchanged, at approximately 7 and 3%, respectively. Increased uptake was seen in the following specific practices:[55]

- Crop practice – Soil preparation with tractor (baseline all: 1.7%, endline all: 4.2%)
- Crop practice – Pest and disease control (baseline all: 4.6%, endline all: 11.5%)
- NRM practice – Management of watersheds or reforestation (baseline all: 1.5%, endline all 5.5%)
- NRM practice – Agro-forestry or cultivation of fruit trees (baseline all: 2.8%, endline all: 8.6%)
- NRM practice – Management of forest plantation (baseline all: 1.3%, endline all: 4.5%)
- NRM practice – Collecting products from forest plants (baseline all: 0.2%, endline all: 1.2%

In contrast, use of the following practices decreased between baseline and endline:

- Crop practice – Soil preparation with ox plow (baseline all: 42.5%, endline all: 33.5%)
- Crop practice – Broadcasting seed (baseline all: 74.0%, endline all: 54.2%)
- Crop practice – Intercropping (baseline all: 43.1%, endline all: 27.0%)
- Crop practice – Weed control (baseline all: 59.9%, endline all: 49.9%)
- Crop practice – Thinning (baseline all: 15.2%, endline all: 4.5%)
- Livestock practice – Rotational grazing (baseline all: 10.6%, endline all: 5.4%)

Despite the drop in usage of sustainable *crop* practices and technologies for all farmers, at endline, a higher percentage of participant farmers than non-participant farmers practiced at least three sustainable *agricultural* practices of any type, crop, livestock and NRM (endline RFSA: 46.1%, non-RFSA: 24.6%). That said, there were no significant differences in this indicator, on average, between participant farmers at endline and baseline farmers, between 42 and 46%. The following are the specific sustainable agricultural practices where uptake was greater at endline among participant households:[56]

- Crop practice – Soil preparation with ox plow (RFSA: 37.5%, non-RFSA: 28.6%
- Crop practice – Planting seeds in rows (RFSA 26.8%; non-RFSA 14.5%)
- Crop practice – Pest and disease control (RFSA 14.9%; non-RFSA 7.7%)

[53] See full results in Annex 7, Table A7.7.
[54] See all results for agricultural indicators in Annex 6, tables A6.2, A6.3, A6.4 and A6.5 and Annex 7, Table A7.10.
[55] See full results in Annex 7, Table A7.10.
[56] See full results in Annex 7, Table A7.10.

- Crop practice – Weed control (RFSA 55.1%; non-RFSA 43.6%)
- Crop practice – Mulching (RFSA 5.5%; non-RFSA 3.2%)
- Crop practice – Thinning (RFSA 6.3%; non-RFSA 2.4%)
- Livestock practice – Animal shelters (RFSA 48.8%; non-RFSA 22.3%)
- NRM practice – Agro-forestry or cultivation of fruit trees (RFSA 12.3%; non-RFSA 4.4%)

Participant farmers more frequently practiced at least three sustainable crop practices at endline than non-participant farmers (endline RFSA: 26.8%, endline non-RFSA: 17.6%); that said, the rate at which participant farmers practiced at least three sustainable crop practices was still lower compared to what was reported by baseline farmers (endline RFSA: 26.8%, baseline all: 34.1%). Practicing at least three sustainable crop practices decreased for farmers from both poor households (baseline poor: 29.0%, endline poor: 20.5%) and non-poor households (baseline non-poor: 61.5%, endline non-poor: 27.9%).

There was no difference in usage of at least three sustainable livestock practices by farmers between baseline and endline (approximately 7%); however, this was more prevalent at endline among participant farmers (endline RFSA: 9.8%, endline non-RFSA: 4.0%). Similarly, there was no difference in usage of at least three sustainable NRM practices by farmers between baseline and endline (approximately 3%), but this was more common at endline among participant farmers (endline RFSA: 6.4%, endline non-RFSA: 1.8%).

Possible reasons for the general lack of increased uptake of targeted agriculture practices include the persistent, severe shock context (e.g., climate, conflict) that made it difficult to sustain these practices. In addition, uptake would be challenged if the cost of inputs has increased or access to agricultural extension and livestock services has declined (e.g., due to price and/or weather shocks); this could explain better results for participants if access to inputs and services was subsidized or facilitated in another manner. Another possible reason is a lack of interest among younger farmers in pursuing agricultural livelihoods: a SILC focus group in Napak District indicated the intervention on increasing household productivity through agricultural systems had the least impact on youth because youth were more focused on quick income-earning activities, such as motorcycle hire.

Improved storage practices.[57] Use of improved storage practices and technologies declined between baseline and endline (baseline all: 50.5%, endline all: 36.2%). A higher percentage of participant farmers than non-participant farmers used these practices (endline RFSA: 41.1%, endline non-RFSA: 29.8%), although participant farmers at endline were less likely to use improved storage practices compared to households surveyed at baseline (baseline all: 50.5%, endline RFSA: 41.1%). The use of improved storage practices decreased for farmers from poor households (baseline: 49.4%, endline: 34.2%). The principal driver of reduced usage of improved storage practices was a decline in the use of granaries (baseline all: 50.5%, endline all: 35.9%); the only other prevalent storage, super grain/Purdue Improved Crop Storage (PICS) bags, remained unchanged (approximately 25%). Drought-induced low agricultural production is a plausible explanation for the reduced use of improved storage practices: farmers may have been consuming their harvest and/or simply did not have surplus to store. Across districts, key informants and focus groups were nearly uniformly complimentary of the training and new knowledge of the benefits of improved storage practices, describing post-harvest handling (PHH) and storage as among the most

[57] See all results for improved storage practices in Annex 6, Tables A6.2, A6.3, A6.4 and Annex 7, Table A7.11.

successful interventions. The use of tarpaulins and PICS bags were regularly mentioned in the qualitative data, compared to almost no mention of silos or granaries; the survey data reported silo usage to be less than 1% at both baseline and endline. This may simply reflect that the volume available to store was more suited to PICS bags. The preference among improved PHH and storage practices was well-explained in a lead farmers FGD in Nakapiripirit, in which farmers said that they adopted the practice of timely harvesting and drying on tarpaulins because the food dried faster and they avoided the inconvenience of drying it on the ground with cow dung. As one farmer stated, "With tarpaulins, the maize dries faster in three days, and it doesn't have stones." The farmers recognized the value of silo technology, saying it helped them store produce longer, but deemed it expensive: "The 300 kg silo costs UGX 30,000 and that is expensive for most of us." Farmers in Napak also mentioned the high price of siloes.

Financial services.[58] The use of agricultural financial services increased between baseline and endline (baseline all: 21.7%, endline all: 41.6%). These increases were mainly driven by improvements in the use of agricultural savings mechanisms (baseline all: 18.1%, endline all: 40.2%). Participant households reported using agricultural financial services more frequently than non-participant farmers at endline (endline RFSA: 53.1%, endline non-RFSA: 28.0%), and were also more likely to use agricultural savings (endline RFSA: 52.1%, endline non-RFSA: 26.1%) and credit (endline RFSA: 21.1%, endline non-RFSA: 12.6%) services. Farmers in both poor and non-poor households reported increased use of financial services.

The increase in the use of financial services may reflect project success in strengthening farmer savings capacity by organizing them into SILCs. According to KIIs with two SILC leaders in Abim and Nakapiripirit districts, most farmers saved some of their earned income from agriculture in the SILCs, from which they also borrowed if they needed small loans or credit. In all districts, it was mentioned that women strongly participated in SILCs. The SILC Leader in Abim District explained how the saving groups have improved the financial literacy of the communities, which offered them a source of capital to engage in farming but also provided a safety net for shocks since in their groups as members could access some funds in case of a shock or personal loss. The SILC leader said SILCs have enabled members to acquire property such as houses, land, and oxen.

Value chain activities.[59] The percentage of farmers practicing value chain activities was unchanged from baseline to endline (approximately 30 to 35%). The practice of value-chain activities was more prevalent among participant farmers (endline RFSA: 39.0%, endline non-RFSA: 21.6%), although levels of practicing sustained value-chain activities for endline participants were unchanged relative to levels reported at baseline, roughly 35%. Value-chain practices decreased for farmers from poor households and were unchanged for farmers from non-poor households.

One sub-county chief explained that Nuyok tried to improve the collective marketing capacity of Producer Marketing Groups (PMGs) to cooperative level but failed. He said Nuyok only managed to link PMGs to the Uganda Cooperative Alliance for training and capacity building. Lead farmers in a Nakapiripirit FGD mentioned that their efforts to bulk collapsed a long time ago. Yet as noted by a

[58] See all results for financial services indicators in Annex 6, Tables 6.2, 6.3 and 6.5 and Annex 7, Table A7.8.
[59] See all results for value chain activities in Annex 6, Tables A6.2, A6.3, and A6.5 and Annex 7, Table A7.9.

female SILC leader in this district, strengthening farmers' capacity in bulking to cooperative level would have been an effective strategy to enhance farmer capacity to negotiate for higher prices and consequently have their incomes enhanced. One major constraint cited by the sub-county chief for the above initiative was that although Nuyok had turned the PMGs into cooperatives, they were still too weak to survive on their own.

According to a MCA in Napak District, the most prevalent off-farm activities under Nuyok included business training and life skilling such as tailoring and saloon businesses. He said those without enterprises were able to start their own because of the business and life skills they received from Nuyok. He said Nuyok encouraged self-employment by giving startup capital of UGX 310,000–400,000 to various MCA groups in the district and noted that some of the youth participants are now involved in income-generating activities like trade, tailoring and saloon businesses, shop businesses, and the transport industry, and are striving to link with financial institutions to expand their enterprises. For instance, a SILC focus group in Napak District explained they were linked to Stanbic Bank and wanted to access funds to buy a lorry truck for a transport business.

The role of activity participation.[60] Two sets of multivariate equations were used to explore the relationships between participation in Nuyok activities, agricultural practices, and HDDS. The first examines relationships between 1a) participation in Nuyok agricultural groups, trainings, and services, and 1b) engagement in or use of project-promoted financial services, value chains, and agricultural and storage practices. The second examines relationships between 2a) use of project-promoted financial services, value chains, and agricultural and storage practices and 2b) HDDS. The results show one pathway from participation in Nuyok activities to HDDS: participation in Nuyok agricultural groups and trainings is associated with increased use of project-promoted agricultural practices, which, in turn, is associated with higher HDDS.

Cash decision-making

The percentage of men and women in union reporting earning cash in the previous 12 months increased substantially between baseline and endline (baseline all: 47.4%, endline all: 66.8%). At endline, a higher percentage of men and women in participant households reported earning cash compared to non-participant households (endline RFSA: 71.3%, endline non-RFSA: 61.3%). The percentages of both men and women in participant households earning cash were higher than respective rates reported at baseline. In poor households, the percentage of men and women earning cash increased between baseline and endline (baseline poor: 46.0%, endline poor: 67.2%).[61] Findings from both the FGDs and KIIs underscore that Nuyok succeeded in increasing household incomes in the program areas, such as by supporting crop diversification and introducing alternative farm and off-farm livelihood activities (see discussion in Section 3.3.2).

[60] See Annex 8, Tables 2 and 3 for full estimation results.
[61] See complete results in Annex 6, Tables A6.2 A6.3, A6.5.

3.2.4 Purpose 3: Nutrition of PLW, adolescent girls, and CU2 improved

This section reviews changes in indicators related to the health and nutrition of women and children, decision-making in MCHN, as well as WASH, all of which are pertinent for assessing achievement under Purpose 3.

3.2.4.1 Child anthropometric indicators[62]

Child anthropometric indicators—stunting, underweight, and wasting—measure the status of chronic and acute child malnutrition. All three of these indicators were unchanged at endline. Roughly one-third of CU5 measured at endline were underweight, and roughly one-third were stunted. The prevalence of wasted children has also been consistent between baseline and endline at around 12%. There were no differences between participant and non-participant households for these children's anthropometric indicators.

The qualitative data do not contain information to explain these specific results, though most informants (albeit RFSA participants) mentioned improvements in children's diets. As discussed later in Section 3.2.4.3, the survey data show improvements in the minimal acceptable diet (MAD) indicator. That said, it bears noting that dietary diversity is but one of a host of factors that can influence child anthropometry measures; other potential influences are maternal health, education, employment, and access to health services, including routine growth monitoring. Moreover, dietary indicators are based on 24-hour recall, while stunting captures chronic malnutrition and long-term exposure to factors that impact malnutrition. Furthermore, MAD tells us only the frequency of consumption of different food categories; it does not capture the quantity of food consumed, which also factors into child growth. It is possible that the lack of measurable change in child anthropometric measures for Nuyok reflects a severe and protracted shock environment, where project efforts may not have moved the needle on child anthropometric indicators but did contribute to preventing further deterioration.

3.2.4.2 Women's health and nutrition

The prevalence of underweight women of reproductive age remained unchanged between baseline and endline, at approximately four out of ten women. Equations estimating the relationship between women's participation in health and nutrition groups and trainings and the probability of being underweight showed that women who participate in Nuyok health and nutrition groups are less likely to be underweight.

The prevalence of women consuming a diet of minimum diversity was about the same at baseline and endline (approximately 15%). There were no differences at endline between participant and non-participant households. However, consumption of legumes and beans was higher women in participant households at endline (endline RFSA: 41.4%, baseline all: 29.3%).[63]

[62] See Annex 6, Tables A6.2 and A6.3 for full results on anthropometric indicators.

[63] See Annex 7, Table A7.14 for full results on women's consumption of different food groups. The statistically significant changes for different food groups were an increase in the consumption of legumes and beans (baseline all: 29.3%, endline all: 42.7%) and a decrease in the consumption of Vitamin A-rich vegetables and fruits (baseline all: 33.1 percent, endline all: 24.4 percent).

There were no significant changes in the prevalence of women of reproductive age consuming targeted nutrient-rich foods (bio-fortified beans, bio-fortified maize or sorghum, and orange-flesh sweet potatoes), with percentages ranging from 1–9 %. A higher percentage of women in participant households reported consuming the targeted foods compared to both non-participant households at endline (endline RFSA: 11.7%, endline non-RFSA: 6.4%).[64]

3.2.4.3 Child nutrition[65]

Exclusive breastfeeding. The proportion of exclusively breast-fed children remained unchanged from baseline to endline at around 72%. Female children were more likely to be breastfed for participant households than non-participant households (endline RFSA: 83.4%, endline non-RFSA: 61.1%); otherwise, there were no other statistically significant comparisons.

MAD. The prevalence of children 6–23 months with MAD improved from baseline to endline, although endline rates were still relatively low with less than one in five children receiving MAD (baseline all: 6.6%, endline all: 17.1%). The improvement is most evident in breast-fed children compared to non-breast-fed children in the same age range. For both age categories of breast-fed children (6–8 months and 9–23 months), this positive change is driven by improvement in minimum meal frequency; for the 9–23-month group, improvement in dietary diversity is an additional driver.[66]

The percentage of children with MAD was higher at endline in participant households compared to the baseline level for all households (baseline all: 6.6%, endline RFSA: 19.1%). In poor households, the percentage of children with MAD increased (baseline poor: 6.7%, endline poor: 14.8%).

Targeted nutrient-rich foods: Though consumption of bio-fortified beans increased (baseline all: 2.2%, endline all: 10.3%), the overall prevalence of children 6–23 months consuming targeted nutrient-rich foods remained unchanged at around one in 10 children. A higher percentage of children in participant households consumed these foods compared to baseline (baseline all: 8.6%, endline RFSA: 18.0%).

The limited progress on child nutrition indicators does not necessarily reflect a failure to improve caregivers' knowledge on good feeding practices. Recent research by Arasio and Ayele (2022) finds that rural households in Karamoja adequately understand the determining factors of good child nutrition, such as providing enough diverse kinds of food, with an emphasis on home-produced products, when available. They are also able to accurately identify the generally accepted signs of child malnutrition and understand the role of high-protein foods such as milk and peanuts in child health. The researchers found that parents in Karamoja know how to feed their children a healthy diet and concluded that the principal barrier to improved child nutrition is not ignorance or misinformation but lack of necessary resources. The qualitative findings from this final PE of Nuyok are generally consistent with Arasio and Ayele.

[64] Results for women's targeted nutrient-rich commodity indicators are in Annex 6, Tables A6.2, A6.3 and A6.4, and multivariate analysis results are in Annex 8, Tables 4 and 5.
[65] See full results for child nutrition indicators in Annex 6, Tables A6.2, A6.3, A6.4 and A6.5; see results on meal frequency and food groups consumed by children 6–23 months in Annex 7, Table A7.18.
[66] See Annex 7, Table A7.18 for complete results on MAD components.

Diarrhea. While the qualitative data indicate perceived improvements in diarrhea prevalence, the household survey results indicate that this change was only significant in non-poor households and that diarrhea prevalence worsened overall. The quantitative survey finds that diarrhea among CU5 within two weeks of the survey increased between baseline and endline (baseline all: 31.6%, endline all: 40.4%). Significant changes were seen in poor households, where diarrhea prevalence worsened (baseline poor: 30.0%, endline poor: 40.7%), In non-poor households, diarrhea prevalence improved from baseline to endline (baseline non-poor: 51.3%, endline non-poor: 38.0%). The percentage of children with diarrhea within the past two weeks who were treated with oral rehydration therapy declined substantially for all households (baseline all: 83.3, endline all: 60.2), and for poor households in particular (baseline poor: 82.3%, endline poor: 61.6%).

The quantitative survey findings showing an increase in diarrhea prevalence are unsurprising given the WASH context: the results showed consistently low levels of basic sanitation, including continuing open defecation (see Section 3.2.4.5). The differences in quantitative and qualitative findings regarding diarrhea prevalence may be a result of recall issues (e.g., focus groups reflecting a longer time span and more general impressions over time, versus the survey being specific to the previous two weeks), and differences between poor and non-poor households that could not be easily discerned in focus groups. The qualitative data suggest that communities did improve their knowledge about the connection between health and sanitation. However, it was also clear that the barriers to consistently applying improved practices are formidable.

3.2.4.4 Maternal and child health decision-making and care practices

Gender decision-making around MCH. There were few significant differences between baseline and endline estimates in MCH decision-making indicators. An exception was a decrease in the percentage of men in union with CU2 reporting making child health decisions alone (baseline all: 15.7%, endline all: 7.3%). Women less frequently reported making maternal health decisions alone (baseline all: 45.4%, endline all: 36.8%), although there was no corresponding statistically significant difference in women reporting making maternal health decisions jointly with their partner.

Contraceptive prevalence.[67] There were no significant differences between baseline and endline in contraceptive prevalence rate (including traditional and modern contraceptive methods); the rates were approximately one in five women overall.

The only contraceptive method used more frequently at endline than at baseline was the lactational amenorrhea method (baseline all: 0.7%, endline all: 5.3%). All other methods were used by less than 5% of women of reproductive age surveyed at endline.

An FGD of SILC members from Napak District discussed how women received training on communicating with their husbands about the timing of safe days for family planning. They were also educated about using moon beads and encouraged to visit hospitals for modern family planning methods. Regarding family planning, men expressed appreciation for the information, acknowledging that during periods of drought and hunger, they have reduced income available for the purchase of basic items. “With this

[67] See Annex 6, Tables A6.2, A6.3 and A6.4 and Annex 7, Table A7.15 for full results on contraceptive indicators.

hunger at times, when you have many children, you feel like swallowing them, so family planning is very good."

At both baseline and endline, nearly all of the target population (approximately 96%) could state at least one health benefit of waiting at least two years after the last live birth before attempting the next pregnancy.

Antenatal care (ANC).[68] The percentage of births receiving at least four ANC visits increased between baseline and endline (baseline all: 77.9%, endline all: 85.1%). There were no significant differences at endline between participant and non-participant households. Antenatal visits increased for both poor (baseline poor: 79.1%, endline poor: 84.2%) and non-poor households (baseline non-poor: 66.0%, endline non-poor: 89.4%).

3.2.4.5 Water, sanitation and hygiene

Access to water.[69] Households in the Nuyok implementation area report improved access to drinking water from baseline to endline. That said, it is important to note that still only one-half had access to improved water sources at endline (baseline all: 40.4%, endline all: 52.4%) and the results differed by wealth status: non-poor households saw significant improvement since baseline (baseline non-poor: 28.8%, endline non-poor: 59.5%) whereas poor households saw little improvement. Improvements in access to drinking water between baseline and endline were largely driven by more households reporting year-round access to their drinking water source (baseline all: 56.3%, endline all 74.9%). The predominant water source is tube well or borehole (approximately 90% of households).

The survey results also showed overall improvement in the time burden to collect water, with more than half of households able to access water in less than 30 minutes (baseline all: 47.8%, endline all: 60.8%). There were no significant endline differences between participants and non-participants for those two measures, which makes sense as any improvements made to seasonal access to boreholes would be shared community-wide. Access to water within 30 minutes improved for both poor (baseline poor: 26.3%, endline poor: 39.5%) and non-poor (baseline non-poor: 19.5%, endline non-poor: 46.7%) households.

Overall, usage of water treatment techniques did not change from baseline to endline; however, rates of households reporting boiling water did improve (baseline all: 5.4%, endline all: 8.8%), with a higher percentage of participants reporting boiling water compared to non-participants (endline RFSA: 11.6%, endline non-RFSA: 6.2%) and baseline households (baseline all: 5.4%, endline RFSA: 11.6%).

Sanitation.[70] Access to improved sanitation is extremely limited in the Nuyok implementation area (at around 7% of households) and did not improve over the life of the activity. Lack of access to sanitation contributed to persistent practice of open defecation: overall rates of open defecation are high (at roughly two out of three households) and remained unchanged from baseline to endline (reasons for this are explored in Section 3.3.3). That said, compared to non-participants, participants had more

[68] See Annex 6, Tables A6.2, A6.3 and A6.5 for full ANC results.
[69] See Annex 6, Tables A6.2, A6.3, A6.4 and A6.5 for detailed WASH indicator results related to water access and treatment. See Annex 7, Table A7.12 for details about water sources and water availability.
[70] See complete results for sanitation indicators in Annex 6, Tables A6.2 and A6.3.

access to basic sanitation (endline RFSA: 10.9%, endline non-RFSA: 5.1%) and lower rates of open defecation (endline RFSA: 58.3%, endline non-RFSA: 69.0%). Nuyok's Home Improvement Campaign promoting household latrines was one of the most frequently reported interventions reported by participant households (see Annex 6, Table 6.6) which may have driven the observed improvements for participant households in access to sanitation and sanitation practices.

Access to handwashing stations with soap and water is also extremely limited (roughly 3%) and remained unchanged between baseline and endline, with no significant differences between participants and non-participants.

3.2.5 Progress toward indicator targets

Endline indicator estimates were compared to indicator performance tracking table (IPTT) endline targets. This analysis shows that Nuyok met or exceeded several outcome targets: two WASH indicators, two gender indicators, and one in each of women's health and nutrition, children's health and nutrition, and resilience. Overall, most indicators stayed the same and a few worsened between baseline and endline. These results should be interpreted considering climate and global economic shocks, such as drought, COVID-19, and global price and supply chain disruptions that took place between 2018 and 2023. Complete results, including a more detailed discussion, are presented in Annex 6, Table A6.7.

3.2.6 Targeting

Within the four selected geographic districts, Nuyok was designed to target men, women, and youth. Specific interventions targeted PLW, adolescent girls, and CU5, and the approach sought to include high-vulnerability groups such as the poorest households (e.g., the landless), the elderly, and persons with disabilities.

Appropriateness of targeting. Stakeholder perceptions of project targeting decisions were generally positive. The disaggregation of survey data by poor and non-poor households[71] reveals improvements over time for poor households in select indicators (e.g., use of financial services, adoption of value chain practices, percentage of men and women earning cash, children's minimal acceptable diet, and ANC visits), suggesting that the RFSA was effective in targeting and positively impacting intended participants. However, it is crucial to recognize that improvements in poor households may also be influenced by the targeting efforts of other donors operating in the area.

Nuyok was viewed as reaching a diverse range of individuals in greater need—pregnant women, the elderly, youth, and the poorest of the poor. A common view of Nuyok is captured by the statement of female government official in Abim, who said the project was well-designed and the targeting well-articulated as it reached out to the hard-to-reach and most vulnerable communities including youth, persons with disabilities, elderly people, and lead mothers who were empowered to influence the behaviors of their community. CRS noted that lead mothers in Abim also had business mentors. Similarly, other informants praised Nuyok for reaching out to the poorest communities with good nutritional support. Engaging with male youth and encouraging constructive behaviors within the

[71] i.e., using a poverty line of than USD 1.90/day (2011 PPP)

community was also considered highly appropriate and effective, as this demographic is often associated with community conflict.

A sub-county chief explained a challenge related to the operationalization of the targeting approach in Napak District. He considered Nuyok to have demonstrated effective targeting across the various intended groups, specifically noting success in reaching all intended participants in Purpose II and the appropriateness of the decision to target youth—particularly young men less inclined toward farming who preferred alternative ventures such as *boda boda* businesses. That said, he noted that individuals may participate in multiple initiatives at the same time (Nuyok and others):

> The challenges that always face beneficiary selection, as a result of the approach of both the different partners and the local government team, is failure to control double registration of beneficiaries to the extent that some of them end up benefiting from several projects, while others are not benefiting from any.

While this is not unique to Nuyok, it nevertheless raises the question of how effectively Nuyok coordinated with fellow development actors in direct participant targeting.

Outreach strategy. Some respondents praised Nuyok's approach to participant outreach, which involved having ample staff on the ground and making purposeful connections with community members. For instance, a government official in Abim District noted that compared to other interventions in the community, Nuyok's strategy for targeting direct participants was among the most effective strategies, attributing this to the constant and widespread presence of sector-specific project personnel and the use of targeted support strategies within diverse demographic groups. He observed that Nuyok staff were consistently allocated to even the farthest villages that had previously been neglected. He found project employees to be more "in touch" with the communities, leading to closer engagement relative to interventions of other actors. He also noted that Nuyok staff were allocated to various locations with different interventions (e.g., some handled WASH while others handled livelihoods) resulting in the continuous community presence of project officers. Nevertheless, divergent perspectives on Nuyok's staffing resources exist; several sub-county chiefs conveyed during their interviews that Nuyok inadequately allocated staff resources to support the effective implementation of plans and actions devised in the planning stages (refer to DRR and DRM discussion in Section 3.3.1).

Similarly, male and female CBMs in Nakapiripirit considered Nuyok's targeting well done, reaching remote villages in the hills and using a direct participant selection process that was thorough, participatory, and inclusive of vulnerable people in the community. The CBMs also remarked that Nuyok empowered CBMs, health center staff, and school administrators to provide feedback on RFSA interventions, and that these individuals understood their right to monitor and point out any wrongdoing. For example, health center staff understood their rights to monitor the use of drugs in the health center. This approach was seen as not only strengthening community engagement, but also as enhancing awareness of program benefits and ensuring more effective targeting and sustained participation.

Specific to Purpose 3, the registration process was seen to reflect appropriate targeting and activity design. CBMs in Napak District explained that pregnant women registered separately from other

participants, an approach that recognized the unique nutritional needs of pregnant women and allowed for tailored assistance. Pregnant women were given beans, which were scarce during the drought years: this important protein source promoted pregnant women's well-being during periods of hardship.

The Napak CBMs also described the targeting approach as helpful in incentivizing participation in Nuyok WASH activities. At the direction of the project, all households in targeted communities that dug and constructed a pit latrine were selected to receive training and support under Nuyok, such as receiving seeds to plant crops and trees. This approach was designed to motivate other members of the community to also dig and construct their own latrines. In addition, youth and able older men and women were targeted, selected, and paid to participate in borehole construction.

3.2.7 Most Effective Pathways

Applying a local, participatory approach. The qualitative data indicates that Nuyok demonstrated a commitment to transparency, accountability, and community participation. Nuyok used community participatory approaches where local communities and governments were involved in identifying gaps in service delivery and in implementing interventions. KII and FGD respondents highlighted how the program's collaborative efforts with local governments, communities, and locally-recognized groups facilitated the timeliness and quality of service delivery. Nuyok staffed and supported established structures such as field agents, MCAs, CBMs, VDMCs, Private Agriculture Services Providers (PASPs), and Private Service Providers (PSPs) with natives of the same communities and involved local government structures in the direct implementation of activities, thus fostering a sense of belonging and ownership. Due to improved coordination, Nuyok and local governments implemented activities that fed into and complemented each other, e.g., joint monitoring that improved the timeliness of local government service delivery and led to quality assurance by the contractors and suppliers. Other examples of collaboration include the involvement of local government offices and VDMCs in designing disaster plans, and road rehabilitation completed by community members via cash-for-work.

Using influencers and community structures to promote change in gender roles and attitudes. Several discussions conducted throughout Nakapiripirit commented that MCAs, lead mothers, and MCGs have been effective in promoting equity across gender roles and in how communities view the work of women and men. Major changes from the work of MCAs and lead mothers that have evolved from trainings and from these volunteers setting examples through their own behavior include: i) sharing domestic work within households where men, in particular, are now performing a number of traditionally female roles; ii) men and women making joint decisions about economic matters; iii) men and women sharing work tasks related to cultivation and livestock breeding; and iv) both males and females voicing opinions within their own household and at community meetings. A female CBM in Nakapiripirit also noted women's increased authority in community meetings; she felt the strides gained in leadership by women in their communities was attributable to the Nuyok trainings on leadership by PSPs, which improved participants' (including women's) leadership skills and built their confidence to take on leadership roles.

A WUC FGD in Nakapiripirit highlighted the efforts of MCAs who talked to men about positive gender attitudes and practices and demonstrated positive gender practices in their families. This focus group

discussed how MCAs have contributed to the reversal of inequitable and harmful gender norms, such as women doing all domestic work without benefits and having little household decision-making power. These FGD members felt the other modes for messaging gender attitudes and practices were thorough, including trainings on gender equity and responsibility-sharing in community dialogues, program activity groups like SILCs and Farmer Enterprise Groups, and Akiyar radio episodes addressing gender equity. It was also reported that working with elders helped to significantly influence gender work because elders are highly respected in the community.

However, there have been problems associated with changing gender roles and attitudes. Most problems mentioned include men who are helping their wives with tasks at home such as cooking: some of these husbands are being insulted by other men in the community, facing comments such as this example given by an MCA FGD in Napak: "Look at this one who is cooking at his home! You have brought shame. Do you even have cows now because you are always following your woman?" This example illustrates that MCAs and others adopting and practicing positive gender norms may do so at some risk to their community standing.

Working with established influencers. Collaborating with locally respected individuals proved to be a highly effective strategy for implementing Nuyok, explained members of a Home Improvement Campaign FGD in Napak. They reported that some influential members of the community were supportive of the changes, particularly on peaceful living, which helped decrease the incidence of domestic disputes, and that women had the aid of male labor for certain household tasks. As one FGD member observed, "The elders feel happy when they see their sons staying together with their wives, helping each other, which prevents them from going on the raids, which pose a lot of danger." The qualitative data contain numerous mentions of the strong influence of traditional authorities such as elders in promoting project goals around behavior and attitudinal changes, especially around gender roles, highlighting the importance of having elders "on board." MCAs were also important messaging vehicles, as they were already identified as community influencers, especially traditional and religious leaders. Community influencers' integration of social behavior change communication into existing activities such as local council meetings, community *barazas* (public meetings), worship services, and into the annual Karamoja Cultural Day, were also seen as effective messaging strategies.

Working with PMGs and input agents to support crop production and marketing. Nuyok promoted improved crop production and marketing through several PMGs. Each was led by a lead farmer who conducted demonstration plots using improved seed varieties and disseminated information on the use of climate-smart agriculture and NRM techniques. The group approach and Nuyok's support in making private-sector linkages were deemed effective; interviews with PMG members showed some managed to store and sell their produce to commercial buyers through Nuyok-supported bulking centers.

Related to market linkages, based on the qualitative data across all districts, the input agent approach was one of the most effective methods in supporting crop and livestock production. Some agents were local farmers trained by Nuyok, while others were already operating in the program localities. The input and livestock agents were linked to farmers to provide them with inputs, as well as agronomic and animal husbandry advice. "Basically, the Nuyok staff would identify capacity gaps for the input agents/

community animal health workers and take them through refresher trainings so that they would extend information to the communities and perform their jobs in a better manner," explained one officer.

The input agents were monitored by Nuyok to ensure they supplied only quality inputs to the farmers; most farmers interviewed did not complain about the improved input/service quality. Only in Nakapiripirit did farmers single out some input suppliers for giving them fake seeds. The agents were generally described as easily reachable in the community, and as such they could extend the new technologies (seeds/ fertilizers) and ensure quick outreach, which complemented the work of Nuyok staff. As one Nuyok staff commented, "How can one Nuyok staff reach over three sub-counties with so many villages, so really the field agents helped!"

Training and support for livestock health. Nuyok established Livestock Groups (each with 30 members and Lead Couple Farmers) that were supported by Community Animal Health Workers (CAHWs). Interviews with local government staff indicated this approach promoted improved animal health by increasing access to preventive treatment and by training livestock producers in better livestock management techniques including for feeding and shelter. CAHWs also supported local governments to administer preventive treatment against ticks and worms during Herd Health Days.

Encouragement for savings. Nuyok promoted SILCs as a savings vehicle. As noted in Section 3.2.3, the endline survey found that SILC membership is associated with increases in the percentage of farmers using agricultural financial services. The qualitative interviews showed project actors and structures in different sectors to be knowledgeable of and effective promoters of the SILCs. For example, a female sub-county chief described the MCAs as effectively promoting savings through SILCs, which became an easy source of finance for their members. These initiatives eventually became more successful because of active participation and endorsements from diverse categories of leadership.

Multi-level support for WASH. To implement WASH activities, Nuyok involved existing structures at all levels, including district, sub-county, parish, and village levels, and with Village Health Teams (VHTs), Health Assistants, district WASH assistants, and local council chairpersons. The training and capacity building offered to these groups resulted in successful Home Improvement Campaigns for improved hygiene and sanitation. As detailed in Section 3.2.5, encouraging community involvement in pit latrine construction by providing additional training and support from Nuyok to households that undertook latrine construction has proven to be an effective strategy for improving access to basic sanitation.

Village-level work to support DRR and DRM. A male and a female CBM interviewed in Nakapiripirit both noted that the bottom-up approach to problem identification and problem-solving using Village Disaster Management Plans, coupled with a conflict monitoring mechanism by the CBMs, were among the most effective pathways in achieving project outcomes. VDMCs were also linked to sub-counties and districts, which galvanized Nuyok's activities with local government authorities. Reports on the strength of and linkages to Parish Disaster Management Committees (PDMCs) were inconsistent and not discussed frequently, though a health officer in one district lamented a lack of an established DRR strategy at parish level.

Local approach to NRM and Farmer-Managed Natural Regeneration (FMNR). The use of a group approach for NRM activities and of locally-based community facilitators was deemed a strong

component of the program design. FMNR sites were managed by an FMNR group headed by the local council chairperson. This was viewed as enabling easy monitoring of the sites and ensuring continuity because local political authorities were involved. Targeting youth in the design was also seen as strategic because NRM activities are labor-intensive.

Supporting localized conflict resolution. A female sub-county chief noted that Nuyok's establishment and empowerment of MCAs and lead mothers was an effective strategy for identifying and quickly solving conflicts, including domestic violence in households, and for promoting social cohesion. She stated that when the established structures (MCA, lead mothers, and CBMs) are unable to solve a particular problem, it is immediately referred to a higher level and followed up by the respective structures. She indicated that as a result, the relationship between community members has improved; if there is any conflict or problem, instead of quickly going to the sub-county, community members first call their peers such as the MCA because they believe that the MCA is trained and capable of solving their problem.

3.3 Effectiveness and Efficiency of Interventions

3.3.1 Purpose 1: Community resilience to shocks and stresses improved

Purpose 1 seeks to improve community capacity to manage shocks, including reducing risk and improving the community asset base. Interventions spanned DRR/DRM, infrastructure, FMNR and NRM, SILCs, and conflict mitigation. This section discusses the effectiveness of these interventions, as well as support to governance (a foundational purpose) in terms of responsiveness and service delivery.

DRR and DRM

Nuyok DRR activities focused on reducing risk, expanding social inclusion, and building capacity. Nuyok used participatory approaches to identify capacities, map resources and hazards, assess risk, prioritize critical community infrastructure, and develop plans of action to reduce risk. Nuyok interventions also involved DRM, a response and recovery process that begins at the onset of a hazardous event such as flooding, fire, drought, or landslide, and involved creating and implementing a disaster management plan.

There is consensus among qualitative respondents that Nuyok was effective in building capacity for disaster risk planning and management at all levels of governance. This entailed Nuyok's facilitation of the community-led disaster risk management process, which included village elders, women, and youth. In addition, Nuyok established VDMCs, which are recognized as official political entities within the disaster policy institutional structure.

Another project component noted as effective was training communities in activities and techniques to perform before, during, and after a disaster. As a Community Development Officer explained, "Farmers were trained on planting early to avoid drought and the effects of short rains; they were also taught to plant both food and cash crops and improve post-harvest handling to survive scarcity periods."

Key informants felt that information sharing and communications regarding Parish Development Plans at lower local government levels were the least effective aspects of the DRR/DRM work as they were

informal and infrequent. Key informants also cited cases of poor coordination between VDMCs and DDMCs that led to distortion of information between the two parties. Community early warning systems were rarely mentioned in KIIs or FGDs. The only early warning factor mentioned was disaster-related information-sharing through the VDMCs; however, the program lacked strong institutionalization from village to sub-county. CRS staff indicated that Nuyok requested the National Meteorological Authority to make location-specific information available, which would have required a dedicated budget that was not available at the project level; this could have galvanized early warning systems in the districts.

According to several KIIs with sub-county chiefs, Nuyok failed to allocate enough staff resources to effectively support implementing the plans and actions devised during the planning stages. Some key informants reported that many villages completed their mapping, identified disaster risk hazards, developed plans to reduce risks, and prioritized a multisector plan of action; however, there was no feedback from Nuyok to the VDMCs and government partners on next steps, which caused a lot of frustration. Some district key informants stated that Nuyok's creation of VDMCs bypassed statutory and institutional structures like local council committees, which diverted technical assistance and capacity-building from government and traditional structures. Some key informants also reported a lack of collaboration and coordination on the community-level disaster risk management process and sharing of the Village Disaster Management Plan, and some village members were frustrated with follow-up, scheduling, and status of activities and visits.

Key informants also cited the lack of an assigned supervisor for community facilitators as a design weakness, limiting effective monitoring of community facilitators' activities. In some cases, Sub-County Disaster Management Committees (SDMCs) or VDMCs lost their disaster management plans while others had not registered them.

Infrastructure

Across districts, KIIs and FGDs revealed that Nuyok's assistance in road rehabilitation enhanced community resilience as improved transportation infrastructure facilitated access to essential social services and markets. Two CBMs in Napak described the upgraded roads as improving communities' access to food, input, and output markets and to basic social services such as hospitals. They noted that, before Nuyok, farmers found it difficult to access semi-urban markets; with project efforts, most farmers could easily transport their produce and select quality inputs. The intervention was successful because farmers would earn higher incomes from selling their products in the town markets. This was more pronounced in Abim, where one lead farmer remarked in a FGD, "Due to opening up of the roads, we can now easily take our produce to the Morulem market." Nuyok also repaired key feeder roads, namely in Awach subcounty (Abim District), Nabilatuk subcounty (Nakapiripirit District), and Napak District. These observations are supported by the household survey results, which indicate an increase in access to basic infrastructure among participant households, which could be driven by Nuyok's investments in road rehabilitation through a cash-for-work program with local communities.

FMNR and NRM

KIIs and FGDs also widely reported that Nuyok enhanced community capacity to handle climate and biological shocks by establishing ponds and FMNR sites. Farmers appreciated FMNR sites for their effectiveness in reducing deforestation, mitigating drought impacts, providing fodder (from tree leaves)

that increased milk yields, and providing a protective buffer against raiders. Farmers adopted targeted technologies including controlled grazing to improve the pasture base and creating fire lines around their homesteads to reduce their vulnerability to fires. At the same time, adoption of some promoted practices was hindered by community members' preference for traditional tree management techniques. For example, some individuals chose not to explore improved techniques such as pruning fence trees. This finding underscores the fact that longstanding, underlying preferences can hinder program effectiveness.

Most Nuyok-promoted NRM technologies were perceived as effective in managing shocks, particularly drought and soil erosion. Agricultural extension staff attributed the general success of FMNR activities to i) the willingness of some individuals to volunteer their land for tree planting; ii) the implementation of FMNR activities through local entities such as VDMCs and local councils who could easily mobilize communities, plan jointly with local government authorities, and readily identify suitable sites; iii) the economic and environmental benefits farmers experienced from the interventions; and iii) continuous NRM trainings with follow-ups until the end of the project. Two technologies that were not well-received were contour ditches bunds and terraces, which were deemed labor-intensive and prone to breakdowns. For example, farmers in Nakapiripirit mentioned that the stones used to create the blockage for run-off were always washed away.

Although farmers appreciated the FMNR sites, their establishment faced some challenges. One issue cited was low program staffing, with one community facilitator expected to serve four villages for NRM activities even though one community facilitator for two villages was suggested as an ideal ratio. A second challenge was timing, e.g., setting up FMNR sites in Napak District began only midway through the project, which led to minimal coverage in the community. In addition, some farmers abandoned income-generating activities (e.g., apiary) in FMNR sites at harvest time, and some FMNR site hosts wanted to clear the trees once the project ended, suggesting they were only hosting because of Nuyok's presence.

All the Nuyok NRM interventions were deemed effective in reaching the poor because most NRM activities were community-based, with increased participation of women and even youth in some cases. Youth were generally less interested in agricultural activities than in earning income from *boda boda* (motorcycle transport) businesses.

Conflict mitigation

In Napak, CBMs attributed a reduction in household-level and community conflict to Nuyok's conflict mitigation training. They described the common domestic conflict as fighting between couples, while animal raiding was experienced across the entire community. The CBMs remarked that Nuyok training on conflict mitigation has reduced conflict within the community because people have understood the benefit of living peacefully, while animal theft by raiders has also declined because the government has deployed the army to patrol the routes raiders used to follow. In the words of one CBM, "We are not sure if theft will continue but at the household and within the community, there will be no more conflict because people now live peacefully and everybody is happy, and if you cause problems, they report you to the authority."

Government official in all project districts made similar comments. A female official in Abim deemed the training on conflict mitigation and conflict management that Nuyok provided to MCAs and other structures as having improved their capacity to handle both household- and community-level conflicts. She shared that the initiative has been effective because communities have developed trust in such structures. Because of its success, the community has embraced the idea and it is now more likely to be sustained as young generations can learn to cope from their parents and others. This official also noted that the CBMs have become more active in monitoring and reporting cases within the community as they occur.

A male government official in Nakapiripirit explained that because of Nuyok trainings, leaders now know what to communicate to their communities: they know the effects of conflict, measures to deal with conflict, and how to mitigate them. He reported that leaders have always sensitized the community through radio talk shows and social gatherings, like the traditional *Akriket*. He listed the most common types of conflict as cattle theft, land conflicts (especially in game reserves), conflict over resource allocations, and domestic conflicts—and felt that the trainings have not only reduced conflict at household and community levels, but also reduced cases of early marriages and defilement. He expects these changes to be sustainable based on the continued sensitization and close monitoring and control of sources of conflict in the community.

Another government official in Nakapiripirit commented, "Communities have realized the need for development as compared to indirect conflict." He indicated that a whistleblower structure has evolved: whenever there is any conflict, the whistleblower reports to the relevant authority, who mitigates the conflict. He noted that several cases have been reported to the District Internal Security Officer, Resident District Commissioner, and local council, and that they have always responded positively.

In contrast, CBM FGD respondents in Nakapiripirit were not sure how the MCAs are using the training they received to handle and reduce conflict in the community. However, the CBMs said they (the CBMs) were trained to take photos whenever they found road construction workers selling fuel and provide the photos as evidence or communicate what they witnessed to the police. They believed that such trainings effectively contributed to reducing conflict in the communities. They described the training as an initial three-day session, followed by training every four months until the end of the program, and felt that the frequency of the training refreshed their knowledge on conflict mitigation and monitoring strategies.

Governance and community-based monitoring

Male and female CBMs interviewed in Nakapiripirit felt that government responsiveness to community issues and service delivery had improved over time, potentially due to Nuyok's intervention. They noted improvement in the turnaround time for government service delivery; previously, when the community reported problems to the government to intervene, the response could take long time. They gave the example that recently when the community reported that boreholes were split, the government completed the repair within a month. It is not clear if the improved response time is due to Nuyok or improvement in the overall government system, but the CBMs indicated that Nuyok helped in making sure that reporting reaches the government in a timely manner. On the other hand, one interviewee

mentioned a lack of logistical support (e.g., computers, office lines) as a possible hindrance to strengthening governance.

Nuyok trained CBMs on the use of social auditing tools for monitoring assignments. The qualitative data suggest that CBMs were an important village-level actor in monitoring diverse aspects of governance and government services related to food security, ranging from monitoring activities at schools and health centers to infrastructure projects. For example, two sub-counties in Napak District reported that road rehabilitation went well partly because of CBM support, and a health officer in Napak reported improvements in the use of funds collected from houses by WUCs, in the functioning of health unit management committees, and reduced teacher absenteeism following visits by CBMs.

3.3.2 Purpose 2: Vulnerable households' livelihoods sustainably improved

Purpose 2 is designed to improve and sustain livelihoods, including increasing participation in productive and profitable agricultural systems and increasing and diversifying income. This section discusses the effectiveness of these interventions as well as both foundational purposes—gender equity and governance.

Livelihoods

As detailed in Section 3.2, the survey data indicate generally no improvement in the use of improved agricultural practices over time, except among participant households. Similarly, only participant households experienced improvements in poverty. The qualitative data shed more light on Nuyok's effectiveness in helping participant households diversify their livelihoods, move into value chain production, and adopt more sustainable, productivity-enhancing approaches.

Capacity-building approach. Nuyok favored a capacity-building approach that promoted sustainability over providing free inputs. Trainings were done for district officials at either the sub-counties or districts, and for farmers. Training themes included agriculture production, gender, and governance. Farmers were consistently trained in Good Agriculture Practices (e.g., row planting, early weeding) and PHH, to bring farmers up-to-date with the latest techniques to improve productivity and competitiveness.

Nuyok worked through lead farmers to provide training on improved farming practices on demonstration plots, and to educate them on improved varieties. A weakness of this approach was that one had to own or hire a large piece of land to be approved as a lead farmer. This meant that if they did not have the capacity to own/hire land, farmers with good agronomic skills and willingness to lead would be excluded as lead farmers.

Diversity and Resilience for Enhanced Nutrition (DiNER) fairs were designed to enable farmers to access improved seeds with an incremental cost-share model and provide related information and training. While project staff described the fairs in project reports as an effective approach that benefited many farmers, they were not a prominent theme in the qualitative findings. Farmers surveyed rarely mentioned having attended or even heard about them. A possible explanation is the distance that some farmers would have had to travel to reach the fairs. One former project officer in Napak had this advice:

> The fairs need to be more localized. Normally the DiNER fair was carried out at the district headquarters, and this would limit farmers in remote locations coming all the way from the different sub-counties to the district headquarters. It would be better if it was organized by sub-county catchment. They can mobilize farmers from Lotome, Ngolearіet and Matanyi sub-counties and converge them at Kangole for one DiNER Fair. Then they should have organized farmers from Iliri, Lokopo and Lopei sub-counties to have theirs at Lokopo sub-county headquarters.

While three agriculture officers/agronomists described the effectiveness of DiNER fairs for connecting farmers to input suppliers and to subsidized seed, there were two reports that the seed was of poor quality because the agro-dealers were out of stock of the seed that had been tested and approved, and they instead sold untested seed.

Another capacity-building approach was the strengthening of linkages between farmers, PMGs, input agents, and input companies. This model entailed farmers' expressing their input/advisory needs through the PMGs, who shared these with field agents linked to larger input companies. This approach was intended to guarantee farmers' access to inputs that were not locally available. However, in discussions with PMGs, the produce/market outlet linkage was rarely discussed. Farmers mentioned that they could now easily take their products to local town markets but there was no evidence of concrete bulk produce market connections or contracts established by Nuyok except for one mentioned in Gulu District.

According to some respondents, the introduction of subsidies—especially seed subsidies—as part of the input agent approach made farmers expect free seed all the time, which posed a challenge to farmers' future purchase of those seeds on their own. As one officer explained, "Most input agents in Nakapiripirit closed business because once subsidies closed, farmers stopped purchasing improved seed from them."

Nuyok did successfully promote the practice of kitchen gardening. Most household members, especially women, recognized the nutritive value of the vegetables and sold surplus for income. Kitchen gardening enhanced and diversified both food sources and household income. Vegetables grown included spinach, cabbage, onion, and eggplant. The crops introduced by Nuyok, however, thrived mainly in areas along the green belt that includes Abim District, parts of Nakapiripirit, and Iriri in Napak District.

KIIs with project staff showed that youth were trained through vocational training institutes. Most of the graduates from the training program were employed or self-employed. Interviews with youth indicated that some of the income-generating activities have provided significant benefits for participants.

Youth Build International also strengthened the capacities of selected youth in Abim District to engage in sustainable livelihood activities. Interviews with youth in Abim showed that the "mental toughness" training had a positive impact in changing the self-image of youth participants and separating committed youth from others who were less serious about becoming self-reliant. The combination of mental toughness training, followed by life skills, business skills, and entrepreneurship training, set a solid foundation for the youth, which was augmented with capital made available to the Youth Build International youth groups.

Improved agricultural practices adopted. The qualitative data indicate that prior to Nuyok, farmers mainly cultivated sorghum for their own consumption and, in rare cases, to sell. Farmers experimented with new approaches and seed varieties in part due to their recognized higher yield and fast maturation. Interviews indicated that most farmers adopted row planting and improved varieties promoted by Nuyok. Nuyok trained farmers how to grow cash crops (e.g., maize, beans) and food crops (orange flesh sweet potatoes) on the same plot of land. Across districts, most KIIs and FGDs indicated that farmers adopted the practice of growing both food crops (sorghum, cassava) and cash crops (maize, beans, groundnut). Other crops introduced were eggplant, onion, and tomato. Farmers were able to grow new food crops due to subsidies and vouchers provided by Nuyok. This system ensured farmer households were both food- and income-secure during years with sufficient rain. Interviews suggest that this approach increased overall household income and diversified food sources. However, the last two years of Nuyok overlapped with a period of chronic drought, so farmer households could not reap the benefits of intercropping during this time.

Some farmers were reluctant to adopt new varieties as they believed that indigenous seeds were much better and improved seeds too expensive. Nuyok provided improved seeds (bean, maize, and groundnut) to farmers at subsidized prices, unlike previous approaches where most civil society organizations were provided with free seeds. Nuyok's approach was meant to inculcate the spirit of self-sustenance among farmers. However, some farmers wanted free seeds, as they had received before Nuyok, and expected free food instead of adopting kitchen gardening. In some districts, such as Napak, late delivery of improved seed, especially orange-flesh sweet potato vines, was a challenge. This delayed farmer planting, and consequentially yield and uptake of the technology. Nuyok countered this by gradually reducing the input subsidies and continuously training farmers to view farming as a competitive business. Nevertheless, over the last two years of Nuyok, drought was responsible for demoralizing some crop farmers in many parts of Nakapiripirit and Napak districts, contributing to the increase in food insecurity.

In addition to building the capacity of households to cultivate a wider variety of food crops, Nuyok introduced several other farm and off-farm livelihood activities. The former included improvements in the delivery of veterinary services and animal fattening, the development of poultry keeping, building market linkages for agricultural produce through collective marketing, and farmer financial services. In Abim District, Nuyok successfully established apiary enterprises within FMNR sites; the beehives offered farmers a supplementary source of income.

Nuyok provided farmers with tarpaulins for drying grain, which led to better storage and quality of grains that eventually would enable them to earn a higher price. One lead farmer in Nakapiripirit explained:

> We used to dry our maize on the ground after smearing it with cow dung and the quality was poor, but now with tarpaulins, we eat better quality grains and can even sell them at market. Nuyok told us to use tarpaulins and trained us on modern PHH techniques like harvesting at the right time and keeping our produce in a good place.

However, the project was less successful in promoting the use of silos since these were deemed expensive. One farmer In Nakapiripirit said: "We can't afford UGX 200,000 to pay for a silo to store

maize, it's expensive for us." The project was also less successful in promoting the use of synthetic fertilizers because of high prices.

The qualitative data suggest that Nuyok interventions across all program districts improved farmers' access to agriculture and veterinary services. Nuyok strengthened the capacity of CAHWs and established PASPs to adequately provide agricultural services to farmers. The CAHWs and PASPs were trained and linked to input suppliers, to local governments for lobbying, advocacy, and to other government programs such as the Parish Development Model. This enabled farmers to easily access agricultural inputs such as various improved seeds, pesticides, and veterinary services, including treatment and drugs for livestock.

Regarding livestock practices, Nuyok's support for the establishment of ponds as water points for livestock was viewed as effective in reducing the distances animals had to travel to access water, thereby freeing up farmers' time to partake in productive activities. That said, interviews indicated that the livestock sector suffered from annual outbreaks of foot and mouth disease, which paralyzed cattle and goat production and marketing, in addition to prompting widespread animal rustling. Many livestock groups built and used self-made wood crushes to treat animals regularly during Herd Health Days and some CAHWs derived income from the preventive and curative treatment for animals. Many households kept poultry; however, they suffered from devastating outbreaks of poultry diseases, especially Newcastle disease.

Respondents mentioned that when COVID-19 struck, movements were restricted, which negatively affected production and marketing activities. Additionally, agriculture was hindered by extreme dry weather conditions and by interruptions from the cattle warriors/raiders in areas like Apok and Kulodwong parish in Abim District. Conflicts were also reported in the Pokot, Pian Upe, and Bokora corridors. Another frequent challenge mentioned was insecurity due to raiders' being attracted by the now healthier-looking animals.

Income diversification. Findings from both KIIs and FGDs indicate that the project was not very effective in diversifying household income. Farmers—especially in the Farmer and Livestock Enterprise Groups—did not mention their household income sources diversified considerably. In specific areas, farmers focused only on their traditional or routine enterprises. For instance, Nakapiripirit and Napak Districts are traditionally known for cattle keeping whereas Abim District is known for crop farming; the qualitative data suggest that crop farmers and livestock farmers remained in their respective trades. These findings are consistent with the quantitative survey data, which show households participating in the same number of livelihoods at baseline and endline, and similar baseline-endline percentages involved in crop and livestock production, respectively. However, there were statistically significant increases in petty trade of other products, and honey production was more prevalent for participant households compared to non-participant households (see Section 3.2.2). As one Abim government official explained, "Farmers' income options have increased with farmers engaged in apiary and selling locally as well as to NGOs like the Irish development program."

SILCs

According to SILC members in a FGD in Abim, SILCs play a critical role in supporting resilience to shocks and stresses by providing a mechanism for saving and borrowing to allow households to expand and establish new enterprises such as on-farm and off-farm shops and transport ventures like *boda boda*. Focus group discussants explained how participating in Nuyok-supported SILCs allowed households to start new enterprises that generated income used to purchase food.

Several SILC FGDs talked about the benefits of the training they received; the analysis of survey data demonstrated this was a strong contributor to household resilience. The two FGDs held in northern Napak explained that they learned skills on loan management, including how to borrow and how to earn returns on the money through interest; they said interest earnings make more money available to others, so profits keep increasing and later all group members benefit from the profits. They were also taught that saving in more than one group would help them accumulate profits. The SILCs were required to have by-laws that helped them stay organized, such as rules for keeping time for the meetings, issuing loans in the presence of all group members, and adhering to a repayment period—all of which created transparency in the group.

SILC members in a FGD in northern Nakapiripirit listed significant changes resulting from SILCs: being able to afford scholastic materials and fees to send their children to school; improved hygiene (e.g., being able to take showers and dress in clean clothes); improved standard of living, where members have been able to acquire household property; and making better profits from cultivation given investments in hiring land and securing higher yields.

It was not possible to establish changes in income level from the survey or the qualitative data, though discussions in both FGDs and KIIs suggest income has increased. Reportedly, several project participants acquired loans from the Nuyok-supported SILCs and used them for income-generating activities. Members of the SILC groups were very enthusiastic about their continued participation in the SILCs after Nuyok ends, with ongoing support from PSPs. SILC respondents reported brewing sorghum beer, collecting firewood, thatch and poles, farm labor, and charcoal or brick making as their main money-making activities; earnings are used to pay for savings shares. Many members used their share-outs to buy livestock and access plowing services, in addition to paying for school and other household expenses, but there is little evidence of income diversification.

Much as the SILC groups reported that they were working well, but faced some challenges during the lean season. Different KIIs and FGDs noted the following challenges as continuously affecting livelihood interventions: i) some villages are so stressed for water that residents could not participate in some project activities, e.g., some lead mothers reported that they often had to cut short MCG sessions to seek water; ii) cattle raiding further forced households to relocate cattle and spend more resources guarding them in an area where agricultural productivity was already low; and iii) alternative income-generation sources were very limited to activities such as harvesting firewood, cutting thatch, and making charcoal.

While Nuyok did not provide savings boxes, some SILCs had savings boxes from previous projects of other organizations (e.g., Abim Aridland Development Program) or a concurrent CRS (non-Nuyok)

project, and some SILCs had purchased cash boxes on their own.[72] While SILC focus groups and key informants working with SILCs often expressed that the SILCs wanted the project to provide these to their groups—either for the first time or to replace old boxes with more secure ones—KIIs with project staff in Napak and Nakapiripirit also noted that the boxes were stolen by raiders.

Gender equity

The qualitative findings underline the strong influence of the MCAs on the community, with significant impacts on individual and household decision-making. It was commonly reported that before Nuyok, when a man wanted to make a decision, he consulted with his brother or father; with Nuyok's interventions, most men now consult and make household decisions with their wife(ives), and couples communication has improved. Men were said to have started respecting women more because of women's improved financial status.

Many respondents reported that sharing of roles and responsibilities within couples has improved, with both men and women performing most roles without any gender segregation. As described by a female sub-county chief, when a woman is sick, men now take on the role of cooking and serving food. The man also takes children to the hospital and goes with his wife for antenatal check-ups. Regarding farming, she said that men are seen putting more effort into food for income while women concentrate more on food for consumption; equal sharing of household resources has increased. Ownership of household resources has also reportedly changed. Qualitative respondents stated that prior to Nuyok, ownership of animals was left to men; now, women also own animals and take them for grazing, especially when the man is sick. Other shared responsibilities and decision-making are in the areas of family health, hygiene, and the growing and management of food, including the kitchen garden. Women are said to now have rights over household resources, unlike in the past.

Purpose 2 Successes

In the eyes of a District Community Development Officer (DCDO), the most significant changes were the diversification in agricultural production and the increases in food security: food and cash crops. Farmers now grow a diversity of crops including *sim sim*, groundnut, rice, beans, and maize, while they used to grow food crops only. The change is regarded as positive given the nutritional and income benefits realized from the improved farming techniques and the diversified production.

"Before Nuyok, we used to go all the way to Lango to get most of the other foods like rice; we only knew sorghum. In fact, we didn't know posho came from maize! We are now a food basket because of Nuyok!"

- Lead farmer, FGD, Abim

[72] All key informants who commented on this issue, and some of the focus groups, seem to have understood that Nuyok did not provide savings boxes; nevertheless, some of the FGDs had the impression that the boxes were from Nuyok. FGD members may not be able to distinguish the organizations/projects from which they received inputs or services, especially if there have been several projects in the area.

Changing gender norms were also reported among youth. Young men used to look after animals while young girls were expected to undertake domestic work; respondents indicated that adults are now taking on the role of grazing animals while young boys go to school together with young girls.

In the estimation of a male DCDO, the participation of both males and females in SILCs was outstanding. He indicated that both males and females assumed leadership responsibilities in the groups, with men encouraging women to take leadership roles in management of SILCs.

Governance

Nuyok's close coordination with local governments was described by many respondents as ensuring local ownership of the interventions. Nuyok was reported as working closely with district production officers and government extension agents when planning and implementing interventions, as well as with local council structures, which was viewed as increasing the likelihood of communities trying the interventions since the structures were community-based.

3.3.3 Purpose 3: Nutrition of PLW, adolescent girls, and CU2 improved

Purpose 3 focuses on nutrition and health of PLW, adolescent girls, and CU2, including improved WASH. This involves increasing household consumption of diverse and quality foods (especially during the first one thousand days of life) and reducing illness in these target groups.

The household survey data show no improvement in women and children's malnutrition, even among direct participant households, but indicate a small improvement in dietary diversity among participant households.[73] Despite the quantitative results, FGDs and KIIs across all districts indicated improved nutrition in households. It was widely perceived that malnutrition was reduced for CU5, PLW, and the whole family.

Respondents attributed improvements in nutrition to the trainings on food and nutrition and the preparation of nutritious meals for children and PLW, as well as to mothers setting up kitchen gardens. MCGs trained communities on kitchen and perma-gardens for food production, and female farmers deemed Nuyok's introduction of kitchen and perma-gardens effective in increasing access to certain foods, especially vegetables, for home consumption and for sale. This section discusses more detailed findings regarding specific strategies employed in the implementation of Purpose 3.

Layered approach. Respondents highlighted Nuyok's layering of interventions as an advantageous approach that ensured that households receiving agriculture and livestock training also received health and nutrition education; consequently, this integration supported livelihood diversification and contributed to enhanced food and nutrition security. For instance, a woman would grow vegetables knowing she could both earn income and provide essential nutrients to her children. She would also establish a toilet, knowing that this ensures health for the whole family. Another benefit of layered interventions is that mothers also reported now being able to preserve food during harvest periods, thus ensuring a food source during hunger periods, and general agreement across districts that couples were now making joint decisions about what food to eat.

[73] Refer to quantitative results in sections 3.2.4.2 and 3.2.4.3.

By incorporating a layered approach to interventions, Nuyok also utilized project staff across various activities efficiently. Nuyok's agronomists and nutritionists at the district level and agriculture field agents and nutrition supervisors at the sub-county-level worked together to integrate Purpose 3/Nutrition and Purpose 2/Food Production. This was achieved through lead farmers (who provided advice on inputs and practices), MCAs (who dispelled nutrition misinformation), and youth groups (who planted fruit tree nurseries). For instance, Purpose 2 agriculture field agents provided support to Purpose 3 through vegetable seed distribution and technical support for lead mothers' kitchen gardens. The layered approach also enabled project participants to access more than one intervention. For example, lead mothers received vouchers at DiNER fairs to acquire vegetable and groundnut seeds to share with their MCGs. From interviews, it was also discerned that lead mothers and members of household caregivers' groups are also members of Purpose 2 groups, including PMGs, livestock groups, and SILC groups.

Training, monitoring, and outreach. MCAs were one vehicle that delivered and reenforced positive health practices. The MCAs taught mothers how to feed children, from breastfeeding to the introduction of solid foods. As explained by members of MCG and MCHN participants in Nakapiripirit, the decline in malnutrition in some homes is due to the training that the mothers received on meal planning and preparation. One member explained, "We were taught that when a baby is six months, we should introduce semi-solid food like porridge and mashed potatoes and also continue breastfeeding. At first, solid food would be introduced at about three months." Additionally, they felt that the more regular screening for malnutrition ensures that the malnourished children are captured early enough—before their conditions worsen. "Initially, there were several cases of malnutrition among children, but right now, only the children born to malnourished parents become malnourished because of low birth weight or when the children fall sick."

Project staff stated that health workers were trained on how to conduct integrated health and nutrition outreach campaigns using WHO's Reach Every District approach. Through the campaigns, communities were provided health services such as nutritional assessment, health education, Vitamin A supplementation, deworming, ANC, and diarrhea treatment. Many FGD participants were happy with the services provided during outreach activities and reported that their children are now healthier due to these services.

Training messages also circulated and were reinforced among participants themselves. FGDs with MCG participants indicated that they learned a lot from each other and are practicing new behaviors. They reported that they find it easy to practice the behaviors they learned in the demonstration sessions, such as cleaning the family compound and cooking porridge using locally available foods.

VHTs. Consistent with survey results showing improvement in the percentage of births receiving ANC (see Section 3.2.4.4), FGDs and KIIs across all districts reported more women are accompanied by men when attending ANC, which resulted in healthier pregnancies and healthier newborns. Women are increasingly abandoning consulting witch doctors when they are sick. The qualitative data suggest this is a result of Nuyok initiating and empowering the VHT structure to train other community members, conduct screening, and refer clients to health facilities. Interviews with project staff indicated that all VHTs were organized and trained in essential nutrition to train lead mothers, who in turn reached

household caregivers of CU5 and PLW with essential nutrition and hygiene actions messages and demonstration sessions. One mother had this to say: "I had a sick child and elders recommended I go for witchcraft, but Nuyok encouraged a good diet so that's what I did." Nutrition supervisors and VHTs also received training on kitchen gardens and integrated pest management with on-going technical support from lead farmers on how to promote the understanding and use of varied nutritious foods in the cooking demonstrations conducted with household caregiver groups.

A few challenges were mentioned regarding the implementation of the VHT approach. One concerns the role of nutrition supervisors in providing technical backstopping to VHTs during MCG sessions and home visits to strengthen their skills. It was noted that because of the large number of Nuyok target communities, there were not enough nutrition supervisors to provide timely support to VHTs. Second, some lead mothers reported that VHTs do not observe the full session of the household caregiver group, and sometimes they do not accompany them during home visits. The approach of using short trainings without timely follow-up for poor-performing lead mothers undermines the effectiveness of the intervention in strengthening lead mothers' skills to facilitate household caregiver group sessions with the necessary quality. Lastly, some key informants reported that nutrition supervisors rarely use the quality improvement verification checklists to monitor and correct VHTs. This presents a missed opportunity for them to be able to assess the skills of lead mothers and provide remedial on-site training to continue building their skills.

Vouchers and subsidies. Many respondents attributed improved nutrition to access to subsidized seeds such as maize and vegetables (e.g., eggplant, tomatoes, beans) from input suppliers working with Nuyok that enabled farmer households to grow and consume a variety of foods. Vouchers were also used effectively with families who had children with severe acute malnutrition (SAM) and moderate acute malnutrition (MAM); as reported in Lotome, in Napak District, Nuyok gave nutrition vouchers worth UGX 70,000 to families with malnourished children in some communities, enabling those households to obtain *posho* (a type of corn meal), beans, cooking oil, soap, two cooking pans and one basin, which helped improve their health and nutrition status.

Increasing income. While neither quantitative and qualitative data[74] revealed evidence of increased livelihood diversification or increased income, focus group discussants and key informants perceived that income has increased as a result of Nuyok interventions, enabling households to buy additional food items like meat, eggs, silverfish, maize flour, cassava, or milk (not typically part of their regular household provisions). There were, however, challenges regarding a self-sufficiency mindset: food donations over the protracted drought period, especially from the World Food Programme, made farmers expect free handouts and reluctant to produce their own food.

Latrines and sanitation. Survey data show that access to improved sanitation remained limited and did not improve over the life of the activity, contributing to sustained high rates of open defecation (see Section 3.2.4.5). However, FGDs with participant households across all program districts indicated perceived improvements in health and hygiene practices, which aligns with survey results that showed participants had more access to basic sanitation and lower rates of open defecation at endline

[74] See Section 3.2.3 findings and Section 3.3.2 discussions on income diversification and SILCs.

compared to non-participants. These advances were thought to result from the adoption of WASH practices like latrine construction and use, use of sanitary facilities like drying racks and drying lines, and improved household and personal hygiene (washing utensils, hand washing).

Increased use of latrines was attributed to a few factors. First, the use of the "Chicago" technology enables construction of firm and lasting latrines on poor-quality sandy soils. As highlighted by a health official in Abim District, "The greatest achievement, especially for WASH, was that latrine coverage improved from 47% to around 61% due to implementation of the new technology called Chicago to overcome the poor soil quality challenges."

Second, the recognition of "Open Defecation Free" champions and the corresponding reward of an exchange visit likely increased latrine use. The qualitative data indicated that many villages in Nakapiripirit and Napak were declared open-defecation-free. A participant in a WUC FGD in Napak made this comment:

> In Napak, some of the community members were declared Open Defecation Free champions and were taken for exchange visits. Among these were women who had never left their homes for anything else apart from to fetch [water], collect firewood, and farming but got a chance for exposure. I'm telling you some were so amazed by what they were seeing: clean environment, clean latrines, clean utensils.

The third factor was the use of the Household Improvement Campaign and hygiene and sanitation cluster approach whereby project staff trained 10 members in each cluster as mindset change agents and educated communities on latrine construction materials and latrine designs that can withstand poor soil conditions and rain. The qualitative data suggest that this strategy resulted in positive behavioral changes in WASH. Project staff stated that many villages had formed and trained clusters as part of the Home Improvement Campaign to tackle sanitation. Many clusters were reported to be trained and to have dug latrines and shared information on clean households. Nuyok also provided free pickaxes and hoes to a few selected homesteads to encourage communities to construct pit latrines. These tools could be borrowed by neighbors, if needed.

However, latrine construction in Nuyok program districts still grappled with several challenges. Construction of pit latrines was described as the least-attained goal under WASH, mainly because of the poor soil that becomes waterlogged during the rainy season, causing the latrines to collapse. Consequently, construction of pit latrines was not implemented extensively by the communities in Napak and Nakapiripirit. Specific challenges mentioned were: i) broken tools due to the various soil types of the region—including rocky, sandy, black cotton, and loose soils; ii) difficulty digging pits that were adequately deep; iii) latrine collapse due to termites eating the wooden logs used as crossbeams for mud slabs over pits; iv) poor-quality construction; and v) poor attitude of some community members toward constructing toilets. Poverty was also a hinderance to latrine construction: as one community member interviewed commented, "You want us to put latrines, yet we have hunger?" All of these factors will likely impact latrine sustainability.

Regarding hygiene, most FGD participants indicated they had knowledge of hand washing. Most evaluators observed households' tippy taps and other handwashing facilities; however, soap was not observed in the field or at tippy taps for most households observed.

Approach to WASH in schools. Nuyok WASH interventions in schools were oriented around using children as secondary change agents who took behavior change messages home and shared them with their households. Nuyok rolled out the Children Hygiene and Sanitation Training methodology to all targeted schools. Additionally, the project supplied schools with handwashing stations. The WASH in-school intervention suffered from competition with other WASH and social behavior work implemented by Caritas and the Communication for Development Foundation.[75]

Enabling access to safe water. In contrast to the survey data which illustrated a worsening in the prevalence of diarrhea among CU5**,** interviews with project staff indicated a reduction in childhood illnesses like diarrhea and increased household utilization of safe and clean water, attributing these results to WASH interventions. Specifically, key informants reported that these improvements mainly resulted from training handpump mechanics on WASH infrastructure maintenance, training WUCs on effective borehole management and maintenance, training households on safe water management and treatment, and rehabilitating boreholes. For instance, communities in Abim District reported greatly benefitting from access to clean water because of rehabilitated boreholes.

The timing of borehole rehabilitation activities was fortuitous, as it was done when water was most needed for handwashing to fight COVID-19 between 2020—2022. Respondents perceived an improvement in access to safe water over the life of the activity, crediting this positive change to the rehabilitation of boreholes funded by water user fees collected through WUCs. However, survey results indicate that despite progress, approximately one-half of households still lack access to water, with many journeying more than 30 minutes to collect water. Evaluators noted during field observations that the region continues to face a scarcity of boreholes relative to its growing population, accentuating the long distances individuals must cover to access these water sources.

3.4 Sustainability of Outcomes

3.4.1 Foundational Purpose: Communities and institutions capacity to improve food and nutrition security improved

Governance. Interviews with a variety of informants indicated that the knowledge imparted to various governance structures via Nuyok-supported trainings will remain and be used to sustain the positive outcomes that have been achieved. The project was noted to have built the capacity of district and sub-county personnel and structures including Chief Administrative Officers, DCDOs, District Production Officers, District Commercial Officers, subcounty chiefs, DDMCs, SDMCs, PDMCs, VDMCs, WUCs, MCAs, CBMs, PASPs, PSPs, as well as community members, on diverse themes in governance, DRR, livelihoods, gender, and other topics.

[75] CRS staff noted that WASH in schools was rolled out in the first two years and stopped after the midterm evaluation.

Nuyok conducted trainings on what policies exist in the district so that all local government officials were aware of the policies governing their activities and roles in their respective departments. Now, most officials are reportedly aware of the roles and policies that can improve service delivery as compared to prior to Nuyok. Nuyok trainings were also considered to have led to reduced role conflicts between district staff.

Another factor that suggests a future for governance mechanisms that Nuyok supported is the government's support of the Parish Development Model, which will require the services of CBMs, MCAs, and VDMCs. However, CBMs stated that they have stopped monitoring beyond their village; they no longer go to schools and health centers because when the project ended, they were not told to continue. Because of this misunderstanding, they fear that government officials, including schools, health centers, and contractors will question their authority to continue monitoring them, since their mandate ended when the Nuyok program concluded.

Advances in capacity development will continue to be tested by an ongoing shock context. In this regard, one of the Community Development Officers interviewed said,

> To a greater extent all these practices are going to be sustained because Nuyok introduced it with an intended mindset and behavioral change training, so the people now have knowledge, and they were able to experience some positive outcomes from those practices. However, given the prevalence of prolonged droughts, insecurity may cause extreme poverty levels and undermine these achievements.

Gender equity. Despite the reported success of MCAs in fostering the practice of positive gender norms, the likelihood of sustained behavior change in this area is uncertain. An optimistic view was expressed in an FGD with MCAs in Nakapiripirit that discussed Nuyok's contributions to declines in GBV. These MCAs agreed the reduction in GBV will continue after Nuyok because households have acknowledged the benefits of living in peace as couples; they felt this will perpetuate and reinforce role-sharing and joint decision-making among couples. Another positive prediction was made by a male government official in Abim: "If a man sees another man respecting their wife, sharing work with the woman, then other men will also do the same. It will be sustainable because members realized it improved efficiency!"

Some lead mothers interviewed anticipate that the knowledge gained from Nuyok will enable people to sustain changes around gender norms, especially having witnessed a reduction in GBV and observing most homes to be currently living harmoniously. Some respondents believe there is no way men will go back to their old ways because they are enjoying the benefits of living harmoniously in their homes.

However, situations are not the same across all districts: reports vary by location and even within FGDs, in some cases, with many respondents less certain of the future of gains in gender equity.

One threat to sustaining positive changes in gender norms is polygyny, which is common in some communities. A lead mother in a Napak FGD explained: "The men who are polygynous are already feeling exhausted because initially they would just impregnate the women. So, expecting them to share the responsibilities would be all right in one home, but not in many homes because the workload now becomes too much." Some women have started fearing their partners may seek additional relationships. Currently, many women express a preference for returning to traditional roles, where they managed all

domestic chores but held the ability to discipline their husbands physically; they believe that by reverting to these traditional dynamics, they can safeguard and preserve the stability of their marriages.

3.4.2 Purpose 1: Community resilience to shocks and stresses improved

The VDMC–SDMC–DDMC linkages facilitated by Nuyok are considered necessary to sustain achievements in DRR and DRM. Improved disaster preparedness and continuous monitoring by local governments are widely expected to continue because disaster management committees have been interlinked from village to district levels; most VDMCs and SDMCs are now registered at district level. Moreover, as government structures, VDMCs can benefit from government budget allocations, which opens possibilities for future support. The local government is critical to future efforts as it provides technical backstopping on DRR as well as funds for supporting capacity-building activities like trainings.

In some districts like Abim, there is also a directive that all villages have a VDMC and a Village Disaster Management Plan. These plans are community-based and as such are well-positioned to identify, plan, and implement disaster reduction strategies at the local level, promising for future DRM efforts.

Many respondents considered it highly likely that FMNR sites will be sustained, especially as farmers have seen the value of the sites. They use them for grazing and for water diversion and to protect their gardens from flooding; the sites also provide material for fencing homesteads. In some districts, FMNR sites are documented in local government structures, another factor which could support sustainability.

Because of the income benefits associated with fruit tree planting—farmers realize they can earn income from tree sales—farmers in FGDs expressed willingness to continue planting fruit trees. However, while farmers interviewed in Abim and Nakapiripirit were willing to continue buying fruit tree seedlings at their own cost because they generated income, there was no indication that community members would be willing to invest resources in FMNR sites.

Similarly to DRR and DRM, local linkages are considered necessary to sustain FMNR achievements. This involves the local council chairperson (who heads the FMNR group) and local council, FMNR group, and the district and local government. The most serious threats to sustainability are deforestation of FMNR sites for charcoal and the high cost of fruit tree seedlings.

3.4.3 Purpose 2: Vulnerable households' livelihoods sustainably improved

The structures Nuyok established or strengthened to support livelihood activities such as agricultural village agents and CAHWs were largely anticipated to continue after the project. Livestock farmers in FGDs, for example, showed interest in investing in services offered by CAHWs.

SILC groups were considered likely to continue because the same groups are targeted for the Parish Development Model, which the government has embraced. SILCs are responsible for continued enterprise growth and household income, which enables improved nutrition. They have proven to be the most popular avenues for savings and access to loans. SILCs also promote group cohesion, critical for continuity and consistent with the Parish Development Model, which emphasizes social mobilization and mindset change and is expected to augment the good practices promoted by Nuyok. It was also

reported that, through the office of the District Commercial Officer, the Ministry of Trade would link to and follow up with PSPs for further support. With such relationships, resources are expected to come from both existing partnerships that have already been strengthened, as well as from future partnerships. Linkages have already been made with Stanbic Bank and Post Bank to access more financial services. Many respondents indicated that the communities are well motivated to maintain SILCs for easy access to finance, and most respondents acknowledged the importance of PSP services, especially during share-outs.

Nuyok also established linkages with input dealers to ensure sustainable access to agricultural inputs. Communities are largely expected to continue to access agricultural and veterinary inputs from input suppliers because the extension officers are willing to connect them to these suppliers. For example, a number of project participants in Abim District reported they were buying quality seeds using their own money after Nuyok ended; farmers who tried new seeds and experienced higher yields are motivated to continue paying for improved seed, use improved crop management practices like improved seed, use post-harvest handling practices like tarpaulins, and pay for animal health services (spraying, deworming) because of associated productivity and income gains. However, these predictions, intentions, and capacities may not be uniform across communities: some farmers were unwilling to buy seeds because they are considered expensive.

The linkages between farmer and input agent, PMG and sub-county agriculture extension agent, and farmer and sub-county veterinary agent/CAHW will be crucial to sustaining any positive outcomes. One comment on this theme was that the districts, through the office of the District Commercial Officer, have linked PASPs and PSPs to the Ministry of Trade for further trainings. Yet while the input agent to farmer linkage is expected to continue, it may be weaker because the agents will no longer move in communities to bring their supplies closer to local farmers. That said, the agents are still available to supply inputs if approached in trading centers.

Lead farmers may continue to mobilize and teach their fellow farmers about farming technologies, though their continuing role may vary from district to district. In Nakapiripirit, lead farmers interviewed expect to continue teaching other farmers on improved crop management practices like row planting and intercropping. Farmers' adoption of many improved agricultural practices, including kitchen and perma-gardens, is most likely to continue based on benefits that the communities recognize. In Abim District, community members in FGDs said they are motivated to maintain kitchen gardens because they have become a source of income for most families as well as a source of food for home consumption. Prospects for the continued cultivation of iron-rich bean and orange-flesh sweet potatoes are good: the high demand and market for these crops is a motivation for farmers to continue growing them.

An ongoing risk to sustainability is climate change. As explained by MCAs in a FGD in Nakapiripirit:

> Climate change has caused people to lose morale to farm. I wish there were resources or money to sustain us for the next planting season. We don't have financial resources. There is a lack of money to carry out most agricultural practices that have been taught by Nuyok. There is no money to buy seedlings, or money to hire labor for the garden, or even food we've been advised to eat.

3.4.4 Purpose 3: Nutrition of PLW, adolescent girls, and CU2 improved

The nutritional knowledge gained by mothers and communities at large are likely to continue beyond after the project. For example, because of the trainings received, mothers report adding eggs, peanut butter, or sunflower oil to their children's porridge. The perception of lead mothers in many FGDs was that mothers feel their children look healthier and these changes have eradicated malnutrition. Similarly, the promotion of dietary diversity and associated strategies is thought to have encouraged households to continue growing a variety of foods and doing kitchen gardening, given the benefits of both food availability and income from produce sales. Kitchen gardens are anticipated to continue as they have helped to reduce household expenses: households produce their own vegetables and no longer bear their cost at market. The biggest threat to sustaining kitchen gardens is the harsh weather. Lead mothers in Napak explained: "We are very much interested in maintaining the gardens, but it is so hard because of the sunshine. The water sources are very far, which makes it impossible to keep watering the garden. Planting that dries up is just a waste of time, so we don't bother anymore."

Home Improvement Campaigns have continued in the communities, focusing on latrine construction and related training, the dangers of open defecation, talking to mothers and husbands about the importance of certain foods to prevent malnutrition in women and children, and hygiene and safe water issues such as the need for a home to have a drying rack, rubbish pit, and clean drinking water to prevent diseases. These campaigns are still carried out routinely by the different committees with the help of VHTs and sometimes with one or two health officials. While latrines were associated with a reduction of disease burden**,** as noted in Section 3.3.3, latrine construction and maintenance face numerous challenges, especially lack of durability in poor soils. These difficulties are likely to continue to hinder the establishment and sustainability of latrines.

Across all districts, it was repeatedly mentioned that communities will continue contributing water user fees for boreholes through WUCs, as the accessibility of safe water is highly valued**.** However, there still are not enough boreholes in the region for the growing population; many individuals still travel long distances to access boreholes.

District and sub-county key informants expressed motivation for continuing to support the health outreach program because it improved some district indicators on antenatal coverage and immunization. They also indicated that outreach is a government priority and budgeted under primary health care funds. The largest threat to sustainability is a lack of resources to continue providing these services since the allocated primary health care funds are insufficient; as a result, the frequency of outreach must be reduced significantly. However, with support from other recipients like UNICEF, districts will continue to conduct outreach at a reduced scale, based on the amount of funds health facilities receive from the district. Sub-county health assistants were skeptical about integrating services from other departments like the Community Development Office; this was thought to be challenging because they always request facilitation, which the health department cannot afford without support from partner projects such as Nuyok.

Most MCAs were committed volunteers and reported additional social benefits to being MCAs such as community recognition, stronger and closer families, greater love toward and from their wives, improved household hygiene, and reduced healthcare expenses. MCAs demonstrate high levels of

motivation and have been intentionally embedded in roles and structures that already demonstrate key factors associated with sustainability such as VHTs, SILC groups, CAHWs, youth entrepreneurs running profitable businesses, and Purpose 2 Field Agents supported to become PSPs. Considering that the community has built confidence and trust in the MCAs, and the MCAs themselves have realized this trust, it is presumed that the MCA approach will be sustained with or without Nuyok. Discussants in one MCA FGD felt that the local government and local leaders, both traditional and political, also need to support them to be sustained. Others agreed with this view; one DCDO suggested that the MCA approach will be functional and sustainable with continued coordination and collaboration with local government leadership, which needs to incorporate them into the system as champions and agents. This DCDO thought the MCAs should be handed over to the government and incorporated into the Office of the DCDO for continued follow-up and mentorship.

3.5 Unintended Consequences

Respondents noted that there were a few unintended consequences as a result of project activities. **Positive secondary impacts of project activities on peace and security.** Respondents commented that social cohesion and interactions emanating from groups such as VDMCs, PDMCs, SDMCs, and DDMCs were requisites for peaceful co-existence in communities. The relative peace experienced in the Karamoja region could also be attributed to the peaceful co-existence strengthened in groups such as MCGs and SILCs.

Another project activity cited as influencing security was the establishment of FMNR sites. Although their main intention was to conserve the environment, participants mentioned that FMNR sites have enabled the strengthening of physical security in their areas**.** For instance, in one case the Uganda People's Defense Force camped at the FMNR site, thus forcing the warriors out.

Some project activities could increase insecurity. One unforeseen consequence of some livelihood-enhancing activities was that they sometimes increased security risks, such as improving livestock health, which led to an increase in livestock raids, and providing in-kind inputs such as hoes, saucepans, watering cans, and jerrycans, which increased instances of theft. Similarly, SILCs became targets for robbers who frequently attacked the treasurers to steal money. In response to these challenges, Nuyok initiated efforts to coordinate peace meetings to alleviate tensions in affected areas. In addition, it was reported that latrines became hiding places for raiders during the late hours of the night in a few instances. This threat was addressed by advising community members to fence the latrine inside the perimeter fences of the *manyatta*.

Decrease in sexually transmitted diseases. A youth from an MCA FGD in Nakapiripirit noted the culture of early marriage has been largely abandoned. He said parents are now refusing early marriage of girls who are 12 or 13 years old, preferring marriage no younger than 18, and with the efforts of Nuyok, forced marriage in the interest of bride price is now discouraged. He indicated that this has contributed to a lower incidence of sexually transmitted diseases like syphilis, gonorrhea, and AIDS.

Unintended negative consequences of promoting gender equity. There have been some negative consequences of women's participation in Nuyok trainings. In Nakapiripirit, some members in an FGD

with lead mothers said they were beaten by their husbands after participating in the trainings because their husbands thought that Nuyok was paying them a lot of money that the women were withholding from them. This was reported to Nuyok, which asked the lead mothers bring their husbands to the training so that they would see first-hand what was being done. This helped the men develop trust and stop beating their wife(-vies).

Some community members were reported to have misconstrued the gender trainings: as reported by some lead mothers, “Some women misunderstood the trainings and are now very big-headed and disrespectful to their husbands because they know their husbands will not beat them.”

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

Food security, economic, and resilience outcomes. Population-level food security indicators show extremely high levels of food insecurity in the Nuyok activity area overall, increasing somewhat from baseline to endline. Both quantitative information about shock exposure and the qualitative findings indicate that this deterioration is associated with increased severity of shock exposure over time, particularly drought, variable rain, rising food prices, and increased conflict shocks (such as theft of livestock) over the course of activity implementation. Similarly, most MCHN indicators—including child anthropometrics—did not change from baseline to endline, possibly due to protracted shock exposure to many different types of shocks over the project period. The exceptions were statistically significant improvements in MAD (+10.9 percentage points [pp]), diarrhea (-8.7pp), and ANC visits (+7.9pp), but a decrease in the use of ORT (-23.1pp).

The percentage of households that reported earning cash increased by almost 50% between baseline and endline survey rounds. Furthermore, at endline, the share of participant households that reported having earned cash income was almost 15% higher than non-participant households.

Household-level resilience capacity indices (absorptive and adaptive) increased between baseline and endline, and both capacity levels were higher for participants than non-participants at endline. Statistical analysis indicates that these increases were due to improved shock preparedness and mitigation, access to savings, availability of humanitarian assistance, increased levels of asset ownership, and to a lesser extent, higher levels of bonding social capital.

Overall, most indicators remained unchanged, and a few worsened. However, stability is a positive outcome given the persistence of severe shocks such as those related to climate and conflict. Nuyok interventions may have served as a buffer, bolstering resilience and protecting households and communities against worsening conditions.

Targeting. The household survey data show improvement over time in select indicators for poor households compared to non-poor households, suggesting that Nuyok was effective in targeting and positively impacting intended participants. Notably, poor households in the Nuyok areas experienced improvements in access to financial services and in the adoption of value chain practices, increased participation in cash-earning activities, and enhancements in women and children's health (specifically, in MAD and ANC visits).

Some indicators are less clear regarding the effectiveness of targeting. Overall, poverty rates did not change from baseline to endline, but participants are less likely to be poor than non-participants at the time of the endline. These results could indicate two possibilities: (a) that program interventions reduced poverty in participating households; or (b) alternatively, they could reflect that non-poor households were more likely to benefit from Nuyok interventions.

Effectiveness of program interventions and strategies. Several quantitative measures pointed to positive impacts of program interventions. Overall, there was a large increase in the use of financial services, almost doubling from baseline to endline. The use of financial services was much higher for

Nuyok participant households compared to non-participant households at endline. Furthermore, SILC members exhibited higher levels of savings and access to loans than non-members. Social capital increased somewhat from baseline to endline and was higher for participants than non-participants. In addition, access to improved drinking water improved for non-poor households from baseline to endline (though access for poor households was unchanged).

Explanatory factors. The qualitative data suggest several factors in activity design and implementation that help explain the results observed. Fundamental to Nuyok's implementation strategy was the establishment and strengthening of community governance systems and the involvement of local government partners in project operations such that community structures would be sustainably linked to local government. The intent was to develop a common vision working toward food and nutrition security, aligning resources and acting on commitments using the "Direction, Alignment and Commitment" framework.

Nuyok succeeded in strengthening sub-county and local government capacity to monitor and deliver services. In Nakapiripirit, a district key informant explained, "The best anyone could have done was a lot of capacity building, which is what Nuyok did." Across all program districts, key informants and FGD participants reported that Nuyok trainings improved the capacity of institutions and community members to address key issues affecting food and nutrition security. Nuyok was successful in strengthening the leadership capacity of district and sub-county government officials including Chief Administrative Officers, their deputies, and assistants; District Executive Committee members; District Production and Commercial Officers; Community Development Officers; technical heads of sector departments; agriculture and veterinary extension officers; local councils and their chairpersons; and community leaders and elders. Local leaders applied leadership training and action plans to support food and nutrition security activities in their districts. Community Development Officers and agriculture and veterinary extension officers increased their direct interaction with communities and transferred knowledge on gender, governance, farming, raising animals, and DRR to the local level. The project also strengthened the capacity of critical community entities such as District, Sub-county, Parish, and VDMCs and established structures such as CBMs and MCGs by providing training in governance (transparency and accountability), gender equity, DRR, and modern farming practices—training they are currently putting into practice.

Joint monitoring and coordination of activities made it easy for the sub-county and district to coordinate to ensure timely service delivery to the community. Community monitoring of service delivery improved across all districts over the course of the project**.** The CBMs established and trained by Nuyok became instrumental in monitoring the different interventions as well as government service delivery in health centers and schools, as well as road rehabilitation and borehole repair activities.

Nuyok efforts resulted in improved information flow and coordination. The availability of trained Nuyok structures such as CBMs, VDMCs, and MCGs was reported as being responsible for timely information flow and coordination between the community and the local government, resulting in improved service delivery. In addition, Nuyok and local government activities were integrated and fed into each other. The CBM, for example, complemented the structure of the sub-county government team, while the

district was able to secure information from the sub-county quickly, enabling efficient and effective follow-up.

Similarly to its successful approach of collaborating with local government and strengthening their capacity for service delivery, Nuyok's strategy of working with community-based groups and locally recognized influencers to advance project goals was largely effective, especially via social and behavior change messaging. Local structures like VDMCs were better prepared to monitor and address shocks afflicting their communities because of the training received and the action plans they developed. WUCs and their members were more capable and motivated to follow the systems and procedures established to protect and maintain safe water sources. Individuals trained by the project such as lead mothers, lead farmers, CBMs, and MCAs gained confidence, recognition, and motivation to continue building resilience in their communities using the knowledge and skills fortified through Nuyok's capacity-strengthening initiatives. Community elders played a key role in supporting project goals by enforcing targeted messaging, such as around gender equity and MCH. This highly localized approach strengthened the agency of community members to take charge of the development objectives they identified as priorities, and to communicate and collaborate in harmonious ways with local, traditional, social and governance systems.

By the end of the project, positive change was reported in knowledge, attitudes, and practices reflecting gender equity, particularly regarding women's leadership, roles and responsibilities, and household decision-making. Qualitative findings across all Nuyok program districts indicate that women's participation in community decision-making and governance structures has improved; at group level, women are taking on leadership roles such as chairperson and treasurer of SILCs and Farmer Enterprise Groups, as well as Parish Development Model groups and local councils. A sub-county chief in Nakapiripirit noted that "…a lady competed and was elected by a majority committee of nine members in the by-election for the local council chairperson for Naturu Town Council in Naturu Parish in Loregae Sub County, Nakapiripirit District." In addition, more women have been performing livelihood activities that were men's domain before Nuyok, such as taking livestock for deworming, spraying and other treatments. Some women have now purchased land and cattle, which was uncommon before Nuyok.

4.2 Lessons Learned and Recommendations

The following broad recommendations and principles are derived from lessons learned through Nuyok's activities and intended for consideration in future food and nutrition programming in Uganda and other countries in the region.

Engage and collaborate at the community level. Fostering collaboration with local government, community elders, and other recipients, coupled with working with community-based structures such as CBMs, MCAs, SILCs, and VDMCs to implement interventions, was key in Nuyok for community ownership, successful project outcomes, and sustainability. The project also demonstrated that because elders are highly respected in the community, working through elders helped significantly to promote and adopt more equitable gender practices.

Important considerations for local coordination that emerged from the findings, in the evaluation team's view, are i) the need for role clarity, to ensure complementarity of partner and government efforts (as

noted by one Nuyok district-level staff, program implementation via a consortium allows for different organizations to focus on their strengths); ii) community identification of priorities and capacity needs, which supports local ownership; and iii) bottom-up linkages (village to district) to enhance program service delivery.

Promote systems for accountability. As observed by interviewed CBMs, communities do not always have enough information about government services or how to ensure accountability. Nuyok has reportedly improved communities' knowledge of these issues and mechanisms for follow-up, e.g., regarding road construction projects or where to find unexpired medicines. The situation has improved with increased community-level monitoring (e.g., of health centers), and the CBM system works well in ensuring checks and balances. As suggested by one sub-county chief, this system should be promoted and cascaded to all villages as an effective means to monitor non-governmental organization programs; he also commented that there is government interest in monitoring its own programs, such as for monitoring and planning for mitigating conflict and disaster risks. A resource mentioned by a sub-county official as essential for monitoring by government is readily available transport at sub-county level.

Layer interventions. Nuyok effectively combined DRR, resilience, livelihoods, health and nutrition, and WASH programming and integrated governance and gender equity as cross-cutting dimensions. Layering and sequencing a combination of project interventions strategically provides participants with a more comprehensive service package which may contribute to higher realization of project goals and objectives.

Use a simplified TOC and make sure implementers understand it. A TOC is a useful tool that can be used to facilitate integration across project purposes. Key informants explained that a simplified TOC diagram was placed in every project office, and many interviewed staff were able to explain how the project works to contribute to the overall goal. Many staff could also explain how activities implemented under other purposes supported their activities. Having staff and other implementation actors understand how all the pieces fit together is important for uniting them under a common strategy and for collaboration across sectors.

Continue to integrate mindset change in programming. Several key informants described one of the main challenges to food security and resilience in the Karamoja region as communities' being historically accustomed to free handouts by development actors. However, they also noted that Nuyok's continued sensitization and awareness-raising were successful in changing the community attitude and mindset to embrace self-reliance. This shift is evidenced, for example, in communities' contributing water user fees, and in cost-sharing to buy improved seeds. Communities were observed to respond positively to Nuyok trainings and were motivated to learn new and specific information to improve their lives. For example, in Home Improvement Campaigns people learned and applied helpful information about personal hygiene, cleanliness within the household, and best practices in solid waste management. A female sub-county chief remarked that the greatest lesson learned is that "there is nobody who cannot change" and "change can take place at any stage," giving the example that Nuyok interventions changed for the better the ways of some youths in her sub-county who were previously considered "notorious." She said the project also helped people learn that everybody in the community can contribute in one way or another when needs are identified, and when they are exposed to knowledge; she praised the MCAs, in

particular, recommending this model (where MCAs both mentor couples and set examples with their own wives) be replicated in other intervention areas. The validity of this suggestion is reinforced by the comments in a female FGD where participants reported that their husbands learned a lot and changed their behaviors as a result of the MCAs' discussions and influence regarding their household roles and fair treatment of wives and partners.

Indeed, MCAs and similar peer-to-peer approaches such as MCGs were viewed as effective in mindset and behavior change efforts; a DCDO in Napak District emphasized that mother groups command a lot of respect and can be influential. Nuyok also promoted continuous advocacy through radio talk shows and *barazas* that was meant to prepare people to embrace project interventions and hence change their mindset. As noted by health official in Abim District, the latter platforms are some of the best approaches to be considered in the future because they help hold public servants accountable to their communities, which drives improvement in service delivery.

Security is key. Security must be addressed head-on to allow developmental interventions to work well and be sustained. As noted by a sub-county chief in Napak, "Unless the insecurity situation in the region is resolved, the people of Karamoja are very far from enjoying progress in the developmental projects that are intended to bring positive changes to the communities." Similarly, a health officer in Abim remarked that communities benefited from living in a peaceful environment without conflict and that government and NGOs should continue handling conflict management until conflict is completely eradicated in the area. It was widely acknowledged that security and peace are fundamental to attaining and sustaining development gains.

5. REFERENCES

Achen, S., Rwabukwali, C.B., & Atekyereza, P. (2021). Socio-cultural perceptions of sexuality influencing the sexual and Reproductive health of pastoral adolescent girls in Karamoja sub-region in Uganda. *Social Sciences and Humanities Open.* Volume 4, Issue 1, 2021, 100191. https://www.sciencedirect.com/science/article/pii/S2590291121000875?via%3Dihub

Arasio, R. L., & Ayele, M. (2022). Food security, nutrition, and conflict assessment in Karamoja, Uganda: Key trends one year after the end of COVID-19 restrictions. Karamoja Resilience Support Unit, Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Kampala. https://karamojaresilience.org/wp-content/uploads/2022/09/TUFTS_2241_KRSU_COVID_19_Assessment_V2_online.pdf

Arasio, R.L., & E. Stites. (2022). "The Return of Conflict in Karamoja, Uganda: Community Perspectives." Karamoja Resilience Support Unit. Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Kampala. https://karamojaresilience.org/wp-content/uploads/2022/11/TUFTS_2250_KRSU_return_of_conflict_in_Karamoja_V3_online.pdf

Cullis, A., & Arasio, R.L. (for the Karamoja Resilience Support Unit, on behalf of Karamoja Development Partners Group). (2022): The 2022 Humanitarian Crisis in Karamoja: Findings from a real-time review. November.

Egeru, A., Arasio, R. L., & Longoli, S. P. (2023). Water and Rangeland in Karamoja: Trends, preferences, and status of indigenous and introduced resources and systems. Karamoja Resilience Support Unit, Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Kampala. https://karamojaresilience.org/wp-content/uploads/2023/10/Water-and-Rangeland-in-Karamoja_FINAL.pdf

Food and Nutrition Technical Assistance III Project (FANTA III). 2015. *FFP Indicators Handbook Part I: Indicators for Baseline and Final Evaluation Surveys*. April 2015. Washington, DC. FFP Indicators Handbook Part 1: Indicators for Baseline and Final Evaluation Surveys (April 2015) (fantaproject.org)

Food and Agriculture Organization (FAO) and Food and Nutrition Technical Assistance Project (FANTA) III. (2014). Introducing the Minimum Dietary Diversity–Women (MDD-W) Global Dietary Diversity Indicator for Women. https://www.fao.org/fileadmin/templates/nutrition_assessment/Dietary_Diversity/Minimum_dietary_diversity_-_women__MDD-W__Sept_2014.pdf

FEWS NET. (2023). Delayed harvest in Karamoja prolongs lean season, sustaining Crisis (IPC Phase 3). July. https://fews.net/east-africa/uganda/key-message-update/july-2023

Hair, Joseph F., Anderson, Rolph E., & Black, William C. (2014). Multivariate Data Analysis Ed. 7th. Harlow: Pearson.

ICF Macro, Inc. (2019). 2018 Baseline Study of Food for Peace Development Food Security Activities (DFSAs) in Uganda. https://pdf.usaid.gov/pdf_docs/PA00TJ9W.pdf

Stites. E. (2022). Conflict in Karamoja: A synthesis of historical and current perspectives, 1920- 2022. Karamoja Resilience Support Unit, Feinstein International Center, Friedman School of Nutrition Science and Policy Tufts University, Kampala. https://karamojaresilience.org/wp-content/uploads/2022/11/TUFTS_2254_KRSU_Conflict_knowledge_synthesis_V2_online.pdf

Stites, E. (2021). Gender, youth and development in Karamoja: Issues and opportunities. Briefing Paper. Karamoja Resilience Support Unit, Feinstein International Center, Friedman School of Nutrition Science and Policy Tufts University, Kampala. February. https://karamojaresilience.org/wp-content/uploads/publications/2021/TUFTS_2114_KRSU_Gender_Youth_Briefing_paper_V3_online.pdf

Stites, E., Athieno, B. & Dyer, C. (2022). "Educating Girls in Karamoja, Uganda: Barriers, Benefits, and Terms of Inclusion in the Perspectives of Girls, Their Communities, and Their Teachers." Karamoja Resilience Support Unit (KRSU), Feinstein International Center, Friedman School of Nutrition Science and Policy at Tufts University, Kampala, Uganda. https://karamojaresilience.org/wp-content/uploads/2022/11/TUFTS_2249_KRSU_Educating_girls_in_KaramojaV2_online.pdf

USAID. (2021). Bureau for Humanitarian Assistance Indicator Handbook Part I: Indicators for Baseline and Endline Surveys for Resilience Food Security Activities. Revised June 2021. https://www.usaid.gov/sites/default/files/2022-05/USAID-BHA_Handbook_Part_I_Baseline_and_Endline_Surveys_June_2021.pdf

Wasonga, O. V., & R. L. Arasio. (2023). Indigenous Early Warning in Karamoja, Uganda: Application, Validity, and Entry Points for Integration with Conventional Forecasts. Karamoja Resilience Support Unit, Feinstein International Center, Friedman School of Nutrition Science and Policy, Tufts University, Kampala. https://karamojaresilience.org/wp-content/uploads/2023/04/Indigenous-Early-Warning_FINAL_lower-res.pdf

ANNEX 1: EVALUATION PERSONNEL

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ANNEX 2: EVALUATION MATRIX

Table 2.1: Evaluation Matrix

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
Overall Activity Achievement				
1. To what extent have the interventions of the two RFSAs met their goals, purposes, and desired outcomes; and what factors promoted or inhibited their achievement?	Comparative, descriptive and normative	**Qualitative:** -Direct and indirect beneficiaries -Recipient staff -USAID BHA staff -USAID Uganda staff -National government staff including Ministries of Karamoja Affairs; Health; Gender, Labour and Social Development; and Agriculture, Animal Industry and Fisheries; Water and Environment; Education -District government officials and staff -Local partners (community-based organizations and private sector) -Local community leaders -Recipient documentation (e.g., proposals, annual and quarterly reports)	**Qualitative:** -Desk review -KIIs using semi-structured instruments specific to given respondent category -FGDs using semi-structured instruments specific to given respondent category -Observation by field teams **Quantitative:** Baseline and end-line surveys, monitoring processes	**Qualitative:** -Content analysis of beneficiary responses (FGDs) and stakeholder responses (KIIs) to assess their views on the extent to which key outputs and outcomes have been achieved, and on what factors promoted or inhibited interventions and outcomes -Content analysis of recipient Annual Reports that describes achievements to date and factors related to performance -Content analysis of RFSA midterm evaluations describing findings and conclusions on achievements to date and factors related to progress to date. Additionally, will determine the extent to which midterm recommendations informed subsequent activity improvements. **Quantitative:** -Statistical analysis and comparison of PBS baseline/endline indicators disaggregated by beneficiary status, and comparative analysis of endline indicators against IPTT baseline/endline indicators (targets versus actual). Differences in population means (or proportions, depending on the outcome/impact variable) will be measured between the baseline and endline survey rounds

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
		-RFSA midterm evaluation reports **Quantitative:** -Uganda PBS baseline/endline data -IPTT baseline/endline data		to determine the significance of any changes over time. -Multivariate regression models that include village fixed effects and key socio-economic and intervention-specific factors as covariates will be used to explore socio-economic and intervention-specific factors that may have influenced the observed outcome/impact changes, while controlling for village-specific influences that are unrelated to the activity. -Triangulation of information from different sources to determine the level of achievement for different objectives.
1.1. Did interventions reach the poorest and most vulnerable households within the target population areas (landless, land poor, women and girls including divorced and widowed older females in female-headed households, adolescent girls and boys (youth), persons with disabilities [PWD]?)?)	Comparative, descriptive, and normative	Same as EQ1	Same as EQ1 + Case study communities and households	Same as EQ1 for both qualitative and quantitative analyses, with further disaggregation by each beneficiary sub-group for sub-groups analysis. Narrative/thematic analysis will further determine the contribution of the targeting strategies to achieving the activity goal and objectives especially with regard to gender and reaching the most vulnerable. For the quantitative analyses, disaggregation of key outcomes such as resilience capacities, WASH, and food security by poverty status Additionally, comparison of beneficiary/non-beneficiary households will also be done. Triangulation of information from different sources, including comparisons, across case study communities and households.
1.2. Based on available evidence, among the priority	Descriptive and normative	Same as EQ1	Same as EQ1 +	**Qualitative:** -Document review using each recipient's RFSA

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
interventions, what were the most effective pathways to achieving outcomes?			Communities and household case studies	results framework and descriptive narrative of the theory of change as the reference point. Assess how well recipients' implementation of activities followed or deviated from the causal pathways in the BHA results framework. -Supplement analysis with data from KIIs and FGDs. Narrative/thematic analysis of documentation to determine the following: • Coherence of the pathways/TOC • Outcome mapping to determine the contribution of RFSA to USAID's efforts to reduce food insecurity among chronically food insecure households • Identify the key determinants for achieving the key outcomes including any unforeseen pathways leading to unintended positive or negative consequences of the activity **Quantitative:** -Same as EQ1. Multivariate regression models of a few select outcome/impact indicators will be conducted to empirically test the hypothesized associations underlying the activities' theory of change. Note that it is difficult to conduct causal analyses with cross-sectional data. The regressions will control for key socio-economic variables and intervention-specific factors and include cluster dummies to control for community-specific conditions outside of the activity.

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
				-Triangulation of information from different sources including different communities and households
Effectiveness and Efficiency of Interventions				
2. In each technical sector addressed by the activities (maternal and child health and nutrition; agriculture / livelihoods; early warning systems / disaster risk / resilience, and governance), what were the most effective and most efficient implementation methods and approaches among those selected by recipients?	Comparative, descriptive and normative	**Qualitative:** -Direct and indirect beneficiaries -Recipient staff -USAID BHA staff -USAID Uganda staff -National government staff including Ministries of Karamoja Affairs; Health; Gender, Labour and Social Development; and Agriculture, Animal Industry and Fisheries; Water and Environment; Education; -District government officials and staff -Local community leaders -Local partners (community-based organizations and private sector) -Recipient documentation (e.g., proposals, annual and	**Qualitative:** -Desk review -KIIs using semi-structured instruments specific to given respondent category -FGDs using semi-structured instruments specific to given respondent category -Community case studies **Quantitative:** Desk review, baseline and end-line surveys	**Qualitative:** -Content analysis of beneficiary responses (FGDs) and stakeholder responses (KIIs) to assess their views on effectiveness and efficiency of ' implementation methods across the multiple technical sectors, as well as for specific interventions for which USAID indicated particular interest via its comments. -Content analysis of recipients' RFSA proposals, annual reports and midterm evaluation report(s) to understand changes in implementation approaches, costs associated with specific technical sector and activity, etc. -Content analysis will also determine the coherence of technical approaches/methods with local context, timeliness of technical interventions, quality of services offered, implementation challenges and contextual factors that affected quality of outputs. -Triangulation of information from different sources including different communities **Quantitative:** -Multivariate regression analysis will be used to explore the association between select outcome/impact variables and different

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
		quarterly reports) -Previous evaluation reports (e.g., RFSA midterm evaluation reports) **Quantitative:** -RFSAs Uganda PBS baseline/endline data -IPTT baseline/endline data		combinations of interventions (group participation, trainings, and/or services received). This will help in understanding the effectiveness of different implementation approaches.
2.1. What are the strengths of and challenges to the activities' overall implementation approach, management, communication, and collaboration? What steps were taken by the recipients to address challenges?	Descriptive	**Qualitative:** -Recipient documentation -Previous evaluation reports -Recipient staff -USAID BHA staff -USAID Uganda staff -National government staff including Ministries of Karamoja Affairs; Health; Gender, Labour and Social Development; and Agriculture, Animal Industry and Fisheries; Water and Environment; Education; -District government officials and staff	**Qualitative:** -Desk review -KIIs using semi-structured instruments specific to given respondent category	**Qualitative:** -Content analysis of relevant KIIs (e.g., recipient staff, Uganda government staff, USAID BHA staff, other NGO/donor staff implementing in same area) to assess their views on strengths and challenges associated with each activity. -Content analysis of KIIs (e.g., recipient staff, Uganda government staff, USAID BHA staff, other NGO/donor staff implementing in same area, local partners) to address challenges in activity management, partnership, M&E, decision-making processes, and adaptations -Content analysis of RFSA proposals describing implementation approach, management, communication and collaboration to be compared with annual reports to identify strengths and challenges and steps recipients took to address challenges -Review of midterm evaluation reports that identify strengths, challenges and weaknesses of

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
		-Staff at other NGOs and donors implementing activities in same areas -Private sector service providers -Local community leaders -Local partners (community-based organizations and private sector)		implementation approach, management, communication, collaboration. Compare with subsequent recipient annual reports to determine if these strengths are still evident and what steps recipients have taken to address challenges., how they have been overcome (and if so, how) -Compare results of these reviews with content analysis of KII data.
2.2. Who was targeted by and benefited from each activity's intervention activities, and how effective was /were the selected targeting approach(es) in achieving its respective goals?	Comparative and descriptive	**Qualitative:** -Recipient documentation -Previous evaluation reports -Recipient staff -USAID BHA staff -USAID Uganda staff -Staff at Ugandan Ministries of Health, Education, and Agriculture -Communal and Departmental staff -Local community leaders -Local partners **Quantitative:**	**Qualitative:** -Desk review -KIIs using semi-structured instruments specific to given respondent category **Quantitative:** Desk review, baseline and end-line surveys	**Qualitative:** -Content analysis of recipient activity documents (e.g., proposals and progress reports, IPTTs) to understand logic and intent of targeting, as well as approaches selected and their relative effectiveness -Content analysis of relevant KIIs (e.g., recipient staff, USAID staff) and FGDs to understand effect and intent of targeting -Comparison of findings related to targeting in the midterm evaluations with those found in this round **Quantitative:** -Statistical analysis of data from PBS baseline/endline. Data from the PBS will be disaggregated and compared by sex and household poverty status to address the question of who benefited from each intervention. Determination of potential differences in program

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
		-RFSAs Uganda PBS baseline/endline data -IPTT baseline/endline data		benefits by sex/gendered household type, and household poverty status, will be further informed by multivariate regressions.
2.3. How are the quality, frequency, effectiveness, and suitability of the services provided by the activity perceived by the beneficiaries and their communities? Are there major differences in these perceptions of service delivery across key beneficiary sub-groups, and what are reasons why?	Comparative and descriptive	**Qualitative:** -Direct and indirect beneficiaries -Previous evaluation reports -Recipient activity documentation -Private sector actors -USAID BHA staff -USAID Uganda staff -Communal and departmental staff -Local community leaders -Local partners	**Qualitative:** -Desk review -KIIs using semi-structured instruments specific to a given respondent category. -FGDs using semi-structured instruments specific to a given respondent category	**Qualitative:** -Content analysis of FGDs with direct and indirect beneficiaries by select subgroups to assess their perception of the activities they were involved in -Content analysis of relevant KIIs (e.g., local community leaders, private-sector actors) to assess their perception of the activities they or their peers were involved in -Comparison of findings related to the perception of activities in previous evaluations with those found in this round.
Sustainability of Outcomes				
3.1. What processes, systems, and institutional arrangements (especially linkages and coordination with other USG and non-USG investments) were made by the recipients or members of the target population to sustain the necessary and critical services	Descriptive	**Qualitative:** -Recipient activity documentation -Midterm evaluation reports -Recipient staff -USAID BHA staff -USAID Uganda staff -Staff at Ugandan Ministries of Health,	**Qualitative:** -Desk review -KIIs using semi-structured instruments specific to a given respondent category. -FGDs using semi-structured	**Qualitative:** -Content analysis of recipient activity documents and relevant KIIs (e.g., recipient staff, Ministries' and Departmental staff, USAID staff, staff at other donors and NGOs) to assess the type, strength, and nature of processes, systems, and linkages in place, and their level of importance in sustaining the activities. -Content analysis of recipient Sustainability Plans and Exit Strategies

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
required to achieve and sustain activity outcomes?		Education, and Agriculture -Staff at other NGOs and donors -Communal and Departmental staff -Local community leaders -Local partners	instruments specific to a given respondent category	-Review of RFSA midterm evaluation reports that discuss the likelihood of sustainability based on recipient Sustainability Plans and Exit Strategies -Review of subsequent recipient annual reports to determine if recipients followed up on findings/conclusions/recommendations from midterm evaluations to ensure the sustainability of activities and outcomes
3.2. What is the level of motivation of the service providers to continue providing services after the activity ends and of the beneficiaries to receive and pay (or invest time) for these services?	Descriptive	**Qualitative:** -Direct and indirect beneficiaries -Recipient activity documentation -Midterm evaluation reports -Recipient staff -USAID BHA staff -USAID Uganda staff -Staff at Ugandan Ministries of Health, Education, and Agriculture -Communal and Departmental staff -Staff at other NGOs and donors -Private sector service providers -Local community leaders	**Qualitative:** -Desk review -KIIs using semi-structured instruments specific to a given respondent category. -FGDs using semi-structured instruments specific to a given respondent category	**Qualitative:** -Content analysis of KIIs with service providers and FGDs with beneficiaries to assess motivation to invest (money and/or time) into providing and/or purchasing services, as well as their perception of the value of activities -Content analysis of relevant KIIs (e.g., local community leaders, recipient staff, Ugandan Ministries' staff) to assess their motivation to continue services and fund them. -Review recipient activity documents to identify indications that beneficiaries are already investing time and/or money into certain activities (e.g., cost-share, volunteering, resumption of discontinued activity). -Content analysis of recipient sustainability plans and exit strategies -Review of RFSA midterm evaluation reports that discuss the likelihood of sustainability based on recipient Sustainability Plans and Exit Strategies -Review of subsequent recipient Annual Reports to determine if recipients followed up on

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
		-Local partners		findings/conclusions/recommendations from midterm evaluations to ensure sustainability of activities and outcomes
Unintended Consequences, Lessons Learned, and Best Practices				
4. What are the positive or negative unintended consequences of each of the activities, if any, and how were these consequences identified and taken into account by the recipients?	Descriptive	**Qualitative:** -Direct and indirect beneficiaries -Recipient activity documentation -Previous evaluation reports -Recipient staff -USAID BHA staff -USAID Uganda staff -Staff at Ugandan Ministries of Health, Education, and Agriculture -Communal and Departmental staff -Staff at other NGOs and donors -Private sector actors -Local community leaders **Quantitative:** -RFSAs Uganda PBS baseline/endline data	**Qualitative:** -Desk review -KIIs using semi-structured instruments specific to given respondent category. -FGDs using semi-structured instruments specific to given respondent category. **Quantitative:** Desk review, baseline and end-line surveys	**Qualitative:** -Content analysis of FGDs with direct and indirect beneficiaries, and relevant KIIs (e.g., Ugandan recipients, recipient staff, USAID BHA staff) to identify and assess their views on negative or positive unintended consequences -Content analysis of select KIIs for lesson learned, adaptive management in activity implementation to address such consequences, and recommendations to minimize negative consequences (if identified) -Content analysis of activity documents to identify unintended consequences, and of previous evaluation reports to assess whether any previously identified unintended consequences remain relevant and how their magnitude may have evolved **Quantitative:** -Analysis of "spill-over'' effects using PBS baseline-endline data. Select outcome/impact indicators will be disaggregated by beneficiary status using self-reported data (i.e., direct and indirect participation) and compared to determine change in indicator estimates for each subgroup -If applicable, additional tailored statistical analysis of baseline-endline PBS data to identify

	Type of Answers Needed	Data Source(s)	Collection Methods	Data Analysis Methods
				certain types of unintended consequences, as pointed by the qualitative team, and quantify them
5. What key lessons learned and best practices should inform future activities in Karamoja, and possibly the in the country?	Descriptive and normative	**Qualitative:** -Recipient activity documentation -Previous evaluation reports -Recipient staff -USAID BHA staff -USAID Uganda staff -Staff at Ugandan Ministries of Health, Education, and Agriculture -Communal and departmental staff -Private sector actors -Local community leaders	**Qualitative:** -Desk review -KIIs using semi-structured instruments specific to given respondent category.	**Qualitative:** -Content analysis of relevant KIIs (e.g., recipient staff, Ugandan recipients, USAID BHA staff) to assess their views on lessons learned and best practices for future design of food and nutrition security activities -Content analysis of activity documents to identify lessons learned and review of midterm evaluation reports to avoid duplicating previous lessons and best practices, as well as identifying those that seem to have not held over time

ANNEX 3: METHODOLOGY: SUPPLEMENTAL INFORMATION

1. QUANTITATIVE METHODOLOGY

This annex supplements Section 2.4 of this report to summarize key aspects of the evaluation's methodology. Additional details can be found in the Evaluation Protocol and Data Treatment and Analysis Plan (DTAP).

1.1 QUANTITATIVE SAMPLE SELECTION

The sample was selected using multi-stage cluster sampling with two stages of sampling: 1) selection of clusters, and 2) selection of households. In the first stage, clusters were selected from among the clusters in which the baseline survey was conducted using probability proportional to size (PPS).[76] International Research Consortium of Uganda conducted a full listing in the subsample of baseline clusters selected for the endline survey. In the second sampling stage, households were selected within each selected cluster from completed lists of all households compiled through the household listing. A total of 30 households were selected per cluster using systematic random sampling from the household listing.

First stage sampling of clusters: Prior to conducting the first-stage sampling of clusters, TANGO consulted with the recipient to identify baseline sampled clusters that were inaccessible or likely to be inaccessible due to insecurity at the time of the endline survey. TANGO also consulted with the recipient to determine if any baseline sampled clusters should be excluded from the endline sampling frame for any other reason, such as not receiving any programming. Based on the recipient's feedback and BHA's suggestions, TANGO applied the following exclusion criteria before finalizing the sampling frame for the endline PBS:

- Enumeration areas (EAs) where RFSA programming did not occur or was discontinued within two years from the start of activity implementation
- EAs that are too remote/isolated or inaccessible due to security concerns

The sampling frame is provided in Annex E of the Evaluation Protocol. The annex also identifies clusters that were not accessible due to security reasons, clusters that did not receive interventions and/or received interventions only for a short time (1-2 years), and clusters that received "light touch" interventions after a certain time. At the time of sampling, one cluster in Nuyok was deemed inaccessible due to security reasons, four clusters were not part of Nuyok's implementation, and one cluster is located adjacent to a game reserve and its residents consequently moved away. Those six clusters were excluded from the Nuyok sampling frame.

[76] The evaluation team followed the "two-phase" approach for the first stage of sampling as described in the FTF Sampling Guide. In Phase One, PPS methods were used to sample the total number of clusters inclusive of the number of reserves (30 percent). In the second phase, reserve clusters were selected using fractional interval sampling.

Applying these criteria resulted in the inclusion of 39 of the 45 baseline clusters in the Nuyok endline sampling frame.[77] Out of this frame, TANGO selected 36 (28 required plus 8 reserve) clusters using PPS based on the count of households from the baseline listing.[78] The eight reserve clusters in each strata represent 30 percent of the required clusters, which should be sufficient if one or more clusters need to be replaced at the time of the household listing or survey due to insecurity or other reasons.

The reserve sample was randomly drawn from the 36 sampled clusters using the two-phase approach suggested in the Feed the Future PBS Sampling Guide. In the first stage, the required clusters and reserves were drawn from the list of baseline sampled clusters, after removing clusters that were identified as ineligible for inclusion in the endline for the reasons mentioned above. In the second stage, the reserve clusters, i.e., eight in each stratum, were selected using the fractional sampling approach.[79]

Second-stage sampling of households: At the second stage of sampling, 30 households were randomly selected per cluster using systematic sampling. Before this selection took place, International Research Consortium of Uganda conducted a listing exercise to identify and count each household in the cluster. GPS coordinates taken during the baseline were used to locate the sampled clusters. During the listing exercise, enumerators collected basic information on the household, including the name and age of the household head, the name of the spouse, the number of household members, and a telephone number, if available. GPS coordinates for each cluster were taken from a commonly accepted central point in the cluster. GPS coordinates were also taken for each surveyed household to facilitate locating sampled households during the main data collection. At the end of the listing exercise, International Research Consortium of Uganda submitted to TANGO a file of the sampled EAs with the GPS information, similar to the file provided at baseline.

As at baseline, a household for the purpose of endline household survey is defined as follows:

- A person or group of people who live together and share meals ("eating from the same pot").

This is not the same as a family. A family includes people who are related, but a household includes any people who live together, whether or not they are related. For example, three unrelated men who live and cook meals together would not be considered one family, but they would be considered one household.

For men with more than one wife (polygamous situations), households are treated in accordance with the definition below:

- If the wives live in the same homestead (dwelling structures and adjoining land occupied by family members) and share the same eating arrangements, they are treated as the same

[77] In the CRS/Nuyok strata, six clusters were excluded: four were not part of implementation, people moved out of one cluster due to a game reserve, and people moved out from another cluster due to security reasons.
[78] The sampling frame for each RFSA was sorted by district prior to the PPS sampling procedure.
[79] The eight reserve EAs selected in the second phase are numbered 1 through 8 in the order in which they were randomly sampled to define the sequence of their release. If only one reserve EA is needed, the reserve EA labeled "number 1" replaces the first EA from among the original EAs that cannot be accessed. Inaccessible EAs are replaced with reserve EAs using this approach as needed to achieve the overall number of required EAs for each strata. For additional details see: https://www.fantaproject.org/sites/default/files/resources/FTF-PBS-Sampling%20Guide-Apr2018.pdf

household. If the wives live independently and do not share the same eating arrangements, they are treated as separate households.

As noted in the preceding paragraph, these definitions were the same for the baseline survey.

Third-stage selection of individuals within sampled households: The household roster was completed at the beginning of the interview, thus identifying all members of the selected household. The selection of individuals within households depends on the questionnaire module (see next section) for which individuals are eligible. The protocol for the selection of individuals within households (and their potential proxy respondents) was as follows:

- For the modules requiring data about the household (C, CC, F, H, and P), no individuals are sampled since the household is the sampling unit. The head of household, spouse, or the adult most knowledgeable about the module topic (e.g., the adult responsible for food preparation, for the module on food security or food consumption expenditures) is eligible to respond to these modules.
- For the children's module (D), and anthropometry, measures were collected for all eligible children. The mother or caregiver of the selected CU5 was interviewed as a proxy respondent. For questions related to children's feeding practices, all children under 24 months were selected. The mother or caretaker of the eligible children (i.e., all children under 24 months) was interviewed as a proxy respondent.
- For the woman's module (E), all women between the ages of 15-49 were selected. No proxy respondents were allowed. For women's anthropometry, only non-pregnant women were measured.
- For the agricultural module (G), all farmers within the household who have ownership or decision-making power over all plots of land and/or livestock that are part of the "farm" were interviewed. If a farmer migrated for an extended period to work outside of the household, the spouse and/or another responsible adult farmer who could answer the agricultural questions was interviewed as a proxy respondent.
- For the gender modules (J and K), all cash earners that are married or in a union and all parents of children under two years of age that are married or in a union were interviewed. No proxy respondents were allowed.

1.2 PBS Survey Modules

The PBS data collection tool consists of the following 15 modules:

- Module A: Household identification and informed consent
- Module B: Household roster
- Module C: Household food security
- Module CC: Mobility, local government responsiveness
- Module D1: Children's nutritional status and feeding practices
- Module D2. Diarrhea and oral rehydration therapy
- Module E: Women's nutrition, breastfeeding and antenatal care
- Module F: Water, sanitation, and hygiene
- Module G: Agriculture
- Module H: Poverty

- Module J: Gender – Cash
- Module K: Gender – Maternal and Child Health and Nutrition (MCHN)
- Module L. Gender – Household decision-making, access to credit and group participation
- Module R: Resilience
- Module P: Activity participation (endline only)

1.3 Methodological Revisions to Indicator Calculations

Several baseline resilience indicator estimates were updated at endline due to two broad issues: i) data loss during endline data collection, primarily in Module L; and ii) corrections made based on the review of methodological guidance. Following is a list of the indicators affected, detailed description of the revisions, and reasons for the revisions.

Proportion of households participating in group-based savings, micro-finance or lending:

- ***Issue 1:*** Review of the Performance Indicator Reference Sheet (PIRS) for this indicator states that the denominator should include all surveyed households with relevant data. The denominator for the baseline estimate was limited to respondents who indicated that credit/microfinance or savings groups existed in the community (LM4.04=Yes or LF4.04=Yes).[80]
- ***Issue 2:*** Roughly one-half of the households surveyed at endline do not have data for Module L (LM/LF). Although field teams interviewed all members in all households that were eligible for Module L, an error in endline CSPro programming resulted in only data for men and women in households with children under two being retained (see discussion in Sec. 2.8).
- ***Result:*** The baseline indicator was revised in accordance with PIRS and the endline indicator was calculated accordingly to include in the denominator all households with relevant data. The comparability of the baseline and endline estimates for the indicator is affected by the fact that the endline estimate is based on a subsample of the eligible population rather than on the entire population (which is what this indicator intended to measure).

Absorptive capacity index:

- ***Issue 1:*** The calculation of the *access to informal safety nets* sub-indicators of the absorptive capacity index was impacted by the Module L data loss at endline.[81]
- ***Issue 2:*** Module L data loss impacted the *shock preparedness and mitigation* sub-indicator to a lesser extent (only one of three dimensions was impacted, requiring a revision only to the affected dimension, and not a full loss of the dimension).
- ***Result:*** Due to the data loss, including the *informal safety nets* sub-indicator in the absorptive capacity index at endline would result in losing roughly one-half the sample for this index estimate at endline. The baseline estimate for the index was thus revised to exclude the *access to informal safety nets* sub-indicator. The endline estimate was calculated accordingly. The exclusion of *informal safety nets* from the absorptive capacity index allows for the retention of the full sample at endline for this index and thus full comparability of the baseline and endline estimates. Removing *informal safety nets* from the index contributed to a slight downward

[80] LM refers to Module L male respondent; LF refers to Module L female respondent.
[81] Comparability of baseline and endline estimates of the *informal safety nets* sub-indicator was also compromised by the loss of Module L data; estimates are reported in Annexes A6.1 and A6.2.

revision of the baseline estimate. The revision of the calculation of the *shock preparedness and mitigation* sub-indicator contributed to a small decrease in the baseline estimate.

Adaptive capacity index:

- ***Issue 1:*** At baseline, women's literacy – one of three dimensions of the *access to education and training* sub-indicators of the adaptive capacity index – was calculated using data from questions related to the Probability of Poverty Index (PPI) (custom indicators module). PPI was only reported for the Uganda DFSA 2018 endline; it was not reported in the 2018 RFSA baseline, thus this information was not collected in the 2023 endline survey.
- ***Result:*** The baseline estimate for the adaptive capacity index was recalculated to include a revised version of the *access to education and training* sub-indicator, dropping *women's literacy* so that the sub-indicator includes two dimensions instead of three. The endline *access to education and training* sub-indicator and adaptive capacity index were calculated accordingly. The revision facilitates full comparability of the baseline and endline estimates for both the sub-indicator and the index. The revised calculations yield a slight decrease in baseline values for *access to education and training* and a slight increase in the value for the adaptive capacity index.

Transformative capacity index:

- ***Issue 1:*** The calculation of the *participation in local decision-making* and *access to natural resources* sub-indicators of the transformative capacity index was impacted by the Module L data loss at endline.[82]
- ***Issue 2:*** The baseline calculation of the *access to agricultural extension* and *access to livestock services* sub-indicators errantly coded missing values as equal to achievement for those sub-indicators.
- ***Issue 3:*** At baseline, the *bridging social capital* and *local government responsiveness* sub-indicators had negative factor loadings (index weights), which according to methodological guidance, requires exclusion of those sub-indicators from the index calculation. The baseline estimate included the two sub-indicators with negative loadings when they should have been omitted. If retained, any improvement in either of the sub-indicators would cause the estimate of the transformative capacity index to decrease between baseline and endline due to the negative weights of those two sub-indicators.
- ***Result:*** The baseline estimate of the transformative capacity index was revised as follows: i) excluded *participation in local decision-making* and *access to communal natural resources* sub-indicators due to endline sample loss; ii) recalculated *access to agricultural extension* and *access to livestock services* sub-indicators correctly; and iii) excluded *bridging social capital* and *local government responsiveness* due to their negative weights. The revised baseline transformative capacity index estimate better aligns it with methodological guidance, corrects baseline coding errors, and facilitates full comparability of baseline and endline estimates (due to removal of sub-indicators that experienced data loss at endline). The revised calculations yield lower baseline estimates for both *access to agricultural extension* and *access to livestock services*. The revised baseline estimate for transformative capacity index is also lower than the original estimate.

[82] Comparability of baseline and endline estimates of *participation in local decision-making* and *communal natural resources* sub-indicators was also compromised by the loss of Module L data; these estimates are reported in Annex 6.

2. QUALITATIVE METHODOLOGY

2.1 Qualitative Sample: Site Selection

The evaluation team selected sites for qualitative data collection (KIIs and FGDs) from the same clusters visited for the quantitative survey. The qualitative sample sites were drawn purposively to ensure representation across the following criteria: i) range of RFSA interventions, ii) urban and rural settings or distance to the nearest market, ii) livelihood zones, and (iv) climatic and agroecological areas. The evaluation team shared the draft site sample with the recipient to solicit information on whether the selected sites were high, average or low intensity (i.e., indicating the concentration of activities at each site), and finalized the sample to ensure a range of program activity levels was represented, and that all program activities were reflected in the overall sample.

2.2 Qualitative Sample: Participant Selection

To select KII and FGD participants, the evaluation team developed a matrix listing the key activities for each project purpose, the relevant potential key informants/stakeholders for each activity, and the primary beneficiaries for each activity. The team sought to represent all categories of these informants in KII and/or FGDs and coordinated with the recipient and partners to develop a field plan that would optimize access to these individuals within the available timeframe and budget. Specific KII participants were selected purposively for each project purpose/sub purpose from a list of project staff that was compiled at the project and district levels. FGD participants were also selected purposively for each purpose/sub-purpose at the parish and village levels: they were mobilized by former project staff in close collaboration and consultation with local council chairpersons and Village Health Teams for MCGs, WUCs, home improvement campaigns, etc. FGD members were selected based on their participation in different project activities, including different types of participation such as mobilization and training, and on their availability to participate in interviews during the fieldwork period. While the evaluation team provided guidance and accompaniment in the process of selecting FGD participants, there is still some possibility of selection bias given local stakeholders' familiarity with project participants; moreover, given that most FGD participants had direct rather than indirect or no experience with the project, the perspectives gathered are more representative of direct participants than of other community members. KIIs and FGDs were conducted with different study participants from the household survey to avoid respondent fatigue.

The Evaluation Protocol called for 60-70 KIIs and 45 FGDs by the field team. Ultimately the field team conducted 58 KIIs and 45 FGDs (additional KIIs were conducted by the TANGO evaluator). The field team's KII count fell slightly short of the target envisioned in the protocol for various reasons, mainly: illness of the informant or the informant's child; the informant's being offline during the scheduled time or generally; the informant's "no show" at the scheduled time (or repeated rescheduling that did not come to fruition); and the informant's non-response to repeated attempts to contact them. Given the richness, volume, and high quality of the primary data collected, conducting fewer KIIs than planned is

not viewed as a limitation to the evaluation – rather, a “saturation point” of qualitative data was readily reached given the depth and breadth of the data collected.

ANNEX 4: KEY INFORMANT INTERVIEWS CONDUCTED

Table 4.1 Key informant interviews conducted - Nuyok

	District	Organization	Role	Position	Number of Participants	
					Male	Female
1	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	Nuyok Coordinator	1	0
2	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	Livelihood Programme Manager	1	0
3	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	Resilience Programme Manager	1	0
4	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	Health and Nutrition PM	1	0
5	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	Nutrition Officer	1	0
6	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	WASH Programme Manager	1	0
7	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	MEAL Programme Manager	1	0
8	Nakapiripirit	Caritas Moroto Diocese	Project staff	SILC Supervisor	1	0
9	Nakapiripirit	Caritas Moroto Diocese	Project staff	Community Supervisor	1	0
10	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	Agronomist	1	0
11	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	NRM Officer	1	0
12	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	DRR Officer	0	1
13	Nakapiripirit/Nabilatuk	Caritas Moroto Diocese	Project staff	Health Systems Strengthening Officer	1	0
14	Napak	Caritas Moroto Diocese	Project staff	Community Planning Officer/SIL Lotome	1	0
15	Napak	Caritas Moroto Diocese	Project staff	Gender Officer SIL Nabwal/Irriri	0	1
16	Napak	Caritas Moroto Diocese	Project staff	Resilience Program Manager	1	0
17	Napak	Caritas Moroto Diocese	Project staff	WASH Officer / SIL Ngoleriet	1	0
18	Napak	Caritas Moroto Diocese	Project staff	Health systems s officer/SIL	1	0
19	Napak	Caritas Moroto Diocese	Project staff	BDS Program Manager /SIL Matany	0	1

	District	Organization	Role	Position	Number of Participants	
					Male	Female
20	Napak	Caritas Moroto Diocese	Project staff	Livelihoods Program Manager	0	1
21	Napak	Caritas Moroto Diocese	Project staff	SILC Supervisor/SIL Lokopo	1	0
22	Napak	Caritas Moroto Diocese	Project staff	WASH Program Manager	1	0
23	Napak	Caritas Moroto Diocese	Project staff	NRM Officer	0	1
24	Napak	Caritas Moroto Diocese	Project staff	Agronomist	1	0
25	Napak	Caritas Moroto Diocese	Project staff	Nutritionist	1	0
26	Kampala	Caritas Kotido Diocese (CKD)	Project staff	Health, Nutrition & WASH Manager	0	1
27	Abim	Caritas Kotido Diocese (CKD)	Project staff	SIL	0	1
28	Kotido	Caritas Kotido Diocese (CKD)	Project staff	Program Coordinator-Nuyok/ Head of Programs	0	1
29	Kapchorwa	Caritas Kotido Diocese (CKD)	Project staff	Nutritionist-Nuyok	0	1
30	Abim	Caritas Kotido Diocese (CKD)	Project staff	WASH Officer	1	0
31	Gulu	Caritas Kotido Diocese (CKD)	Project staff	Agronomist	1	0
32	Abim	Caritas Kotido Diocese (CKD)	Project staff	Natural Resource Mgt Officer	1	0
33	Abim	Caritas Kotido Diocese (CKD)	Project staff	Disaster Reduction Officer	1	0
34	Abim	Caritas Kotido Diocese (CKD)	Project staff	Community Supervisor	0	1
35	Bukedea	Caritas Kotido Diocese (CKD)	Project staff	Gender Officer	1	0
36	Abim	Government of Uganda	District level	District Agriculture Officer	1	0
37	Abim	Government of Uganda	Sub county level	Agriculture extension officers and heads of agriculture	1	0
38	Abim	Government of Uganda	District level	District Community Development Officer	1	0
39	Abim	Government of Uganda	Sub county level	Sub county Chief	0	1

	District	Organization	Role	Position	Number of Participants	
					Male	Female
40	Abim	Government of Uganda	District level	District Health Officer	1	0
41	Abim	Government of Uganda	Parish level	Community-based monitors	2	1
42	Abim	Government of Uganda	Parish level	Members of SILC/SILC Leaders	1	1
43	Abim	Government of Uganda	Sub county level	Sub-county health assistant	1	0
44	Nakapiripirit	Government of Uganda	District level	District Agriculture Officer	1	0
45	Nakapiripirit	Government of Uganda	Sub county level	Agriculture extension officers and heads of agriculture	1	0
46	Nakapiripirit	Government of Uganda	District level	District Community Development Officer	1	0
47	Nakapiripirit	Government of Uganda	Subcounty level	Subcounty Chief	0	1
48	Nakapiripirit	Government of Uganda	District level	District Health Officer	0	1
49	Nakapiripirit	Government of Uganda	Parish level	Community-based monitors	1	1
50	Nakapiripirit	Government of Uganda	Parish level	Members of SILC/SILC Leaders	0	2
51	Nakapiripirit	Government of Uganda	Sub county level	Sub-county health assistant	0	1
52	Napak	Government of Uganda	Sub county level	Agriculture extension officers and heads of agriculture	0	1
53	Napak	Government of Uganda	District level	District Community Development Officer	1	0
54	Napak	Government of Uganda	Sub county level	Sub county Chief	1	0
55	Napak	Government of Uganda	District level	District Health Officer	1	0
56	Napak	Government of Uganda	District level	District Water Officer/Environment Officer	1	0
57	Napak	Government of Uganda	Parish level	Community-based monitors	1	0
58	Napak	Government of Uganda	Sub county level	Sub-county health assistant	1	0
59	Kampala	CRS	Nuyok staff	Chief of Party	1	

	District	Organization	Role	Position	Number of Participants	
					Male	Female
60	Kampala	CRS	Nuyok staff	Deputy Chief of Party	1	
61	Nairobi	CRS	Nuyok staff	MEAL officer	**1**	
62	Kampala	CRS	Nuyok staff	Health & Nutrition Technical Advisor		1
63	Moroto	CRS	Nuyok staff	WASH Technical Advisor	1	
64	Kampala	CRS	Nuyok staff	Gender and Youth Advisor		1
				Total	**47 M**	**22 F**

Note: Three KIIs were conducted as group interviews; this resulted in a respondent count higher than the total number of KIIs.

ANNEX 5: FOCUS GROUPS CONDUCTED

Table 5.1 Focus Groups Conducted – Nuyok

	District	County	Sub-county	Respondent Category	Number of Participants	
					Male	Female
1	Abim	Labwor	Abim	Members of MCG and MCHN beneficiaries	0	11
2	Abim	Labwor	Abim	Members of WUC/WPMs	6	3
3	Abim	Labwor	Abim	Female and male household heads	4	8
4	Abim	Labwor	Abim	Members of SILC/SILC Leaders	1	10
5	Abim	Labwor	Abim	Male change agents	9	0
6	Abim	Labwor	Abim	Male and female youth	6	3
7	Abim	Labwor	Alerek	Livestock producers	8	3
8	Abim	Labwor	Alerek	Lead Farmers	6	7
9	Abim	Labwor	Alerek	Mother Care Group/Lead mothers	0	10
10	Abim	Labwor	Alerek	HIC cluster members	2	8
11	Abim	Labwor	Alerek	Members of WUC/WPMs	6	4
12	Abim	Labwor	Alerek	Female and male household heads	4	8
13	Abim	Labwor	Alerek	Member of SILC	4	8
14	Abim	Labwor	Alerek	Male Change Agents	8	0
15	Abim	Labwor	Alerek	Male and female youth	2	8
16	Nakapiripirit	Chekwii	Loregae	Mother Care Group/Lead mothers	0	12
17	Nakapiripirit	Chekwii	Loregae	Members of WUC/WPMs	5	5
18	Nakapiripirit	Chekwii	Loregae	Female and male household heads	5	5
19	Nakapiripirit	Chekwii	Loregae	Members of SILC	1	10
20	Nakapiripirit	Chekwii	Loregae	Male change agents	4	0
21	Nakapiripirit	Chekwii	Loregae	Male and female youth	5	5
22	Nakapiripirit	Chekwii	Namalu	Livestock producers	6	1
23	Nakapiripirit	Chekwii	Namalu	Lead Farmers	4	3
24	Nakapiripirit	Chekwii	Namalu	Mother Care Group/Lead mothers	0	9

	District	County	Sub-county	Respondent Category	Number of Participants	
					Male	Female
25	Nakapiripirit	Chekwii	Namalu	HIC cluster members	3	4
26	Nakapiripirit	Chekwii	Namalu	Members of WUC/WPMs	5	2
27	Nakapiripirit	Chekwii	Namalu	Female and male household heads	5	7
28	Nakapiripirit	Chekwii	Namalu	Members of SILC	6	2
29	Nakapiripirit	Chekwii	Namalu	Male change agents	7	0
30	Nakapiripirit	Chekwii	Namalu	Male and female youth	3	4
31	Napak	Bokora	Lotome	Mother Care Group/Lead mothers	0	10
32	Napak	Bokora	Lotome	Members of WUC/WPMs	6	4
33	Napak	Bokora	Lotome	Female and male household heads	1	8
34	Napak	Bokora	Lotome	Members of SILC	2	7
35	Napak	Bokora	Lotome	Male Change Agents	6	0
36	Napak	Bokora	Lotome	Male and female youth	2	6
37	Napak	Bokora	Matany	Livestock producers	7	2
38	Napak	Bokora	Matany	Farmers	3	8
39	Napak	Bokora	Matany	Mother Care Group/Lead mothers	0	9
40	Napak	Bokora	Matany	HIC cluster members	2	5
41	Napak	Bokora	Matany	Members of WUC/WPMs	5	2
42	Napak	Bokora	Matany	Female and male household heads	2	9
43	Napak	Bokora	Matany	Members of SILC	1	8
44	Napak	Bokora	Matany	Male change agents	4	0
45	Napak	Bokora	Matany	Male and female youth	2	5
				Total	**168 M**	**243 F**

ANNEX 6: INDICATOR TABLES

See next page.

Table A6.1. BHA Uganda Endline Indicators [Nuyok RFSA, Uganda, 2018, 2023]								
Indicators, 95% Confidence Intervals and Base Population								
		Confidence interval		Number of	Weighted	Standard	Standard	
	Indicator value	Lower	Upper	records	population	deviation	error	DEFT[6]
FOOD SECURITY INDICATORS								
Average Household Dietary Diversity Score (HDDS)	3.5	3.0	4.0	744	57,436	1.9	0.23	3.4
Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES) one year recall	95.7	93.8	97.6	742	57,308	16.4	0.93	1.5
Males and female adults	95.8	93.5	98.0	543	42,257	16.0	1.09	1.6
Adult female, no adult male	97.0	94.8	99.3	169	12,716	13.4	1.10	1.1
Adult male, no adult female	87.8	74.4	101.2	30	2,335	30.5	6.46	1.2
Child, no adults								
POVERTY INDICATORS								
Per-capita expenditures (as a proxy for income) of USG assisted areas	$1.00	$.78	$1.22	760	318,056	$.85	0.11	3.5
Males and female adults	$1.02	$.78	$1.25	564	263,629	$.81	0.11	3.3
Adult female, no adult male	$.86	$.68	$1.04	166	47,887	$.88	0.09	1.3
Adult male, no adult female	$1.34	$.89	$1.80	30	6,540	$1.63	0.22	0.7
Child, no adults								
Prevalence of poverty: Percentage of people living on less than $1.90 per day	85.1	77.4	92.8	760	318,056	35.7	3.71	2.9
Males and female adults	84.4	75.7	93.1	564	263,629	34.3	4.19	2.9
Adult female, no adult male	89.3	82.1	96.5	166	47,887	37.3	3.46	1.2
Adult male, no adult female	80.6	62.1	99.0	30	6,540	54.9	8.85	0.9
Child, no adults								
Depth of Poverty: Mean percentage shortfall relative to the $1.90 poverty line	48.5	39.3	57.7	760	318,056	30.7	4.41	4.0
Males and female adults	47.8	38.2	57.4	564	263,629	29.0	4.61	3.8
Adult female, no adult male	54.0	46.4	61.7	166	47,887	35.9	3.69	1.3
Adult male, no adult female	37.4	18.4	56.5	30	6,540	43.1	9.16	1.2
Child, no adults								
Depth of poverty of the poor: Mean percentage shortfall relative to the $1.90 poverty line	57.0	50.7	63.3	640	270,539	24.9	3.02	3.1
Males and female adults	56.6	50.1	63.1	478	222,514	23.3	3.11	2.9
Adult female, no adult male	60.5	55.0	66.0	143	42,757	29.2	2.66	1.1
Adult male, no adult female				19				
Child, no adults								

Table A6.1. BHA Uganda Endline Indicators [Nuyok RFSA, Uganda, 2018, 2023]								
Indicators, 95% Confidence Intervals and Base Population								
		Confidence interval		Number of	Weighted	Standard	Standard	
	Indicator value	Lower	Upper	records	population	deviation	error	DEFT[6]
WASH INDICATORS								
Percentage of households using an improved drinking water source	52.4	44.8	60.0	782	60,895	50.0	3.64	2.0
Available on premises	3.6	0.9	6.4	782	60,895	18.6	1.32	2.0
Available in 30 minutes or less (round trip)	41.4	33.1	49.7	782	60,895	49.3	4.00	2.3
Available in more than 30 minutes (round trip)	7.4	3.8	11.0	782	60,895	26.2	1.71	1.8
Percentage of households practicing correct use of recommended household water treatment technologies	9.4	6.0	12.8	782	60,895	29.2	1.63	1.6
Chlorination	0.0			782	60,895	0.0		0.0
Flocculent/Disinfectant	0.2	-0.2	0.6	782	60,895	4.6	0.20	1.3
Filtration	0.8	0.1	1.5	782	60,895	9.0	0.35	1.1
Solar	0.1	-0.1	0.2	782	60,895	2.6	0.07	0.7
Boiling	8.8	5.7	11.9	782	60,895	28.4	1.48	1.5
Percentage of households that can obtain drinking water in less than 30 minutes (round trip)	60.8	52.5	69.1	782	60,895	48.8	3.99	2.3
Percentage of households with access to a basic sanitation facility	7.9	3.3	12.5	782	60,895	27.0	2.20	2.3
Male and female adults	8.8	4.0	13.7	580	45,622	28.2	2.33	2.0
Adult female, no adult male	5.6	1.0	10.2	171	12,888	23.3	2.22	1.2
Adult male, no adult female	3.1	-3.3	9.5	31	2,385	17.4	3.09	1.0
Child, no adults								
Percentage of households in target areas practicing open defecation	63.8	47.9	79.8	782	60,895	48.1	7.69	4.5
Percentage of households with soap and water at a handwashing station commonly used by family members	1.6	0.3	2.9	782	60,895	12.6	0.63	1.4
AGRICULTURAL INDICATORS								
Percentage of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	41.6	30.1	53.2	969	82,985	49.3	5.57	3.5
Male	47.1	36.5	57.6	455	38,733	50.1	5.06	2.2
Female	36.9	23.8	50.0	514	44,252	48.1	6.29	3.0
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	31.1	23.6	38.6	969	82,985	46.3	3.61	2.4
Male	35.6	28.0	43.2	455	38,733	48.0	3.65	1.6
Female	27.2	17.8	36.7	514	44,252	44.4	4.53	2.3
Percentage of farmers who used at least 3 sustainable agriculture (crop, livestock, and NRM) practices and/or technologies in the past 12 months	36.2	26.6	45.8	969	82,985	48.1	4.61	3.0
Male	41.5	30.6	52.4	455	38,733	49.5	5.24	2.3
Female	31.5	22.6	40.5	514	44,252	46.4	4.32	2.1

Table A6.1. BHA Uganda Endline Indicators [Nuyok RFSA, Uganda, 2018, 2023]								
Indicators, 95% Confidence Intervals and Base Population								
		Confidence interval		Number of	Weighted	Standard	Standard	
	Indicator value	Lower	Upper	records	population	deviation	error	DEFT[6]
Percentage of farmers who used at least 3 sustainable crop practices and/or technologies in the past 12 months	22.6	17.8	27.3	969	82,985	41.8	2.27	1.7
Male	26.8	20.3	33.4	455	38,733	44.5	3.16	1.5
Female	18.8	14.2	23.5	514	44,252	39.0	2.24	1.3
Percentage of farmers who used at least 3 sustainable livestock practices and/or technologies in the past 12 months	7.1	3.3	10.9	969	82,985	25.7	1.84	2.2
Male	9.5	5.2	13.7	455	38,733	29.4	2.05	1.5
Female	5.0	1.6	8.5	514	44,252	21.8	1.66	1.7
Percentage of farmers who used at least 2 sustainable NRM practices and/or technologies in the past 12 months	4.3	2.0	6.5	969	82,985	20.2	1.07	1.6
Male	4.7	2.2	7.2	455	38,733	21.2	1.22	1.2
Female	3.9	1.5	6.3	514	44,252	19.3	1.15	1.4
Percentage of farmers who used improved storage practices in the past 12 months	36.2	26.8	45.7	969	82,985	48.1	4.54	2.9
Male	41.2	31.9	50.6	455	38,733	49.4	4.49	1.9
Female	31.9	21.4	42.3	514	44,252	46.5	5.04	2.5
WOMEN'S HEALTH AND NUTRITION INDICATORS								
Prevalence of underweight (BMI < 18.5) women of reproductive age	42.7	37.0	48.4	499	40,286	49.5	2.73	1.2
Prevalence of women of reproductive age consuming a diet of minimum diversity	15.9	10.6	21.3	614	53,024	36.6	2.58	1.7
Contraceptive Prevalence Rate	19.8	12.4	27.1	405	35,178	39.9	3.52	1.8
Modern methods	18.8	11.6	26.1	405	35,178	39.1	3.50	1.8
Traditional methods	1.4	-0.4	3.1	405	35,178	11.7	0.83	1.4
Percentage of births receiving at least four antenatal care (ANC) visits during pregnancy	85.1	80.3	90.0	424	34,779	35.6	2.34	1.4
Prevalence of women of reproductive age who consume targeted nutrient-rich commodities	9.3	4.3	14.3	614	53,024	29.0	2.41	2.1
Bio-fortified beans	3.8	0.7	6.9	613	52,982	19.2	1.48	1.9
Bio-fortified maize or sorghum	5.6	2.5	8.6	613	52,982	22.9	1.46	1.6
Orange-flesh sweet potatoes	0.5	-0.1	1.2	613	52,982	7.4	0.30	1.0

Table A6.1. BHA Uganda Endline Indicators [Nuyok RFSA, Uganda, 2018, 2023]								
Indicators, 95% Confidence Intervals and Base Population								
		Confidence interval		Number of	Weighted	Standard	Standard	
	Indicator value	Lower	Upper	records	population	deviation	error	DEFT[6]
CHILDREN'S HEALTH AND NUTRITION INDICATORS								
Prevalence of healthy weight (WHZ ≤ 2 and ≥ -2) among children under five (0-59 months)	85.2	81.5	88.9	722	54,763	35.6	1.77	1.3
Male	83.8	79.2	88.3	329	24,392	37.3	2.19	1.1
Female	86.3	82.2	90.4	393	30,371	34.1	1.97	1.1
Age 0-23 months	83.2	76.9	89.6	304	23,136	37.4	3.05	1.4
Age 24-59 months	86.6	82.4	90.7	418	31,627	34.1	1.99	1.2
Prevalence of underweight children (WAZ < -2) children under five (0-59 months)	28.5	22.8	34.2	726	55,070	45.2	2.76	1.6
Male	31.6	23.2	40.0	331	24,542	47.0	4.05	1.6
Female	26.0	20.9	31.1	395	30,528	43.5	2.45	1.1
Prevalence of stunted children (HAZ < -2) children under five (0-59 months)	35.5	28.8	42.3	726	55,070	47.9	3.24	1.8
Male	41.4	33.2	49.5	331	24,542	49.8	3.92	1.4
Female	30.8	23.7	38.0	395	30,528	45.8	3.43	1.5
Prevalence of wasted children (WHZ < -2) children under five (0-59 months)	13.9	10.1	17.7	722	54,763	34.7	1.82	1.4
Male	14.9	10.0	19.8	329	24,392	36.0	2.37	1.2
Female	13.2	9.0	17.4	393	30,371	33.5	2.03	1.2
Percentage of children under age 5 who had diarrhea in the last two weeks	40.4	35.6	45.3	742	56,210	49.1	2.34	1.3
Male	42.1	33.5	50.7	335	24,807	50.0	4.13	1.5
Female	39.1	34.6	43.7	407	31,403	48.4	2.20	0.9
Percentage of children under age 5 with diarrhea treated with ORT	61.4	53.0	69.8	295	22,726	48.8	4.05	1.4
Male	65.6	54.2	77.0	138	10,439	47.9	5.48	1.3
Female	57.9	45.3	70.4	157	12,287	48.5	6.02	1.6
Prevalence of exclusive breast-feeding of children under six months of age	69.3	51.3	87.4	93	7,149	46.4	8.65	1.8
Male	69.9	49.6	90.2	46	3,251	47.8	9.75	1.4
Female	68.8	49.7	88.0	47	3,897	44.1	9.23	1.4
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	17.1	9.8	24.3	213	16,125	37.7	3.50	1.4
Male	14.5	4.8	24.3	96	6,977	36.1	4.69	1.3
Female	19.0	9.7	28.3	117	9,148	38.5	4.47	1.3
Prevalence of children 6-23 months who consume targeted nutrient-rich commodities	14.2	7.0	21.4	213	16,125	35.0	3.46	1.4
Male	19.7	9.2	30.2	96	6,977	40.8	5.04	1.2
Female	9.9	3.0	16.9	117	9,148	29.4	3.33	1.2
Bio-fortified beans	10.3	4.6	16.1	207	15,691	30.5	2.76	1.3
Bio-fortified maize or sorghum	7.9	0.9	15.0	207	15,691	27.1	3.38	1.8
Orange-flesh sweet potatoes	0.6	-0.3	1.5	207	15,691	7.9	0.42	0.8

Table A6.1. BHA Uganda Endline Indicators [Nuyok RFSA, Uganda, 2018, 2023]								
Indicators, 95% Confidence Intervals and Base Population								
		Confidence interval		Number of	Weighted	Standard	Standard	
	Indicator value	Lower	Upper	records	population	deviation	error	DEFT[6]
GENDER INDICATORS								
Percentage of men and women in union who earned cash in the past 12 months	66.8	59.3	74.3	1,169	93,751	47.1	3.61	2.6
Male	68.3	61.4	75.2	563	44,901	46.4	3.32	1.7
Female	65.4	55.9	74.9	606	48,850	47.1	4.58	2.4
Percentage of women in union and earning cash who report participation in decisions about the use of self-earned cash	82.2	76.9	87.6	360	33,319	38.3	2.57	1.3
Percentage of women in union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	62.1	52.4	71.8	297	27,537	48.6	4.65	1.7
Percentage of men in union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	58.6	53.6	63.5	268	21,933	49.4	2.38	0.8
Percentage of men and women in union with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	85.6	80.0	91.1	391	35,114	35.2	2.67	1.5
Male	75.6	65.8	85.5	157	12,169	46.3	4.74	1.3
Female	90.9	85.4	96.3	234	22,944	27.6	2.62	1.5
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	26.5	17.2	35.7	157	12,169	44.3	4.42	1.3
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	36.8	29.2	44.4	234	22,944	48.3	3.65	1.2
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	50.1	42.0	58.2	157	12,169	50.2	3.87	1.0
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	40.6	35.2	45.9	234	22,944	49.2	2.57	0.8
alone	7.3	1.5	13.0	157	12,169	26.0	2.75	1.3
Percentage of women in union with children under two who make child health and nutrition decisions alone	30.5	19.7	41.3	234	22,944	46.1	5.19	1.7
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	58.9	50.0	67.8	157	12,169	49.4	4.27	1.1
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	51.4	41.8	61.0	234	22,944	50.1	4.62	1.4

Table A6.1. BHA Uganda Endline Indicators [Nuyok RFSA, Uganda, 2018, 2023]

Indicators, 95% Confidence Intervals and Base Population

	Indicator value	Confidence interval		Number of records	Weighted population	Standard deviation	Standard error	DEFT[6]
		Lower	Upper					
RESILIENCE INDICATORS								
Shock exposure index	5.4	5.1	5.7	774	59,958	2.4	0.14	1.7
Cumulative impact of shock exposure index (severity weighted shock exposure)	28.7	27.0	30.4	774	59,958	13.5	0.81	1.7
Ability to recover from shocks and stressors index	3.7	3.4	4.1	635	49,748	1.4	0.18	3.2
Proportion of households participating in group-based savings, micro-finance or lending[1,2]	46.4	35.9	56.9	419	31,057	49.9	5.0	2.1
Index of Social Capital at the household level	60.9	57.7	64.2	774	59,958	26.8	1.57	1.6
Absorptive capacity index[3]	26.4	22.9	30.0	774	59,958	13.9	1.70	3.4
Adaptive capacity index[4]	45.1	40.6	49.5	774	59,958	15.9	2.1	3.8
Transformative capacity index[5]	44.3	32.2	56.4	774	59,958	24.8	5.81	6.5
CUSTOM INDICATORS								
Average rating of government's ability to be responsive to citizens' needs (including transparency, inclusivity, effectiveness) as measured on 12 item scorecard	5.1	4.9	5.3	781	60,829	2.0	0.10	1.4
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	96.0	93.3	98.8	391.0	35113.5	19.5	1.3	1.3
Male	94.2	89.2	99.4	159	12,404	24.8	2.44	1.2
Female	97.0	95.3	99.1	253	24,263	16.0	0.90	0.9

NOTES: Results not reported when n<30.

1. Proportion of households participating in group-based savings, micro-finance or lending: BL estimate revised to include all households with relevant data in the denominator.
2. Due to sample loss, the endline estimate for this indicator is based only on adult female and male households with children under two. In contrast, baseline estimates are derived for all adult female and male households. This difference in the relative composition of households compromises the comparability of baseline and endline estimates for this indicator.
3. Absorptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL necessitated exclusion of the access to informal safety nets sub-indicator and revision of the shock preparedness and mitigation sub-indicator.
4. Adaptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL resulted in revision of the access to education and training sub-indicator.
5. Transformative Index: BL estimate revised to allow for comparability with endline estimate. Data limitations at EL resulted in the exclusion of the participation in local decision making and access to communal natural resources sub-indicators. The access to agricultural extension and access to livestock services sub-indicators were also revised to align better with methodological guidance. The final portion of the revision involved exclusion of the bridging social capital and local government responsiveness sub-indicators from the index, consistent with methodological guidance that requires exclusion of sub-indicators with negative factor loadings.
6. DEFT is the square root of the design effect (DEFF).

Table A6.2. Baseline and Endline Indicator Estimates [Nuyok RFSA, Uganda, 2018, 2023]	Sig. change opposite desired direction		Sig. change in desired direction		No change	
	2018 Baseline	2023 Endline	Difference (EL-BL)[6]	P-value	Number of Observations	
					Baseline	Endline
FOOD SECURITY INDICATORS						
Average Household Dietary Diversity Score (HDDS)	3.1	3.5	0.4	0.070	1,036	744
Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES) one year recall	94.0	95.7	1.7	0.134	1,235	742
Males and female adults	94.3	95.8	1.5	0.244	953	543
Adult female, no adult male	94.1	97.0	2.9	0.048	240	169
Adult male, no adult female	88.0	87.8	-0.2	0.978	42	30
Child, no adults						
POVERTY INDICATORS						
Per-capita expenditures (as a proxy for income) of USG assisted areas	$.99	$1.00	$.01	0.953	1,259	760
Males and female adults	$.98	$1.02	$.04	0.752	974	564
Adult female, no adult male	$.99	$.86	-$.13	0.308	242	166
Adult male, no adult female	$1.88	$1.34	-$.54	0.353	43	30
Child, no adults						
Prevalence of poverty: Percentage of people living on less than $1.90 per day	88.0	85.1	-3.0	0.444	1,259	760
Males and female adults	88.1	84.4	-3.7	0.402	974	564
Adult female, no adult male	89.3	89.3	0.0	0.993	242	166
Adult male, no adult female	71.1	80.6	9.5	0.486	43	30
Child, no adults						
Depth of Poverty: Mean percentage shortfall relative to the $1.90 poverty line	53.0	48.5	-4.5	0.314	1,259	760
Males and female adults	53.3	47.8	-5.6	0.231	974	564
Adult female, no adult male	51.7	54.0	2.3	0.613	242	166
Adult male, no adult female	46.6	37.4	-9.2	0.419	43	30
Child, no adults						
Depth of poverty of the poor: Mean percentage shortfall relative to the $1.90 poverty line	60.2	57.0	-3.2	0.295	1,064	640
Males and female adults	60.5	56.6	-4.0	0.203	839	478
Adult female, no adult male	57.9	60.5	2.7	0.397	208	143
Adult male, no adult female					17	19
Child, no adults						

Table A6.2. Baseline and Endline Indicator Estimates [Nuyok RFSA, Uganda, 2018, 2023]	Sig. change opposite desired direction		Sig. change in desired direction		No change	
	2018 Baseline	2023 Endline	Difference (EL-BL)[6]	P-value	Number of Observations	
					Baseline	Endline
WASH INDICATORS						
Percentage of households using an improved drinking water source	40.4	52.4	12.0	0.020	1,259	782
Available on premises	3.5	3.6	0.1	0.966	1,259	782
Available in 30 minutes or less (round trip)	25.3	41.4	16.1	0.003	1,259	782
Available in more than 30 minutes (round trip)	11.6	7.4	-4.2	0.135	1,259	782
Percentage of households practicing correct use of recommended household water treatment technologies	7.9	9.4	1.6	0.400	1,259	782
Chlorination	2.0	0.0	-2.0	0.013	1,259	782
Flocculent/Disinfectant	0.2	0.2	0.0	0.876	1,259	782
Filtration	1.3	0.8	-0.5	0.431	1,259	782
Solar	0.0	0.1	0.1	0.311	1,259	782
Boiling	5.4	8.8	3.5	0.035	1,259	782
Percentage of households that can obtain drinking water in less than 30 minutes (round trip)	47.8	60.8	13.0	0.024	1,259	782
Percentage of households with access to a basic sanitation facility	6.7	7.9	1.2	0.669	1,259	782
Males and female adults	6.9	8.8	1.9	0.540	974	580
Adult female, no adult male	5.3	5.6	0.2	0.942	242	171
Adult male, no adult female	10.2	3.1	-7.1	0.240	43	31
Child, no adults						
Percentage of households in target areas practicing open defecation	66.9	63.8	-3.1	0.699	1,259	782
Males and female adults	67.9	61.0	-6.9	0.401	974	580
Adult female, no adult male	66.1	75.3	9.3	0.275	242	171
Adult male, no adult female	49.7	55.3	5.6	0.767	43	31
Child, no adults			0.0			
Percentage of households with soap and water at a handwashing station commonly used by family members	3.9	1.6	-2.2	0.193	1,259	782
AGRICULTURAL INDICATORS						
Percentage of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	21.7	41.6	20.0	0.001	1,651	969
Male	21.5	47.1	25.6	0.000	737	455
Female	21.8	36.9	15.1	0.020	914	514
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	35.0	31.1	-3.8	0.384	1,651	969
Male	38.7	35.6	-3.1	0.551	737	455
Female	32.2	27.2	-4.9	0.283	914	514

Table A6.2. Baseline and Endline Indicator Estimates [Nuyok RFSA, Uganda, 2018, 2023]	Sig. change opposite desired direction		Sig. change in desired direction		No change	
	2018 Baseline	2023 Endline	Difference (EL-BL)[6]	P-value	Number of Observations	
					Baseline	Endline
Percentage of farmers who used at least 3 sustainable agriculture (crop, livestock, and NRM) practices and/or technologies in the past 12 months	41.7	36.2	-5.5	0.259	1,651	969
Male	46.0	41.5	-4.4	0.429	737	455
Female	38.6	31.5	-7.0	0.178	914	514
Percentage of farmers who used at least 3 sustainable crop practices and/or technologies in the past 12 months	34.1	22.6	-11.5	0.001	1,651	969
Male	36.4	26.8	-9.6	0.021	737	455
Female	32.3	18.8	-13.5	0.001	914	514
Percentage of farmers who used at least 3 sustainable livestock practices and/or technologies in the past 12 months	8.1	7.1	-1.0	0.606	1,651	969
Male	11.8	9.5	-2.3	0.366	737	455
Female	5.3	5.0	-0.3	0.862	914	514
Percentage of farmers who used at least 2 sustainable NRM practices and/or technologies in the past 12 months	2.6	4.3	1.7	0.249	1,651	969
Male	3.2	4.7	1.6	0.368	737	455
Female	2.2	3.9	1.7	0.253	914	514
Percentage of farmers who used improved storage practices in the past 12 months	50.5	36.2	-14.3	0.002	1,651	969
Male	48.0	41.2	-6.7	0.115	737	455
Female	52.4	31.9	-20.5	0.000	914	514
WOMEN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of underweight (BMI < 18.5) women of reproductive age	38.6	42.7	4.1	0.204	872	499
Prevalence of women of reproductive age consuming a diet of minimum diversity	12.5	15.9	3.4	0.282	1,062	614
Contraceptive Prevalence Rate	14.5	19.8	5.2	0.188	636	405
Modern methods	14.2	18.8	4.6	0.235	636	405
Traditional methods	0.4	1.4	1.0	0.251	636	405
Percentage of births receiving at least four antenatal care (ANC) visits during pregnancy	77.9	85.1	7.2	0.007	746	424
Prevalence of women of reproductive age who consume targeted nutrient-rich commodities	6.7	9.3	2.6	0.370	1,062	614
Bio-fortified beans	1.6	3.8	2.2	0.130	1,062	613
Bio-fortified maize or sorghum	5.0	5.6	0.6	0.768	1,062	613
Orange-flesh sweet potatoes	1.3	0.5	-0.7	0.358	1,062	613

Table A6.2. Baseline and Endline Indicator Estimates [Nuyok RFSA, Uganda, 2018, 2023]	Sig. change opposite desired direction		Sig. change in desired direction		No change	
	2018 Baseline	2023 Endline	Difference (EL-BL)[6]	P-value	Number of Observations	
					Baseline	Endline
CHILDREN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of healthy weight (WHZ ≤ 2 and ≥ -2) among children under five (0-59 months)	87.6	85.2	-2.4	0.239	1,188	722
Male	86.7	83.8	-2.9	0.261	590	329
Female	88.4	86.3	-2.1	0.372	598	393
Age 0-23 months	83.5	83.2	-0.2	0.946	461	304
Age 24-59 months	89.9	86.6	-3.3	0.172	727	418
Prevalence of underweight children (WAZ < -2) children under five (0-59 months)	27.8	28.5	0.7	0.794	1,196	726
Male	34.8	31.6	-3.2	0.438	595	331
Female	21.3	26.0	4.7	0.143	601	395
Prevalence of stunted children (HAZ < -2) children under five (0-59 months)	35.7	35.5	-0.1	0.968	1,186	726
Male	42.7	41.4	-1.4	0.706	589	331
Female	29.2	30.8	1.6	0.698	597	395
Prevalence of wasted children (WHZ < -2) children under five (0-59 months)	11.5	13.9	2.4	0.252	1,188	722
Male	11.7	14.9	3.2	0.244	590	329
Female	11.4	13.2	1.8	0.450	598	393
Percentage of children under age 5 who had diarrhea in the last two weeks	31.6	40.4	8.8	0.003	1,264	742
Male	31.6	42.1	10.5	0.029	624	335
Female	31.7	39.1	7.4	0.007	640	407
Percentage of children under age 5 with diarrhea treated with ORT	83.3	61.4	-21.9	0.000	400	295
Male	82.3	65.6	-16.8	0.009	197	138
Female	84.2	57.9	-26.3	0.000	203	157
Prevalence of exclusive breast-feeding of children under six months of age	72.6	69.3	-3.3	0.743	135	93
Male	82.7	69.9	-12.8	0.284	61	46
Female	65.4	68.8	3.4	0.768	74	47
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	6.6	17.1	10.4	0.018	355	213
Male	5.6	14.5	8.9	0.101	180	96
Female	7.6	19.0	11.4	0.038	175	117
Prevalence of children 6-23 months who consume targeted nutrient-rich commodities	8.6	14.2	5.6	0.163	355	213
Male	11.6	19.7	8.1	0.186	180	96
Female	5.6	9.9	4.3	0.280	175	117
Bio-fortified beans	2.2	10.3	8.2	0.009	319	207
Bio-fortified maize or sorghum	7.5	7.9	0.5	0.898	319	207
Orange-flesh sweet potatoes	2.5	0.6	-1.9	0.375	319	207

Table A6.2. Baseline and Endline Indicator Estimates [Nuyok RFSA, Uganda, 2018, 2023]	Sig. change opposite desired direction		Sig. change in desired direction		No change	
	2018 Baseline	2023 Endline	Difference (EL-BL)[6]	P-value	Number of Observations	
					Baseline	Endline
GENDER INDICATORS						
Percentage of men and women in union who earned cash in the past 12 months	47.4	66.8	19.3	0.001	1,993	1,169
Male	47.2	68.3	21.1	0.000	931	563
Female	47.6	65.4	17.7	0.006	1,062	606
Percentage of women in union and earning cash who report participation in decisions about the use of self-earned cash	86.6	82.2	-4.4	0.135	435	360
Percentage of women in union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	64.8	62.1	-2.7	0.659	299	297
Percentage of men in union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	56.6	58.6	2.0	0.653	359	268
Percentage of men and women in union with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	85.0	85.6	0.6	0.851	664	392
Male	79.0	75.8	-3.2	0.597	269	158
Female	89.4	90.9	1.5	0.661	395	234
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	26.1	26.5	0.4	0.942	269	157
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	45.4	36.8	-8.6	0.084	395	234
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	41.8	50.1	8.3	0.139	269	157
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	36.3	40.6	4.3	0.373	395	234
Percentage of men in union with children under two who make child health and nutrition decisions alone	15.7	7.3	-8.4	0.011	269	157
Percentage of women in union with children under two who make child health and nutrition decisions alone	39.7	30.5	-9.2	0.197	395	234
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	51.1	58.9	7.9	0.121	269	157
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	42.1	51.4	9.3	0.164	395	234

Table A6.2. Baseline and Endline Indicator Estimates [Nuyok RFSA, Uganda, 2018, 2023]	Sig. change opposite desired direction		Sig. change in desired direction		No change	
	2018 Baseline	2023 Endline	Difference (EL-BL)[6]	P-value	Number of Observations	
					Baseline	Endline
RESILIENCE INDICATORS						
Shock exposure index	5.5	5.4	-0.1	0.769	1,251	774
Cumulative impact of shock exposure index (severity weighted shock exposure)	31.9	28.7	-3.3	0.049	1,226	774
Ability to recover from shocks and stressors index	4.1	3.7	-0.4	0.044	1,060	635
Proportion of households participating in group-based savings, micro-finance or lending[1,2]	26.4	46.4	20.0	0.000	1,185	419
Index of Social Capital at the household level	55.4	60.9	5.5	0.059	1,251	774
Absorptive capacity index[3]	20.8	26.4	5.6	0.008	1,251	774
Adaptive capacity Index[4]	39.7	45.1	5.4	0.021	1,251	774
Transformative capacity index[5]	36.2	44.3	8.1	0.116	1,251	774
CUSTOM INDICATORS						
Average rating of government's ability to be responsive to citizens' needs (including transparency, inclusivity, effectiveness) as measured on 12 item scorecard	4.7	5.1	0.4	0.026	1,251	781
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	96.8	96.0	-0.7	0.717	706	391
Male	97.0	94.2	-2.8	0.350	270	157
Female	96.6	97.0	0.4	0.823	436	234

NOTES: Results not reported when n<30. Differences between baseline and endline indicator estimates are considered statistically significant at the p<0.10 level.

1. Proportion of households participating in group-based savings, micro-finance or lending: BL estimate revised to include all households with relevant data in the denominator.

2. Due to sample loss, the endline estimate for this indicator is based only on adult female and male households with children under two. In contrast, baseline estimates are derived for all adult female and male households. This difference in the relative composition of households compromises the comparability of baseline and endline estimates for this indicator.

3. Absorptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL necessitated exclusion of the access to informal safety nets sub-indicator and revision of the shock preparedness and mitigation sub-indicator.

4. Adaptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL resulted in revision of the access to education and training sub-indicator.

5. Transformative Index: BL estimate revised to allow for comparability with endline estimate. Data limitations at EL resulted in the exclusion of the participation in local decision making and access to communal natural resources sub-indicators. The access to agricultural extension and access to livestock services sub-indicators were also revised to align better with methodological guidance. The final portion of the revision involved exclusion of the bridging social capital and local government responsiveness sub-indicators from the index, consistent with methodological guidance that requires exclusion of sub-indicators with negative factor loadings.

6. Targets and desired direction of change are based on the Nuyok IPTT.

Table A6.3. Endline Indicator Estimates for Participant and Non-Participant Households [Nuyok RFSA Uganda, 2023]

					Number of observations	
	Participants	Non-Participants	Difference (participants-non)	P-value	Participants	Non-Participants
FOOD SECURITY INDICATORS						
Average Household Dietary Diversity Score (HDDS)	3.7	3.2	0.5	0.001	373	369
Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES) one year recall	95.0	96.4	-1.4	0.429	371	369
Males and female adults	95.0	96.6	-1.6	0.443	301	242
Adult female, no adult male	94.2	98.7	-4.5	0.109	64	103
Adult male, no adult female					6	24
POVERTY INDICATORS						
Per-capita expenditures (as a proxy for income) of USG assisted areas	$1.13	$.85	$.28	0.000	381	377
Males and female adults	$1.14	$.86	$.28	0.000	314	250
Adult female, no adult male	$1.01	$.77	$.24	0.118	62	102
Adult male, no adult female					5	25
Prevalence of poverty: Percentage of people living on less than $1.90 per day	80.4	90.3	-9.9	0.001	381	377
Males and female adults	80.0	90.2	-10.3	0.001	314	250
Adult female, no adult male	85.5	91.5	-6.0	0.240	62	102
Adult male, no adult female					5	25
Depth of Poverty: Mean percentage shortfall relative to the $1.90 poverty line	43.1	54.6	-11.6	0.000	381	377
Males and female adults	42.6	54.6	-12.0	0.000	314	250
Adult female, no adult male	48.2	57.6	-9.4	0.184	62	102
Adult male, no adult female					5	25
poverty line	53.6	60.5	-6.9	0.004	304	334
Males and female adults	53.3	60.5	-7.2	0.002	253	225
Adult female, no adult male	56.4	63.0	-6.6	0.312	49	92
Adult male, no adult female					2	17

Table A6.3. Endline Indicator Estimates for Participant and Non-Participant Households [Nuyok RFSA Uganda, 2023]

					Number of observations	
	Participants	Non-Participants	Difference (participants-non)	P-value	Participants	Non-Participants
WASH INDICATORS						
Percentage of households using an improved drinking water source	52.7	52.1	0.6	0.905	392	386
Available on premises	3.8	3.5	0.3	0.802	392	386
Available in 30 minutes or less (round trip)	41.1	41.5	-0.4	0.935	392	386
Available in more than 30 minutes (round trip)	7.8	7.2	0.6	0.790	392	386
Percentage of households practicing correct use of recommended household water treatment technologies	11.9	7.1	4.7	0.026	392	386
Chlorination	0.0	0.0	0.0		392	386
Flocculent/Disinfectant	0.3	0.1	0.1	0.333	392	386
Filtration	0.7	0.9	-0.2	0.786	392	386
Solar	0.0	0.1	-0.1	0.323	392	386
Boiling	11.6	6.2	5.4	0.009	392	386
Percentage of households that can obtain drinking water in less than 30 minutes (round trip)	59.8	62.1	-2.3	0.522	392	386
Percentage of households with access to a basic sanitation facility	10.9	5.1	5.8	0.012	392	386
Male and female adults	11.7	5.4	6.3	0.045	321	257
Adult female, no adult male	5.9	5.5	0.4	0.920	65	104
Adult male, no adult female			0.0		6	25
Percentage of households in target areas practicing open defecation	56.3	66.2	-9.9	0.161	321	257
Males and female adults	71.1	78.3	-7.2	0.459	65	104
Adult female, no adult male			0.0		6	25
Adult male, no adult female			0.0			6
Percentage of households with soap and water at a handwashing station commonly used by family members	1.9	1.3	0.6	0.428	392	386
AGRICULTURAL INDICATORS						
Percentage of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	53.1	28.0	25.1	0.000	530	435
Male	54.5	36.8	17.7	0.000	257	196
Female	51.8	21.2	30.7	0.000	273	239
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	39.0	21.6	17.4	0.000	530	435
Male	42.1	26.1	16.0	0.001	257	196
Female	36.0	18.1	17.9	0.007	273	239
Percentage of farmers who used at least 3 sustainable agriculture (crop, livestock, and NRM) practices and/or technologies in the past 12 months	46.1	24.6	21.5	0.000	530	435
Male	50.7	30.3	20.4	0.001	257	196
Female	41.7	20.2	21.5	0.000	273	239

Table A6.3. Endline Indicator Estimates for Participant and Non-Participant Households [Nuyok RFSA Uganda, 2023]

					Number of observations	
	Participants	Non-Participants	Difference (participants-non)	P-value	Participants	Non-Participants
Percentage of farmers who used at least 3 sustainable crop practices and/or technologies in the past 12 months	26.8	17.6	9.2	0.012	530	435
Male	31.4	21.5	9.9	0.093	257	196
Female	22.4	14.5	7.9	0.006	273	239
Percentage of farmers who used at least 3 sustainable livestock practices and/or technologies in the past 12 months	9.8	4.0	5.9	0.021	530	435
Male	11.4	7.1	4.3	0.127	257	196
Female	8.3	1.5	6.8	0.022	273	239
Percentage of farmers who used at least 2 sustainable NRM practices and/or technologies in the past 12 months	6.4	1.8	4.6	0.048	530	435
Male	6.5	2.4	4.0	0.134	257	196
Female	6.3	1.3	5.0	0.038	273	239
Percentage of farmers who used improved storage practices in the past 12 months	41.1	29.8	11.4	0.014	530	435
Male	44.5	36.3	8.3	0.125	257	196
Female	37.9	24.7	13.2	0.013	273	239
WOMEN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of underweight (BMI < 18.5) women of reproductive age	41.1	44.9	-3.8	0.586	280	218
Prevalence of women of reproductive age consuming a diet of minimum diversity	18.2	13.3	4.9	0.314	338	275
Contraceptive Prevalence Rate	20.5	19.0	1.5	0.686	227	177
Modern methods	20.2	17.3	2.9	0.353	227	177
Traditional methods	0.5	2.4	-1.9	0.289	227	177
Percentage of births receiving at least four antenatal care (ANC) visits during pregnancy	84.4	85.9	-1.6	0.719	233	190
Prevalence of women of reproductive age who consume targeted nutrient-rich commodities	11.7	6.4	5.3	0.073	338	275
Bio-fortified beans	5.3	2.0	3.3	0.067	338	274
Bio-fortified maize or sorghum	7.2	3.7	3.5	0.123	338	274
Orange-flesh sweet potatoes	0.4	0.7	-0.4	0.596	338	274

Table A6.3. Endline Indicator Estimates for Participant and Non-Participant Households [Nuyok RFSA Uganda, 2023]

					Number of observations	
	Participants	Non-Participants	Difference (participants-non)	P-value	Participants	Non-Participants
CHILDREN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of healthy weight (WHZ ≤ 2 and ≥ -2) among children under five (0-59 months)	87.2	83.0	4.1	0.260	374	346
Male	86.7	80.7	5.9	0.278	174	155
Female	87.6	84.8	2.9	0.559	200	191
Age 0-23 months	82.1	84.1	-2.0	0.725	162	141
Age 24-59 months	90.9	82.2	8.6	0.051	212	205
Prevalence of underweight children (WAZ < -2) children under five (0-59 months)	28.7	28.1	0.7	0.874	377	347
Male	31.9	31.3	0.7	0.915	175	156
Female	26.0	25.6	0.3	0.942	202	191
Prevalence of stunted children (HAZ < -2) children under five (0-59 months)	37.6	33.4	4.2	0.321	377	347
Male	42.2	40.4	1.8	0.788	175	156
Female	33.5	28.0	5.5	0.256	202	191
Prevalence of wasted children (WHZ < -2) children under five (0-59 months)	12.2	15.8	-3.5	0.314	374	346
Male	12.7	17.2	-4.5	0.407	174	155
Female	11.8	14.7	-2.9	0.536	200	191
Percentage of children under age 5 who had diarrhea in the last two weeks	42.6	38.2	4.4	0.160	387	353
Male	45.7	38.2	7.5	0.168	178	157
Female	39.9	38.2	1.7	0.622	209	196
Percentage of children under age 5 with diarrhea treated with ORT	59.5	64.3	-4.8	0.487	161	133
Male	65.1	66.2	-1.1	0.934	78	60
Female	54.1	62.9	-8.8	0.272	83	73
Prevalence of exclusive breast-feeding of children under six months of age	74.5	64.7	9.8	0.225	47	46
Male	68.5	72.1	-3.6	0.769	28	18
Female	83.4	61.1	22.3	0.088	19	28
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	19.1	15.3	3.8	0.500	116	96
Male	18.2	10.9	7.3	0.327	52	44
Female	19.7	18.9	0.9	0.919	64	52
Prevalence of children 6-23 months who consume targeted nutrient-rich commodities	18.0	10.5	7.5	0.143	116	96
Male	19.7	19.7	0.1	0.994	52	44
Female	16.7	3.1	13.6	0.005	64	52
Bio-fortified beans	12.2	8.6	3.5	0.433	113	93
Bio-fortified maize or sorghum	12.2	3.6	8.6	0.043	113	93
Orange-flesh sweet potatoes	1.2	0.0	1.2	0.138	113	93

Table A6.3. Endline Indicator Estimates for Participant and Non-Participant Households [Nuyok RFSA Uganda, 2023]

					Number of observations	
	Participants	Non-Participants	Difference (participants-non)	P-value	Participants	Non-Participants
GENDER INDICATORS						
Percentage of men and women in union who earned cash in the past 12 months	71.3	61.3	10.0	0.008	646	517
Male	72.9	62.2	10.7	0.012	317	243
Female	69.8	60.5	9.3	0.049	329	274
Percentage of women in union and earning cash who report participation in decisions about the use of self-earned cash	80.8	83.7	-2.9	0.560	210	149
Percentage of women in union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	62.3	61.0	1.3	0.861	172	124
Percentage of men in union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	61.8	54.9	6.9	0.332	156	111
Percentage of men and women in union with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	84.4	86.6	-2.1	0.550	216	174
Male	78.6	72.3	6.4	0.514	88	69
Female	87.6	94.1	-6.4	0.110	128	105
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	27.6	25.2	2.3	0.802	88	69
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	38.0	34.0	4.0	0.587	128	105
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	53.3	46.5	6.7	0.475	88	69
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	39.4	42.9	-3.5	0.664	128	105
Percentage of men in union with children under two who make child health and nutrition decisions alone	4.5	10.4	-5.9	0.220	88	69
Percentage of women in union with children under two who make child health and nutrition decisions alone	28.6	30.7	-2.0	0.836	128	105
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	64.7	52.5	12.2	0.290	88	69
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	54.4	49.5	4.8	0.596	128	105

Table A6.3. Endline Indicator Estimates for Participant and Non-Participant Households [Nuyok RFSA Uganda, 2023]

					Number of observations	
	Participants	Non-Participants	Difference (participants-non)	P-value	Participants	Non-Participants
RESILIENCE INDICATORS						
Shock exposure index	6.0	4.9	1.0	0.000	388	383
Cumulative impact of shock exposure index (severity weighted shock exposure)	30.4	26.9	3.5	0.004	388	383
Ability to recover from shocks and stressors index	3.8	3.7	0.1	0.633	326	307
Proportion of households participating in group-based savings, micro-finance or lending[1,2]	55.9	36.7	19.2	0.004	227	190
Index of Social Capital at the household level	63.0	58.7	4.3	0.031	388	383
Absorptive capacity index[3]	30.6	22.3	8.4	0.000	388	383
Adaptive capacity Index[4]	51.3	39.0	12.3	0.000	388	383
Transformative capacity index[5]	47.7	40.9	6.9	0.047	388	383
CUSTOM INDICATORS						
Average rating of government's ability to be responsive to citizens' needs (including transparency, inclusivity, effectiveness) as measured on 12 item scorecard	5.4	4.9	0.5	0.000	392	386
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	97.4	94.5	2.9	0.220	216	174
Male	97.3	90.7	6.6	0.085	88	69
Female	97.5	96.5	1.0	0.653	128	105

NOTES: Results not reported when n<30. Differences between participants and non-participants are considered statistically significant at the p<0.10 level.

1. Proportion of households participating in group-based savings, micro-finance or lending: BL estimate revised to include all households with relevant data in the denominator.

2. Due to sample loss, the endline estimate for this indicator is based only on adult female and male households with children under two. In contrast, baseline estimates are derived for all adult female and male households. This difference in the relative composition of households compromises the comparability of baseline and endline estimates for this indicator.

3. Absorptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL necessitated exclusion of the access to informal safety nets sub-indicator and revision of the shock preparedness and mitigation sub-indicator.

4. Adaptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL resulted in revision of the access to education and training sub-indicator.

5. Transformative Index: BL estimate revised to allow for comparability with endline estimate. Data limitations at EL resulted in the exclusion of the participation in local decision making and access to communal natural resources sub-indicators. The access to agricultural extension and access to livestock services sub-indicators were also revised to align better with methodological guidance. The final portion of the revision involved exclusion of the bridging social capital and local government responsiveness sub-indicators from the index, consistent with methodological guidance that requires exclusion of sub-indicators with negative factor loadings.

Table A6.4. Indicator Estimates for Participant Households at Endline and Baseline Households
CRS Nuyok RFSA Area [Uganda, 2023]

	2018 Baseline	Endline Participants	Raw diff (participants-BL)	P-val	Number of observations: Baseline	Number of observations: Participants
FOOD SECURITY INDICATORS						
Average Household Dietary Diversity Score (HDDS)	3.1	3.7	0.7	0.007	1,036	373
Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES) one year recall	94.0	95.0	1.0	0.513	1,235	371
Males and female adults	94.3	95.0	0.8	0.640	953	301
Adult female, no adult male	94.1	94.2	0.1	0.970	240	64
Adult male, no adult female	88.0				42	6
Child, no adults						
POVERTY INDICATORS						
Per-capita expenditures (as a proxy for income) of USG assisted areas	$.99	$1.13	0.14	0.286	1,259	381
Males and female adults	$.98	$1.14	0.16	0.248	974	314
Adult female, no adult male	$.99	$1.01	0.02	0.908	242	62
Adult male, no adult female	$1.88				43	5
Child, no adults						
Prevalence of poverty: Percentage of people living on less than $1.90 per day	88.0	80.4	-7.6	0.113	1,259	381
Males and female adults	88.1	80.0	-8.1	0.120	974	314
Adult female, no adult male	89.3	85.5	-3.8	0.457	242	62
Adult male, no adult female	71.1				43	5
Child, no adults						
Depth of Poverty: Mean percentage shortfall relative to the $1.90 poverty line	53.0	43.1	-9.9	0.031	1,259	381
Males and female adults	53.3	42.6	-10.7	0.029	974	314
Adult female, no adult male	51.7	48.2	-3.5	0.467	242	62
Adult male, no adult female	46.6				43	5
Child, no adults						
Depth of poverty of the poor: Mean percentage shortfall relative to the $1.90 poverty line	60.2	53.6	-6.6	0.030	1,064	304
Males and female adults	60.5	53.3	-7.3	0.031	839	253
Adult female, no adult male	57.9	56.4	-1.5	0.684	208	49
Adult male, no adult female					17	2
Child, no adults						

Table A6.4. Indicator Estimates for Participant Households at Endline and Baseline Households
CRS Nuyok RFSA Area [Uganda, 2023]

	2018 Baseline	Endline Participants	Raw diff (participants-BL)	P-val	Number of observations: Baseline	Number of observations: Participants
WASH INDICATORS						
Percentage of households using an improved drinking water source	40.4	52.7	12.3	0.039	1,259	392
Available on premises	3.5	3.8	0.3	0.877	1,259	392
Available in 30 minutes or less (round trip)	25.3	41.1	15.8	0.019	1,259	392
Available in more than 30 minutes (round trip)	11.6	7.8	-3.8	0.237	1,259	392
Percentage of households practicing correct use of recommended household water treatment technologies	7.9	11.9	4.0	0.062	1,259	392
Chlorination	2.0	0.0	-2.0	0.013	1,259	392
Flocculent/Disinfectant	0.2	0.3	0.1	0.714	1,259	392
Filtration	1.3	0.7	-0.6	0.414	1,259	392
Solar	0.0	0.0	0.0		1,259	392
Boiling	5.4	11.6	6.2	0.003	1,259	392
Percentage of households that can obtain drinking water in less than 30 minutes (round trip)	47.8	59.8	12.0	0.037	1,259	392
Percentage of households with access to a basic sanitation facility	6.7	10.9	4.2	0.231	1,259	392
Male and female adults	6.9	11.7	4.9	0.221	974	321
Adult female, no adult male	5.3	5.9	0.5	0.890	242	65
Adult male, no adult female	10.2				43	6
Child, no adults						
Percentage of households in target areas practicing open defecation	66.9	58.3	-8.6	0.340	1,259	392
Males and female adults	67.9	56.3	-11.6	0.216	974	321
Adult female, no adult male	66.1	71.1	5.0	0.632	242	65
Adult male, no adult female	49.7				43	6
Child, no adults						
Percentage of households with soap and water at a handwashing station commonly used by family members	3.9	1.9		0.275	1,259	392
AGRICULTURAL INDICATORS						
Percentage of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	21.7	53.1	31.5	0.000	1,651	530
Male	21.5	54.5	33.0	0.000	737	257
Female	21.8	51.8	30.0	0.000	914	273
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	35.0	39.0	4.0	0.340	1,651	530
Male	38.7	42.1	3.5	0.487	737	257
Female	32.2	36.0	3.8	0.491	914	273

Table A6.4. Indicator Estimates for Participant Households at Endline and Baseline Households
CRS Nuyok RFSA Area [Uganda, 2023]

	2018 Baseline	Endline Participants	Raw diff (participants-BL)	P-val	Number of observations: Baseline	Number of observations: Participants
Percentage of farmers who used at least 3 sustainable agriculture (crop, livestock, and NRM) practices and/or technologies in the past 12 months	41.7	46.1	4.4	0.450	1,651	530
Male	46.0	50.7	4.8	0.432	737	257
Female	38.6	41.7	3.2	0.638	914	273
Percentage of farmers who used at least 3 sustainable crop practices and/or technologies in the past 12 months	34.1	26.8	-7.3	0.079	1,651	530
Male	36.4	31.4	-5.1	0.345	737	257
Female	32.3	22.4	-9.9	0.014	914	273
Percentage of farmers who used at least 3 sustainable livestock practices and/or technologies in the past 12 months	8.1	9.8	1.7	0.497	1,651	530
Male	11.8	11.4	-0.4	0.896	737	257
Female	5.3	8.3	3.0	0.278	914	273
Percentage of farmers who used at least 2 sustainable NRM practices and/or technologies in the past 12 months	2.6	6.4	3.8	0.065	1,651	530
Male	3.2	6.5	3.3	0.181	737	257
Female	2.2	6.3	4.1	0.059	914	273
Percentage of farmers who used improved storage practices in the past 12 months	50.5	41.1	-9.4	0.076	1,651	530
Male	48.0	44.5	-3.5	0.509	737	257
Female	52.4	37.9	-14.5	0.017	914	273
WOMEN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of underweight (BMI < 18.5) women of reproductive age	38.6	41.1	2.5	0.613	872	280
Prevalence of women of reproductive age consuming a diet of minimum diversity	12.5	18.2	5.7	0.111	1,062	338
Contraceptive Prevalence Rate	14.5	20.5	6.0	0.127	636	227
Modern methods	14.2	20.2	6.0	0.120	636	227
Traditional methods	0.4	0.5	0.2	0.726	636	227
Percentage of births receiving at least four antenatal care (ANC) visits during pregnancy	77.9	84.4	6.5	0.036	746	233
Prevalence of women of reproductive age who consume targeted nutrient-rich commodities	6.7	11.7	5.0	0.157	1,062	338
Bio-fortified beans	1.6	5.3	3.7	0.055	1,062	338
Bio-fortified maize or sorghum	5.0	7.2	2.2	0.359	1,062	338
Orange-flesh sweet potatoes	1.3	0.4	-0.9	0.265	1,062	338

Table A6.4. Indicator Estimates for Participant Households at Endline and Baseline Households
CRS Nuyok RFSA Area [Uganda, 2023]

	2018 Baseline	Endline Participants	Raw diff (participants-BL)	P-val	Number of observations: Baseline	Number of observations: Participants
CHILDREN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of healthy weight (WHZ ≤ 2 and ≥ -2) among children under five (0-59 months)	87.6	87.2	-0.4	0.889	1,188	374
Male	86.7	86.7	0.0	0.992	590	174
Female	88.4	87.6	-0.7	0.834	598	200
Age 0-23 months	83.5	82.1	-1.3	0.769	461	162
Age 24-59 months	89.9	90.9	1.0	0.726	727	212
Prevalence of underweight children (WAZ < -2) children under five (0-59 months)	27.8	28.7	1.0	0.789	1,196	377
Male	34.8	31.9	-2.9	0.599	595	175
Female	21.3	26.0	4.7	0.234	601	202
Prevalence of stunted children (HAZ < -2) children under five (0-59 months)	35.7	37.6	1.9	0.657	1,186	377
Male	42.7	42.2	-0.5	0.922	589	175
Female	29.2	33.5	4.3	0.437	597	202
Prevalence of wasted children (WHZ < -2) children under five (0-59 months)	11.5	12.2	0.7	0.781	1,188	374
Male	11.7	12.7	1.0	0.751	590	174
Female	11.4	11.8	0.4	0.894	598	200
Percentage of children under age 5 who had diarrhea in the last two weeks	31.6	42.6	10.9	0.000	1,264	387
Male	31.6	45.7	14.2	0.004	624	178
Female	31.7	39.9	8.2	0.010	640	209
Percentage of children under age 5 with diarrhea treated with ORT	83.3	59.5	-23.8	0.000	400	161
Male	82.3	65.1	-17.3	0.012	197	78
Female	84.2	54.1	-30.1	0.000	203	83
Prevalence of exclusive breast-feeding of children under six months of age	72.6	74.5	1.9	0.855	135	47
Male	82.7	68.5	-14.1	0.272	61	28
Female	65.4				74	19
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	6.6	19.1	12.4	0.014	355	116
Male	5.6	18.2	12.6	0.058	180	52
Female	7.6	19.7	12.1	0.077	175	64
Prevalence of children 6-23 months who consume targeted nutrient-rich commodities	8.6	18.0	9.4	0.048	355	116
Male	11.6	19.7	8.1	0.204	180	52
Female	5.6	16.7	11.0	0.043	175	64
Bio-fortified beans	2.2	12.2	10.0	0.003	319	113
Bio-fortified maize or sorghum	7.5	12.2	4.8	0.341	319	113
Orange-flesh sweet potatoes	2.5	1.2	-1.3	0.566	319	113

Table A6.4. Indicator Estimates for Participant Households at Endline and Baseline Households
CRS Nuyok RFSA Area [Uganda, 2023]

	2018 Baseline	Endline Participants	Raw diff (participants-BL)	P-val	Number of observations: Baseline	Number of observations: Participants
GENDER INDICATORS						
Percentage of men and women in union who earned cash in the past 12 months	47.4	71.3	23.9	0.000	1,993	646
Male	47.2	72.9	25.7	0.000	931	317
Female	47.6	69.8	22.2	0.003	1,062	329
Percentage of women in union and earning cash who report participation in decisions about the use of self-earned cash	86.6	80.8	-5.8	0.102	435	210
Percentage of women in union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	64.8	62.3	-2.5	0.681	299	172
Percentage of men in union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	56.6	61.8	5.2	0.342	359	156
Percentage of men and women in union with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	85.0	84.5	-0.4	0.906	664	217
Male	79.0	79.0	0.0	0.996	269	89
Female	89.4	87.6	-1.7	0.657	395	128
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	26.1	27.6	1.5	0.841	269	88
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	45.4	38.0	-7.4	0.221	395	128
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	41.8	53.3	11.5	0.140	269	88
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	36.3	39.4	3.1	0.586	395	128
Percentage of men in union with children under two who make child health and nutrition decisions alone	15.7	4.5	-11.2	0.001	269	88
Percentage of women in union with children under two who make child health and nutrition decisions alone	39.7	28.6	-11.0	0.158	395	128
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	51.1	64.7	13.6	0.046	269	88
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	42.1	54.4	12.2	0.105	395	128

Table A6.4. Indicator Estimates for Participant Households at Endline and Baseline Households
CRS Nuyok RFSA Area [Uganda, 2023]

	2018 Baseline	Endline Participants	Raw diff (participants-BL)	P-val	Number of observations: Baseline	Number of observations: Participants
RESILIENCE INDICATORS						
Shock exposure index	5.5	6.0	0.4	0.301	1,251	388
Cumulative impact of shock exposure index (severity weighted shock exposure)	31.9	30.4	-1.5	0.376	1,226	388
Ability to recover from shocks and stressors index	4.1	3.8	-0.3	0.050	1,060	326
Proportion of households participating in group-based savings, micro-finance or lending[1,2]	26.4	55.9	29.5	0.000	1,185	227
Index of Social Capital at the household level	55.4	63.0	7.5	0.007	1,251	388
Absorptive capacity index[3]	20.8	30.6	9.8	0.000	1,251	388
Adaptive capacity Index[4]	39.7	51.3	11.6	0.000	1,251	388
Transformative capacity index[5]	36.2	47.7	11.5	0.063	1,251	388
CUSTOM INDICATORS						
Average rating of government's ability to be responsive to citizens' needs (including transparency, inclusivity, effectiveness) as measured on 12 item scorecard	4.7	5.4	0.7	0.001	1,250	392
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	96.8	97.4	0.6	0.775	706	216
Male	97.0	97.3	0.3	0.922	270	88
Female	96.6	97.5	0.8	0.675	436	128

NOTES: Results not reported when n<30. Differences between baseline and endline indicator estimates are considered statistically significant at the p<0.10 level.

1. Proportion of households participating in group-based savings, micro-finance or lending: BL estimate revised to include all households with relevant data in the denominator.

2. Due to sample loss, the endline estimate for this indicator is based only on adult female and male households with children under two. In contrast, baseline estimates are derived for all adult female and male households. This difference in the relative composition of households compromises the comparability of baseline and endline estimates for this indicator.

3. Absorptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL necessitated exclusion of the access to informal safety nets sub-indicator and revision of the shock preparedness and mitigation sub-indicator.

4. Adaptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL resulted in revision of the access to education and training sub-indicator.

5. Transformative Index: BL estimate revised to allow for comparability with endline estimate. Data limitations at EL resulted in the exclusion of the participation in local decision making and access to communal natural resources sub-indicators. The access to agricultural extension and access to livestock services sub-indicators were also revised to align better with methodological guidance. The final portion of the revision involved exclusion of the bridging social capital and local government responsiveness sub-indicators from the index, consistent with methodological guidance that requires exclusion of sub-indicators with negative factor loadings.

Table A6.5a. Baseline and Endline Indicator Estimates for Poor Households - CRS Nuyok RFSA Areas
[Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
FOOD SECURITY INDICATORS						
Average Household Dietary Diversity Score (HDDS)	2.8	3.2	0.39	0.038	872	616
Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES) one year recall	94.1	96.5	2.41	0.047	1,045	615
Males and female adults	94.4	96.2	1.79	0.192	823	456
Adult female, no adult male	93.9	97.5	3.60	0.023	206	141
Adult male, no adult female					16	18
Child, no adults						
POVERTY INDICATORS						
Per-capita expenditures (as a proxy for income) of USG assisted areas	$.65	$.73	0.08	0.109	1,064	640
Males and female adults	$.64	$.74	0.10	0.071	839	478
Adult female, no adult male	$.68	$.67	-0.01	0.780	208	143
Adult male, no adult female					17	19
Child, no adults						

Table A6.5a. Baseline and Endline Indicator Estimates for Poor Households - CRS Nuyok RFSA Areas
[Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
WASH INDICATORS						
Percentage of households using an improved drinking water source	42.5	50.4	7.92	0.167	1,064	640
Available on premises	3.7	3.0	-0.72	0.569	1,064	640
Available in 30 minutes or less (round trip)	26.3	39.5	13.14	0.018	1,064	640
Available in more than 30 minutes (round trip)	12.5	8.0	-4.50	0.160	1,064	640
Percentage of households practicing correct use of recommended household water treatment technologies	6.5	7.3	0.81	0.654	1,064	640
Chlorination	1.5	0.0	-1.54	0.037	1,064	640
Flocculent/Disinfectant	0.2	0.3	0.06	0.846	1,064	640
Filtration	1.2	0.7	-0.43	0.424	1,064	640
Solar	0.0	0.1	0.09	0.310	1,064	640
Boiling	4.5	6.7	2.25	0.154	1,064	640
Percentage of households that can obtain drinking water in less than 30 minutes (round trip)	48.6	61.5	12.96	0.032	1,064	640
Percentage of households with access to a basic sanitation facility	5.0	5.9	0.89	0.706	1,064	640
Males and female adults	5.2	6.8	1.63	0.558	839	478
Adult female, no adult male	4.4	3.5	-0.84	0.746	208	143
Adult male, no adult female	4.8	0.0	-4.77	0.364	17	19
Percentage of households in target areas practicing open defecation	72.1	68.5	-3.58	0.621	1,064	640
Males and female adults	71.6	65.8	-5.80	0.437	839	478
Adult female, no adult male	72.3	78.8	6.43	0.421	208	143
Adult male, no adult female	87.5	61.9	-25.56	0.126	17	19
Child, no adults						
Percentage of households with soap and water at a handwashing station commonly used by family members	2.0	0.5	-1.49	0.158	1,064	640
AGRICULTURAL INDICATORS						
Percentage of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	18.5	37.7	19.18	0.000	1,383	776
Male	18.0	42.1	24.08	0.000	607	359
Female	18.8	34.0	15.16	0.007	776	417
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	33.4	25.5	-7.95	0.023	1,383	776
Male	36.5	30.6	-5.91	0.209	607	359
Female	31.2	21.2	-9.99	0.002	776	417

Table A6.5a. Baseline and Endline Indicator Estimates for Poor Households - CRS Nuyok RFSA Areas [Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
Percentage of farmers who used at least 3 sustainable agriculture (crop, livestock, and NRM) practices and/or technologies in the past 12 months	37.2	32.3	-4.91	0.241	1,383	776
Male	40.6	37.9	-2.70	0.577	607	359
Female	34.7	27.6	-7.11	0.153	776	417
Percentage of farmers who used at least 3 sustainable crop practices and/or technologies in the past 12 months	29.0	20.5	-8.57	0.012	1,383	776
Male	30.3	25.5	-4.80	0.216	607	359
Female	28.1	16.2	-11.85	0.003	776	417
Percentage of farmers who used at least 3 sustainable livestock practices and/or technologies in the past 12 months	7.5	5.7	-1.81	0.289	1,383	776
Male	10.4	9.1	-1.32	0.623	607	359
Female	5.4	2.9	-2.52	0.050	776	417
Percentage of farmers who used at least 2 sustainable NRM practices and/or technologies in the past 12 months	2.1	3.3	1.21	0.417	1,383	776
Male	2.6	4.3	1.77	0.350	607	359
Female	1.7	2.4	0.69	0.587	776	417
Percentage of farmers who used improved storage practices in the past 12 months	49.4	34.2	-15.23	0.001	1,383	776
Male	47.3	39.1	-8.15	0.070	607	359
Female	51.0	30.1	-20.89	0.000	776	417
WOMEN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of underweight (BMI < 18.5) women of reproductive age	40.9	44.9	3.99	0.237	742	419
Prevalence of women of reproductive age consuming a diet of minimum diversity	10.6	13.2	2.59	0.459	915	512
Contraceptive Prevalence Rate	13.7	16.8	3.08	0.406	556	341
Modern methods	13.4	15.8	2.43	0.497	556	341
Traditional methods	0.3	1.3	1.00	0.319	556	341
Percentage of births receiving at least four antenatal care (ANC) visits during pregnancy	79.1	84.2	5.13	0.067	674	367
Prevalence of women of reproductive age who consume targeted nutrient-rich commodities	6.5	8.4	1.84	0.559	915	512
Bio-fortified beans	1.5	2.8	1.24	0.294	915	511
Bio-fortified maize or sorghum	5.0	5.4	0.32	0.890	915	511
Orange-flesh sweet potatoes	1.1	0.7	-0.38	0.668	915	511

Table A6.5a. Baseline and Endline Indicator Estimates for Poor Households - CRS Nuyok RFSA Areas
[Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
CHILDREN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of healthy weight (WHZ ≤ 2 and ≥ -2) among children under five (0-59 months)	87.0	84.5	-2.50	0.242	1,087	635
Male	86.1	83.3	-2.80	0.283	537	291
Female	87.7	85.4	-2.30	0.370	550	344
Age 0-23 months	82.5	83.3	0.82	0.795	423	261
Age 24-59 months	89.5	85.3	-4.25	0.111	664	374
Prevalence of underweight children (WAZ < -2) children under five (0-59 months)	28.8	29.5	0.73	0.787	1,092	639
Male	35.9	32.8	-3.12	0.449	540	293
Female	22.4	26.8	4.41	0.131	552	346
Prevalence of stunted children (HAZ < -2) children under five (0-59 months)	35.7	36.8	1.05	0.713	1,085	639
Male	44.0	42.7	-1.29	0.729	536	293
Female	28.2	31.8	3.58	0.315	549	346
Prevalence of wasted children (WHZ < -2) children under five (0-59 months)	12.2	14.5	2.32	0.294	1,087	635
Male	12.3	15.1	2.81	0.298	537	291
Female	12.0	14.0	1.93	0.464	550	344
Percentage of children under age 5 who had diarrhea in the last two weeks	30.0	40.7	10.71	0.001	1,155	652
Male	30.2	43.0	12.79	0.012	567	295
Female	29.7	38.8	9.04	0.004	588	357
Percentage of children under age 5 with diarrhea treated with ORT	82.3	61.6	-20.79	0.000	352	262
Male	81.8	64.7	-17.18	0.017	175	123
Female	82.8	58.8	-24.04	0.003	177	139
Prevalence of exclusive breast-feeding of children under six months of age	73.0	71.7	-1.35	0.893	124	78
Male	83.3	69.4	-13.84	0.287	57	38
Female	65.7	73.7	8.07	0.476	67	40
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	6.7	14.8	8.11	0.076	323	185
Male	4.9	13.7	8.84	0.104	162	84
Female	8.4	15.6	7.23	0.175	161	101
Prevalence of children 6-23 months who consume targeted nutrient-rich commodities	8.7	12.5	3.76	0.335	323	185
Male	12.1	18.4	6.38	0.368	162	84
Female	5.5	7.8	2.29	0.580	161	101
Bio-fortified beans	2.0	9.4	7.38	0.015	289	179
Bio-fortified maize or sorghum	7.9	6.4	-1.53	0.679	289	179
Orange-flesh sweet potatoes	2.4	0.7	-1.66	0.485	289	179

Table A6.5a. Baseline and Endline Indicator Estimates for Poor Households - CRS Nuyok RFSA Areas
[Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
GENDER INDICATORS						
Percentage of men and women in union who earned cash in the past 12 months	46.0	67.2	21.16	0.001	1,725	959
Male	44.5	67.7	23.24	0.000	799	461
Female	47.3	66.7	19.34	0.003	926	498
Percentage of women in union and earning cash who report participation in decisions about the use of self-earned cash	87.4	81.4	-5.98	0.066	378	300
Percentage of women in union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	64.4	62.2	-2.13	0.744	253	245
Percentage of men in union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	59.0	57.2	-1.75	0.739	289	221
Percentage of men and women in union with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	83.9	84.8	0.89	0.816	611	333
Male	76.9	74.9	-2.04	0.733	246	132
Female	88.9	89.9	1.03	0.778	365	201
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	26.3	26.4	0.14	0.980	246	132
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	45.0	38.5	-6.56	0.181	365	201
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	44.2	49.5	5.33	0.357	246	132
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	36.9	39.1	2.18	0.677	365	201
Percentage of men in union with children under two who make child health and nutrition decisions alone	16.3	7.1	-9.14	0.017	246	132
Percentage of women in union with children under two who make child health and nutrition decisions alone	39.7	30.2	-9.56	0.200	365	201
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	53.9	60.6	6.71	0.253	246	132
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	42.5	53.1	10.67	0.112	365	201

Table A6.5a. Baseline and Endline Indicator Estimates for Poor Households - CRS Nuyok RFSA Areas [Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
RESILIENCE INDICATORS						
Shock exposure index	5.4	5.3	-0.01	0.979	1,056	633
Cumulative impact of shock exposure index (severity weighted shock exposure)	30.9	28.8	-2.12	0.195	1,032	633
Ability to recover from shocks and stressors index	4.1	3.8	-0.35	0.102	873	521
Proportion of households participating in group-based savings, micro-finance or lending[1,2]	23.4	42.6	19.22	0.000	1,018	358
Index of Social Capital at the household level	54.4	61.2	6.77	0.040	1,056	633
Absorptive capacity index[2]	19.2	24.3	5.11	0.006	1,056	633
Adaptive capacity Index[3]	37.8	42.8	5.05	0.011	1,056	633
Transformative capacity index[4]	34.6	40.9	6.35	0.158	1,056	633
CUSTOM INDICATORS						
Average rating of government's ability to be responsive to citizens' needs (including transparency, inclusivity, effectiveness) as measured on 12 item scorecard	4.7	5.1	0.42	0.007	1,057	639
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	96.4	95.5	-0.95	0.663	646	333
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	96.7	93.1	-3.61	0.286	247	132
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	96.3	96.8	0.46	0.806	399	201

NOTES: Results not reported when n<30. Differences between baseline and endline indicator estimates are considered statistically significant at the p<0.10 level.

1. Proportion of households participating in group-based savings, micro-finance or lending: BL estimate revised to include all households with relevant data in the denominator.

2. Due to sample loss, the endline estimate for this indicator is based only on adult female and male households with children under two. In contrast, baseline estimates are derived for all adult female and male households. This difference in the relative composition of households compromises the comparability of baseline and endline estimates for this indicator.

3. Absorptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL necessitated exclusion of the access to informal safety nets sub-indicator and revision of the shock preparedness and mitigation sub-indicator.

4. Adaptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL resulted in revision of the access to education and training sub-indicator.

5. Transformative Index: BL estimate revised to allow for comparability with endline estimate. Data limitations at EL resulted in the exclusion of the participation in local decision making and access to communal natural resources sub-indicators. The access to agricultural extension and access to livestock services sub-indicators were also revised to align better with methodological guidance. The final portion of the revision involved exclusion of the bridging social capital and local government responsiveness sub-indicators from the index, consistent with methodological guidance that requires exclusion of sub-indicators with negative factor loadings.

Table A6.5b. Baseline and Endline Indicator Estimates for Non-Poor Households [Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
FOOD SECURITY INDICATORS						
Average Household Dietary Diversity Score (HDDS)	4.2	4.6	0.34	0.473	164	109
Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES) one year recall	93.4	92.6	-0.79	0.716	190	109
Males and female adults	93.5	94.2	0.73	0.797	130	75
Adult female, no adult male	95.0				34	23
Adult male, no adult female					26	11
Child, no adults			0.0			
POVERTY INDICATORS						
Per-capita expenditures (as a proxy for income) of USG assisted areas	$3.54	$2.54	-1.00	0.000	195	120
Males and female adults	$3.47	$2.54	-0.93	0.001	135	86
Adult female, no adult male	$3.55				34	23
Adult male, no adult female					26	11
Child, no adults						

Table A6.5b. Baseline and Endline Indicator Estimates for Non-Poor Households [Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
WASH INDICATORS						
Percentage of households using an improved drinking water source	28.8	59.5	30.67	0.000	195	120
Available on premises	2.6	6.4	3.74	0.373	195	120
Available in 30 minutes or less (round trip)	19.5	47.0	27.48	0.002	195	120
Available in more than 30 minutes (round trip)	6.6	6.1	-0.55	0.844	195	120
Percentage of households practicing correct use of recommended household water treatment technologies	15.7	16.4	0.65	0.879	195	120
Chlorination	4.4	0.0	-4.36	0.022	195	120
Flocculent/Disinfectant	0.0	0.0	0.00	0.000	195	120
Filtration	2.0	1.4	-0.59	0.738	195	120
Solar	0.0	0.0	0.00	0.000	195	120
Boiling	10.4	15.4	4.96	0.188	195	120
Percentage of households that can obtain drinking water in less than 30 minutes (round trip)	43.3	56.3	12.97	0.139	195	120
Percentage of households with access to a basic sanitation facility	16.3	17.7	1.35	0.837	195	120
Males and female adults	17.8	19.1	1.38	0.829	135	86
Adult female, no adult male	11.0				34	23
Adult male, no adult female					26	11
Percentage of households in target areas practicing open defecation	37.7	42.3	4.54	0.735	195	120
Males and female adults	45.2	37.1	-8.09	0.547	135	86
Adult female, no adult male	29.2				34	23
Adult male, no adult female					26	11
Child, no adults						
Percentage of households with soap and water at a handwashing station commonly used by family members	14.3	5.7	-8.62	0.118	195	120
AGRICULTURAL INDICATORS						
Percentage of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	38.9	60.0	21.11	0.028	268	169
Male	38.3	67.1	28.88	0.005	130	84
Female	39.5	52.9	13.47	0.234	138	85
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	43.2	54.6	11.40	0.243	268	169
Male	48.8	53.5	4.65	0.590	130	84
Female	38.1	55.7	17.62	0.173	138	85

Table A6.5b. Baseline and Endline Indicator Estimates for Non-Poor Households [Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
Percentage of farmers who used at least 3 sustainable agriculture (crop, livestock, and NRM) practices and/or technologies in the past 12 months	66.2	49.6	-16.63	0.009	268	169
Male	71.4	54.0	-17.44	0.028	130	84
Female	61.5	45.2	-16.26	0.014	138	85
Percentage of farmers who used at least 3 sustainable crop practices and/or technologies in the past 12 months	61.5	27.9	-33.55	0.000	268	169
Male	65.6	29.1	-36.46	0.000	130	84
Female	57.7	26.7	-31.02	0.000	138	85
Percentage of farmers who used at least 3 sustainable livestock practices and/or technologies in the past 12 months	11.3	13.4	2.03	0.664	268	169
Male	18.5	12.9	-5.55	0.350	130	84
Female	4.9	13.8	8.95	0.112	138	85
Percentage of farmers who used at least 2 sustainable NRM practices and/or technologies in the past 12 months	5.3	8.8	3.51	0.343	268	169
Male	6.0	7.1	1.15	0.778	130	84
Female	4.6	10.4	5.79	0.206	138	85
Percentage of farmers who used improved storage practices in the past 12 months	56.2	41.5	-14.73	0.152	268	169
Male	51.4	43.1	-8.30	0.420	130	84
Female	60.6	39.9	-20.71	0.075	138	85
WOMEN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of underweight (BMI < 18.5) women of reproductive age	25.4	34.0	8.56	0.402	130	69
Prevalence of women of reproductive age consuming a diet of minimum diversity	25.0	29.1	4.11	0.627	147	89
Contraceptive Prevalence Rate	20.4	33.1	12.69	0.140	80	56
Modern methods	19.6	32.2	12.57	0.132	80	56
Traditional methods	0.8	1.8	1.06	0.558	80	56
Percentage of births receiving at least four antenatal care (ANC) visits during pregnancy	66.0	89.4	23.41	0.000	72	48
Prevalence of women of reproductive age who consume targeted nutrient-rich commodities	7.8	13.4	5.62	0.365	147	89
Bio-fortified beans	2.5	9.0	6.58	0.202	147	89
Bio-fortified maize or sorghum	4.6	6.0	1.43	0.688	147	89
Orange-flesh sweet potatoes	2.6	0.0	-2.62	0.079	147	89

Table A6.5b. Baseline and Endline Indicator Estimates for Non-Poor Households [Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
CHILDREN'S HEALTH AND NUTRITION INDICATORS						
Prevalence of healthy weight (WHZ ≤ 2 and ≥ -2) among children under five (0-59 months)	94.7	91.2	-3.52	0.490	101	74
Male	92.8	89.6	-3.25	0.646	53	36
Female	96.6	92.5	-4.15	0.525	48	38
Age 0-23 months	94.6	86.3	-8.27	0.373	38	37
Age 24-59 months	94.8	96.3	1.46	0.780	63	37
Prevalence of underweight children (WAZ < -2) children under five (0-59 months)	16.3	19.6	3.35	0.727	104	74
Male	23.9	20.9	-3.00	0.824	55	36
Female	8.4	18.7	10.30	0.348	49	38
Prevalence of stunted children (HAZ < -2) children under five (0-59 months)	34.9	27.7	-7.22	0.556	101	74
Male	28.3	29.3	0.91	0.937	53	36
Female	41.6	26.5	-15.04	0.405	48	38
Prevalence of wasted children (WHZ < -2) children under five (0-59 months)	3.8	8.8	4.98	0.315	101	74
Male	4.3	10.4	6.18	0.378	53	36
Female	3.4	7.5	4.15	0.525	48	38
Percentage of children under age 5 who had diarrhea in the last two weeks	51.3	38.0	-13.29	0.063	109	77
Male	46.0	36.8	-9.26	0.281	57	38
Female	56.5	38.9	-17.56	0.166	52	39
Percentage of children under age 5 with diarrhea treated with ORT	90.1	60.4	-29.66	0.034	48	28
Male					22	15
Female					26	13
Prevalence of exclusive breast-feeding of children under six months of age					11	13
Male					4	7
Female					7	6
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	6.3				32	24
Male					18	12
Female					14	12
Prevalence of children 6-23 months who consume targeted nutrient-rich commodities	7.3				32	24
Male					18	12
Female					14	12
Bio-fortified beans	3.9	18.9	14.94	0.076	30	24
Bio-fortified maize or sorghum	3.4	17.9	14.57	0.193	30	24
Orange-flesh sweet potatoes	3.8	0.0	-3.82	0.335	30	24

Table A6.5b. Baseline and Endline Indicator Estimates for Non-Poor Households [Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
GENDER INDICATORS						
Percentage of men and women in union who earned cash in the past 12 months	56.9	64.1	7.21	0.404	268	180
Male	64.2	67.7	3.44	0.701	132	88
Female	49.9	60.6	10.68	0.308	136	92
Percentage of women in union and earning cash who report participation in decisions about the use of self-earned cash	81.1	85.4	4.26	0.573	57	53
Percentage of women in union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	67.2	60.4	-6.74	0.533	46	45
Percentage of men in union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	45.7	66.4	20.71	0.034	70	41
Percentage of men and women in union with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	96.3	94.9	-1.37	0.713	53	49
Male					23	21
Female	95.2				30	28
Percentage of men in union with children under two who make maternal health and nutrition decisions alone					23	21
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	50.1				30	28
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner					23	21
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	28.6				30	28
Percentage of men in union with children under two who make child health and nutrition decisions alone					23	21
Percentage of women in union with children under two who make child health and nutrition decisions alone	38.9				30	28
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner					23	21
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	37.6				30	28

Table A6.5b. Baseline and Endline Indicator Estimates for Non-Poor Households [Nuyok RFSA, Uganda, 2018 and 2023]

					Number of observations	
	Baseline	Endline	Difference (BL-EL)	P-value	Baseline	Endline
RESILIENCE INDICATORS						
Shock exposure index	6.6	5.6	-1.02	0.114	195	119
Cumulative impact of shock exposure index (severity weighted shock exposure)	37.8	27.2	-10.59	0.001	194	119
Ability to recover from shocks and stressors index	4.2	3.6	-0.64	0.018	187	99
Proportion of households participating in group-based savings, micro-finance or lending[1,2]	45.0	75.9	30.90	0.004	167	49
Index of Social Capital at the household level	61.2	59.5	-1.74	0.552	195	119
Absorptive capacity index[3]	30.1	36.1	6.02	0.059	195	119
Adaptive capacity Index[4]	50.6	55.2	4.62	0.222	195	119
Transformative capacity index[5]	45.3	59.0	13.69	0.085	195	119
CUSTOM INDICATORS						
Average rating of government's ability to be responsive to citizens' needs (including transparency, inclusivity, effectiveness) as measured on 12 item scorecard	5.1	5.3	0.25	0.589	193	120
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	100.0	100.0	0.00	0.000	60	49
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy					23	21
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	100.0				37	28

NOTES: Results not reported when n<30. Differences between baseline and endline indicator estimates are considered statistically significant at the p<0.10 level.

1. Proportion of households participating in group-based savings, micro-finance or lending: BL estimate revised to include all households with relevant data in the denominator.

2. Due to sample loss, the endline estimate for this indicator is based only on adult female and male households with children under two. In contrast, baseline estimates are derived for all adult female and male households. This difference in the relative composition of households compromises the comparability of baseline and endline estimates for this indicator.

3. Absorptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL necessitated exclusion of the access to informal safety nets sub-indicator and revision of the shock preparedness and mitigation sub-indicator.

4. Adaptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL resulted in revision of the access to education and training sub-indicator.

5. Transformative Index: BL estimate revised to allow for comparability with endline estimate. Data limitations at EL resulted in the exclusion of the participation in local decision making and access to communal natural resources sub-indicators. The access to agricultural extension and access to livestock services sub-indicators were also revised to align better with methodological guidance. The final portion of the revision involved exclusion of the bridging social capital and local government responsiveness sub-indicators from the index, consistent with methodological guidance that requires exclusion of sub-indicators with negative factor loadings.

Table A6.6. Nuyok Participation
[Nuyok RFSA, Uganda, 2023]

	Mean	Confidence interval		Number of observations
		Lower	Upper	
NUYOK PARTICIPATION				
Participated in Nuyok	49.5	42.6	56.4	778
Years of participaton in RFSA	2.3	2.1	2.5	374
Total number of interventions, trainings and activities	3.5	2.8	4.1	778
HOUSEHOLD PARTICIPATION IN NUYOK GROUPS AND ACTIVITIES				
Mothers Care Groups - MCGs	23.7	16.6	30.8	778
Home improvement campaign (HIC) promoting household latrines	21.5	15.9	27.2	778
Savings and Internal Lending Community (SILC) Group	16.5	13.3	19.8	778
Water User Committee	12.1	8.8	15.3	778
Lead Couple Farmers (LCF)	9.3	5.8	12.9	778
Lead farmer	9.3	6.0	12.6	778
Farmer Managed Natural Regeneration (FMNR) Activities	8.4	6.0	10.7	778
Producer Marketing Groups (PMG)	8.1	4.8	11.5	778
Public Works Activities (PWAs) or Cash for Work activities	8.1	5.4	10.8	778
Village Health Team (VHT)	6.7	3.6	9.8	778
Rural Enterprenuers Access Project (REAP) Business Group	5.8	3.1	8.5	778
Village Disaster Management Committee (VDMCs)	5.5	3.5	7.5	778
Conflict Mitgation and Management Committees (CMMC)	5.2	2.8	7.7	778
Male Change Agent (MCA) peer group activities	4.8	2.5	7.1	778
Livestock cluster or Livestock producer group (LPG)	4.8	1.9	7.6	778
Akiyar Dram Group	4.3	2.8	5.9	778
Male Change Agent (MCA)	4.2	2.6	5.9	778
Community Animal Health Workers Group	4.1	2.8	5.4	778
Community Based Monitor (CBM)	3.7	2.0	5.4	778
Community Based Monitor (CBM)	3.7	2.0	5.4	778
Youth enterpreneurship activities in Abim	2.4	0.1	4.8	778
Household hand pump mechanic	1.5	0.6	2.5	778
Total number of interventions	1.7	1.3	2.1	778

Table A6.6. Nuyok Participation
[Nuyok RFSA, Uganda, 2023]

	Mean	Confidence interval		Number of observations
		Lower	Upper	
HOUSEHOLD PARTICIPATION IN NUYOK TRAININGS AND SERVICES				
Improved WASH practices	18.9	12.9	25.0	778
Kitchen/backyard vegetable gardening	16.8	12.5	21.1	778
Improved crop production practices	15.1	10.1	20.1	778
Savings and internal lending communities (SILC)	14.4	11.6	17.2	778
Improved Essential Nutrition and Hygiene Action (ENHA) practices	12.7	9.1	16.3	778
Nutrition vouchers (specifically for HHCGs)	10.8	5.8	15.8	778
Improved post harvest handling and storage	10.5	6.2	14.9	778
Training on leadership and decision making	8.7	5.6	11.8	778
Agriculture seeds and vines (DiNER fairs other Nuyok vouchers)	6.6	3.3	10.0	778
Natural resource management training including agroforestry	5.8	3.6	8.1	778
Male change agent sessions or peer group sessions led by MCAs	4.6	2.9	6.4	778
Community based monitoring initiatives led by CBMs	4.6	2.3	6.8	778
Conflict management and mitigation	4.4	2.3	6.5	778
Bee keeping/apiary	4.1	1.6	6.7	778
Cash for work/conditional cash transfers	3.8	2.0	5.6	778
Water user committee led activities	3.8	2.1	5.5	778
Effective communication as a couple led by MCAs	3.7	1.9	5.4	778
Improved livestock management practices	3.7	1.8	5.6	778
Vocational skills	3.6	1.3	6.0	778
Community managed disaster risk management/reduction	3.6	1.9	5.2	778
Village Health Outreaches	3.5	2.0	5.0	778
Receive Early Warning information	2.7	1.2	4.2	778
Market-related support	2.5	1.2	3.9	778
DRR or CCA	1.9	0.8	3.0	778
Hand pump mechanic training	0.9	0.2	1.6	778
Animal health services (from CAHWs)	0.0			778
Total number of trainings and activities	1.8	1.4	2.1	778

Table A6.7. Comparison of Indicator Estimates and Evaluation Targets
[Nuyok RFSA, Uganda, 2018, 2023]

	2018 Baseline	2023 Endline	Final Evaluation Target[6]	Target met or exceeded
FOOD SECURITY INDICATORS				
Average Household Dietary Diversity Score (HDDS)	3.1	3.5	4.1	
Prevalence of moderate and severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES) one year recall	94.0	95.7	79.0	
Males and female adults	94.3	95.8	79.3	
Adult female, no adult male	94.1	97.0	79.1	
Adult male, no adult female	88.0	87.8	73.0	
Child, no adults				
POVERTY INDICATORS				
Per-capita expenditures (as a proxy for income) of USG assisted areas	$.99	$1.00	$1.63	
Males and female adults	$.98	$1.02	$1.33	
Adult female, no adult male	$.99	$.86	$1.34	
Adult male, no adult female	$1.88	$1.34	$2.23	
Child, no adults				
Prevalence of poverty: Percentage of people living on less than $1.90 per day	88.0	85.1	68.0	
Males and female adults	88.1	84.4	78.1	
Adult female, no adult male	89.3	89.3	79.3	
Adult male, no adult female	71.1	80.6	61.1	
Child, no adults				\
Depth of Poverty: Mean percentage shortfall relative to the $1.90 poverty line	53.0	48.5	42.4	
Males and female adults	53.3	47.8	42.6	
Adult female, no adult male	51.7	54.0	41.4	
Adult male, no adult female	46.6	37.4	37.3	
Child, no adults				
Depth of poverty of the poor: Mean percentage shortfall relative to the $1.90 poverty line	60.2	57.0	50.2	
Males and female adults	60.5	56.6	48.4	
Adult female, no adult male	57.9	60.5	46.3	
Adult male, no adult female				
Child, no adults				
WASH INDICATORS				
Percentage of households using an improved drinking water source	40.4	52.4	55.4	✓
Available on premises	3.5	3.6	3.5	
Available in 30 minutes or less (round trip)	25.3	41.4	47.9	✓
Available in more than 30 minutes (round trip)	11.6	7.4	4.0	
Percentage of households practicing correct use of recommended household water treatment technologies	7.9	9.4	17.9	
Chlorination	2.0	0.0	8.2	
Flocculent/Disinfectant	0.2	0.2	0.2	
Filtration	1.3	0.8	1.3	
Solar	0.0	0.1	0.0	
Boiling	5.4	8.8	14.6	

Table A6.7. Comparison of Indicator Estimates and Evaluation Targets
[Nuyok RFSA, Uganda, 2018, 2023]

	2018 Baseline	2023 Endline	Final Evaluation Target[6]	Target met or exceeded
Percentage of households that can obtain drinking water in less than 30 minutes (round trip)	47.8	60.8	68.2	✓
Percentage of households with access to a basic sanitation facility	6.7	7.9	21.7	
Males and female adults	6.9	8.8	21.9	
Adult female, no adult male	5.3	5.6	20.3	
Adult male, no adult female	10.2	3.1	25.2	
Child, no adults				
Percentage of households in target areas practicing open defecation	66.9	63.8	51.9	
Percentage of households with soap and water at a handwashing station commonly used by family members	3.9	1.6	18.9	
AGRICULTURAL INDICATORS				
Percentage of farmers who used financial services (savings, agricultural credit, and/or agricultural insurance) in the past 12 months	21.7	41.6	37.3	✓
Male	21.5	47.1	36.9	✓
Female	21.8	36.9	37.4	✓
Percentage of farmers who practiced value chain activities promoted by the project in the past 12 months	35.0	31.1	45.2	
Male	38.7	35.6	48.7	
Female	32.2	27.2	42.2	
Percentage of farmers who used at least 3 sustainable agriculture (crop, livestock, and NRM) practices and/or technologies in the past 12 months	41.7	36.2	51.7	
Male	46.0	41.5	56.3	
Female	38.6	31.5	48.6	
Percentage of farmers who used at least 3 sustainable crop practices and/or technologies in the past 12 months	34.1	22.6	44.1	
Male	36.4	26.8	42.4	
Female	32.3	18.8	46.4	
Percentage of farmers who used at least 3 sustainable livestock practices and/or technologies in the past 12 months	8.1	7.1	18.2	
Male	11.8	9.5	21.8	
Female	5.3	5.0	15.3	
Percentage of farmers who used at least 2 sustainable NRM practices and/or technologies in the past 12 months	2.6	4.3	10.8	
Male	3.2	4.7	11.4	
Female	2.2	3.9	10.4	
Percentage of farmers who used improved storage practices in the past 12 months	50.5	36.2	70.5	
Male	48.0	41.2	68.0	
Female	52.4	31.9	72.4	

Table A6.7. Comparison of Indicator Estimates and Evaluation Targets
[Nuyok RFSA, Uganda, 2018, 2023]

	2018 Baseline	2023 Endline	Final Evaluation Target[6]	Target met or exceeded
WOMEN'S HEALTH AND NUTRITION INDICATORS				
Prevalence of underweight (BMI < 18.5) women of reproductive age	38.6	42.7	22.7	
Prevalence of women of reproductive age consuming a diet of minimum diversity	12.5	15.9	32.9	
Contraceptive Prevalence Rate	14.5	19.8	24.7	
Modern methods	14.2	18.8	16.5	
Traditional methods	0.4	1.4	8.2	
Percentage of births receiving at least four antenatal care (ANC) visits during pregnancy	77.9	85.1	89.1	✓
Prevalence of women of reproductive age who consume targeted nutrient-rich commodities	6.7	9.3	23.5	
CHILDREN'S HEALTH AND NUTRITION INDICATORS				
Prevalence of healthy weight (WHZ ≤ 2 and ≥ -2) among children under five (0-59 months)	87.6	85.2	92.3	
Male	86.7	83.8	91.7	
Female	88.4	86.3	93.0	
Age 0-23 months	83.5	83.2	88.2	
Age 24-59 months	89.9	86.6	94.5	
Prevalence of underweight children (WAZ < -2) children under five (0-59 months)	27.8	28.5	12.8	
Male	34.8	31.6	19.8	
Female	21.3	26.0	6.3	
Prevalence of stunted children (HAZ < -2) children under five (0-59 months)	35.7	35.5	24.3	
Male	42.7	41.4	33.3	
Female	29.2	30.8	18.7	
Prevalence of wasted children (WHZ < -2) children under five (0-59 months)	11.5	13.9	7.7	
Male	11.7	14.9	7.8	
Female	11.4	13.2	7.5	
Percentage of children under age 5 who had diarrhea in the last two weeks	31.6	40.4	21.8	
Male	31.6	42.1	21.7	
Female	31.7	39.1	21.8	
Percentage of children under age 5 with diarrhea treated with ORT	83.3	61.4	93.5	
Male	82.3	65.6	93.8	
Female	84.2	57.9	93.1	
Prevalence of exclusive breast-feeding of children under six months of age	72.6	69.3	87.2	
Male	82.7	69.9	79.3	
Female	65.4	68.8	95.0	
Prevalence of children 6-23 months of age receiving a minimum acceptable diet (MAD)	6.6	17.1	18.4	✓
Male	5.6	14.5	17.4	✓
Female	7.6	19.0	19.4	✓
Prevalence of children 6-23 months who consume targeted nutrient-rich commodities	8.6	14.2	Not in IPTT	
Male	11.6	19.7	Not in IPTT	
Female	5.6	9.9	Not in IPTT	

Table A6.7. Comparison of Indicator Estimates and Evaluation Targets
[Nuyok RFSA, Uganda, 2018, 2023]

	2018 Baseline	2023 Endline	Final Evaluation Target[6]	Target met or exceeded
GENDER INDICATORS				
Percentage of men and women in union who earned cash in the past 12 months	47.4	66.8	57.4	✓
Male	47.2	68.3	57.2	✓
Female	47.6	65.4	57.6	✓
Percentage of women in union and earning cash who report participation in decisions about the use of self-earned cash	86.6	82.2	93.2	
Percentage of women in union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash	64.8	62.1	81.5	
Percentage of men in union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash	56.6	58.6	69.7	
Percentage of men and women in union with children under two who have knowledge of maternal and child health and nutrition (MCHN) practices	85.0	85.6	95.2	
Male	79.0	75.8	98.3	
Female	89.4	90.9	92.2	
Percentage of men in union with children under two who make maternal health and nutrition decisions alone	26.1	26.5	21.1	
Percentage of women in union with children under two who make maternal health and nutrition decisions alone	45.4	36.8	65.4	
Percentage of men in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	41.8	50.1	56.8	
Percentage of women in union with children under two who make maternal health and nutrition decisions jointly with spouse/partner	36.3	40.6	51.3	
Percentage of men in union with children under two who make child health and nutrition decisions alone	15.7	7.3	7.5	✓
Percentage of women in union with children under two who make child health and nutrition decisions alone	39.7	30.5	54.7	
Percentage of men in union with children under two who make child health and nutrition decisions jointly with spouse/partner	51.1	58.9	66.8	
Percentage of women in union with children under two who make child health and nutrition decisions jointly with spouse/partner	42.1	51.4	52.6	

Table A6.7. Comparison of Indicator Estimates and Evaluation Targets
[Nuyok RFSA, Uganda, 2018, 2023]

	2018 Baseline	2023 Endline	Final Evaluation Target[6]	Target met or exceeded
RESILIENCE INDICATORS				
Shock exposure index	5.5	5.4	4.7	
Cumulative impact of shock exposure index (severity weighted shock exposure)	31.9	28.7	24.5	
Ability to recover from shocks and stressors index	4.1	3.7	5.1	
Proportion of households participating in group-based savings, micro-finance or lending[1,2]	26.4	46.9	59.9	
Index of Social Capital at the household level	55.4	60.9	Not in IPTT	
Absorptive capacity index[3]	20.8	26.4	30.2	
Adaptive capacity Index[4]	39.7	45.1	47.4	✓
Transformative capacity index[5]	36.2	44.3	52.9	
CUSTOM INDICATORS				
Average rating of government's ability to be responsive to citizens' needs (including transparency, inclusivity, effectiveness) as measured on 12 item scorecard	4.7	5.1	Not in IPTT	
Percent of target population who can state at least one health benefit of waiting at least two years after last live birth before attempting the next pregnancy	96.8	96.0	Not in IPTT	
Male	97.0	94.2	Not in IPTT	
Female	96.6	97.0	Not in IPTT	

NOTES: Results not reported when n<30. Differences between baseline and endline indicator estimates are considered statistically significant at the p<0.10 level.

1. Proportion of households participating in group-based savings, micro-finance or lending: BL estimate revised to include all households with relevant data in the denominator.

2. Due to sample loss, the endline estimate for this indicator is based only on adult female and male households with children under two. In contrast, baseline estimates are derived for all adult female and male households. This difference in the relative composition of households compromises the comparability of baseline and endline estimates for this indicator.

3. Absorptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL necessitated exclusion of the access to informal safety nets sub-indicator and revision of the shock preparedness and mitigation sub-indicator.

4. Adaptive Index: BL estimate revised to allow for comparability with EL estimate. Data limitations at EL resulted in revision of the access to education and training sub-indicator.

5. Transformative Index: BL estimate revised to allow for comparability with endline estimate. Data limitations at EL resulted in the exclusion of the participation in local decision making and access to communal natural resources sub-indicators. The access to agricultural extension and access to livestock services sub-indicators were also revised to align better with methodological guidance. The final portion of the revision involved exclusion of the bridging social capital and local government responsiveness sub-indicators from the index, consistent with methodological guidance that requires exclusion of sub-indicators with negative factor loadings.

6. Final evaluation targets and desired direction of change come from Nuyok's IPTT.

Table A6.7. Nuyok indicator targets

Table A6.7 shows baseline and endline indicator estimates and compares endline estimates to Nuyok targets. Nuyok achievements are considered to have exceeded or met targets if the change in an indicator from baseline to endline is statistically significant and the target falls either between the baseline and endline values or is within the lower and upper bound of the confidence interval around the endline estimate.

Survey data show achievement of several outcome indicators. The percentage of households using an improved drinking water source increased significantly from 40.4 at baseline to 52.4% at endline. The target of 55.4% of households is within the range of the endline estimate. The project also met its targets for availability of drinking water within 30 minutes, which increased significantly from 47.8% to 60.8% of households. The target of 68.2% is within the range of the endline estimate.

Nuyok exceeded its target of 37.3% of farmers using agricultural financial services. This indicator increased significantly between baseline and endline rising from 21.7 to 41.3.

The target for the percentage of births receiving at least four antenatal care (ANC) visits during pregnancy was 89.1% of households. The indicator increased significantly between baseline and endline, rising from 77.9% to 85.1% and the target is within the range of the endline estimate.

Nuyok exceeded its target for the percentage of men and women in union who earned cash in the past 12 months. The indicator rose significantly from 47.4% to 66.8%. The target was 57.4.

The percentage of men in union with children under two who make child health and nutrition decisions alone decreased significantly--the desired direction of change--between baseline and endline, dropping from 15.7% to 7.3%. The target of 7.5% was within the range of the estimate.

Nuyok also met its target of 47.4 for the adaptive capacity index indicator. The index rose significantly from 39.7 to 45.1. The target is within the range of the endline estimate.

ANNEX 7: DESCRIPTIVE TABLES

See next page.

Table A7.1. Estimated Population in the Survey Project Areas
[Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL
Total population	337,266	327,498
Male	155,960	153,116
Female	181,305	174,382
Adults age 15 or older	154,061	143,642
Male	68,619	67,882
Female	85,443	75,760
Cash earners (age 15 or older)	61,522	80,898
Male	27,116	38,524
Female	34,406	42,373
Farmers (age 15 or older)	89,522	87,152
Male	38,361	41,551
Female	51,161	45,602
Women of reproductive age (15-49 years)	63,539	57,541
Women 15-49 years who are not pregnant	48,762	45,837
Women 15-49 years who are married or in a union	44,179	41,265
Women 15-49 years with a live birth within the past five years	35,847	31,975
Young female 15-24 years	25,211	19,446
Young female 15-24 years who are married or in a union	12,453	9,921
Adolescents 10-19 years of age	68,821	70,239
Males 10-19 years of age	33,817	35,051
Females 10-19 years of age	35,005	35,188
Children under 5 years of age	63,350	55,523
Males under 5 years of age	29,789	24,529
Females under 5 years of age	33,562	30,994
Children 6-23 months of age	16,548	15,821
Males 6-23 months of age	8,093	6,818
Females 6-23 months of age	8,455	9,003
Children under 6 months of age	6,592	6,928
Males under 6 months of age	2,758	3,251
Females under 6 months of age	3,835	3,676
Parents of children under 2 years of age	38,367	38,514
Male	15,360	17,843
Female	23,007	20,671

Source: BHA 2018 baseline survey and 2023 endline survey weighted population estimates

Table A7.2. Household Characteristics
[Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL	P-val
Total households (Number of households)[1]	62,225	60,965	
Male and female adults	47,485	45,692	
Female adult(s) only	12,508	12,888	
Male adult(s) only	2,231	2,385	
Child(ren) only (no adults)			
Gendered household type (Percent of households)	100.0	100.0	
Male and female adults	76.3	74.9	0.529
Female adult(s) only	20.1	21.1	0.615
Male adult(s) only	3.6	3.9	0.752
Child(ren) only (no adults)	0.7	0.0	
Average household size (Number of persons)	5.4	5.4	0.814
Average number of adults 15 and older per household	2.5	2.4	0.589
Average number of farmers 15 and older per household	1.4	1.4	0.923
Percent of households with children under 5 years of age	62.7	63.3	0.855
Percent of households with a child 6-23 months of age	26.1	25.3	0.721
Percent of households with a child under 6 months of age	10.3	11.0	0.587
Household headship (Percent male)	62.1	67.9	0.064
Education level of head of household (Percent of households)			
No formal education	66.0	59.3	0.199
Primary	19.5	25.2	0.073
Secondary	13.0	13.3	0.917
Higher	1.6	2.2	0.463
Number of responding households	1,259	783	
Male and female adults	974	581	
Female adult(s) only	242	171	
Male adult(s) only	43	31	
Child(ren) only (no adults)	0	0	

[1] Adults are defined as individuals 18 or older.

Table A7.3. Household Dietary Diversity
[Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		RFSA vs. Non-RFSA	RFSA vs. BL
	Total	Total	P-val	RFSA	Non-RFSA	P-val	P-val
Cereals or grains	62.4	68.5	0.257	77.8	59.8	0.000	0.007
Roots or tubers	21.5	8.4	0.001	11.0	5.8	0.002	0.006
Vegetables	60.8	66.3	0.181	66.6	66.4	0.958	0.293
Fruit	10.5	8.6	0.424	11.0	6.4	0.074	0.843
Meat or chicken	4.1	4.9	0.407	5.5	4.4	0.454	0.201
Eggs	1.6	4.1	0.031	4.2	4.1	0.945	0.096
Fish	5.2	4.5	0.501	5.5	3.3	0.266	0.857
Seeds or legumes	24.9	42.6	0.000	46.3	38.8	0.128	0.000
Dairy	17.2	18.5	0.782	14.5	22.6	0.000	0.509
Oils or fats	28.7	30.2	0.772	34.3	26.5	0.066	0.252
Sugar	11.9	14.2	0.446	15.5	13.0	0.368	0.333
Coffee/tea or condiments	57.2	76.3	0.001	79.7	73.0	0.046	0.000
Number of responding households	1,036	744		372	366		

Table A7.3.1 Food Insecurity Experience Scale (FIES)
[Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL	P-val
Worried about enough food to eat	91.7	94.5	0.102
Unable to eat healthy nutritious food	92.2	93.4	0.525
Ate only a few kinds of foods	92.0	94.0	0.240
Skipped a meal	91.5	92.9	0.468
Ate less than should	92.0	94.7	0.064
No food due to lack of money or resource	90.7	91.2	0.796
Hungry but did not eat	90.1	91.3	0.576
Went a whole day without eating	90.7	91.2	0.796
Number of responding households	1,235	742	

Table A7.4. Crops Raised by Farmers

Percentage of farmers by type of crops [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		
	Total	Total	P-val	RFSA	Non-RFSA	P-val
1. MAIZE	43.4	35.7	0.137	39.9	29.7	0.039
2. WHEAT	0.2	0.0	0.166	0.0	0.0	
3. MILLET	4.6	10.1	0.153	13.4	5.8	0.002
4. BARLEY	0.0	0.8	0.051	0.9	0.6	0.507
5. SORGHUM	85.9	69.4	0.008	69.0	70.1	0.821
6. SOYBEAN	2.6	1.9	0.608	2.0	1.7	0.616
7. LEGUME (BEAN, LENTIL)	43.9	38.0	0.267	40.1	35.9	0.372
8. OILSEED (SUNFLOWER, MUSTARD, SESAME)	29.3	22.4	0.057	26.3	17.8	0.024
9. FRUITS	0.4	0.0	0.185	0.1	0.0	0.335
10. POTATO	5.4	3.8	0.313	5.0	2.3	0.092
11. CHAT	0.1	0.0	0.178	0.0	0.0	
13. GROUNDNUTS	8.7	12.6	0.254	16.9	7.7	0.021
15. VEGETABLES	7.1	2.3	0.005	3.0	1.5	0.302
97. OTHER1	7.0	14.0	0.003	17.2	9.5	0.031
98. OTHER2	1.9	4.3	0.115	3.7	5.0	0.496
Number of farmers that raised crops	1651	969		530	435	

Table A7.5. Crops Raised by Farmers, by sex of farmer

Percentage of male and female farmers by type of crop [Nuyok RFSA, Uganda, 2018, 2023]

	BL			EL			BL vs. EL (P-val)	
	Male	Female	P-val	Male	Female	P-val	Male	Female
1. MAIZE	46.8	40.9	0.108	39.8	32.1	0.034	0.154	0.149
2. WHEAT	0.4	0.1	0.479	0.0	0.0		0.298	0.184
3. MILLET	4.2	5.0	0.469	13.7	7.1	0.058	0.082	0.464
4. BARLEY	0.1	0.0	0.327	0.9	0.7	0.682	0.112	0.058
5. SORGHUM	84.0	87.4	0.052	66.3	72.1	0.066	0.010	0.010
6. SOYBEAN	2.8	2.4	0.606	1.6	2.1	0.747	0.351	0.870
7. LEGUME (BEAN, LENTIL)	44.0	43.8	0.950	39.5	36.8	0.562	0.430	0.236
8. OILSEED (SUNFLOWER, MUSTARD, SESAME)	28.0	30.2	0.419	23.9	21.1	0.266	0.321	0.016
9. FRUITS	0.6	0.3	0.563	0.0	0.1	0.329	0.196	0.470
10. POTATO	6.1	4.8	0.310	4.9	2.7	0.280	0.659	0.138
11. CHAT	0.0	0.2	0.180	0.0	0.0			0.180
13. GROUNDNUTS	8.7	8.6	0.959	12.1	13.0	0.532	0.354	0.223
15. VEGETABLES	6.2	7.8	0.275	2.9	1.8	0.300	0.122	0.000
97. OTHER1	7.7	6.5	0.239	15.2	13.0	0.432	0.015	0.008
98. OTHER2	2.5	1.4	0.085	5.1	3.5	0.353	0.279	0.027

Table A7.6. Livestock Raised by Farmers

Percentage of livestock farmers by type of livestock [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		
	Total	Total	P-val	RFSA	Non-RFSA	P-val
Cattle	49.1	46.5	0.798	46.1	47.4	0.902
Goats	47.9	53.8	0.362	56.0	49.4	0.495
Sheep	13.9	10.2	0.422	9.8	11.1	0.794
Donkeys	1.3	0.0	0.161	0.0	0.0	
Camel	0.0	0.0		0.0	0.0	
Poultry	19.9	13.2	0.135	15.7	7.9	0.211
Pigs	2.5	10.7	0.059	14.1	3.8	0.003
Other	0.0	0.0		0.0	0.0	
Number of farmers that raised livestock	437	238		161	77	

Table A7.7. Land Ownership, by sex of farmer [Nuyok RFSA, Uganda, 2018, 2023]

	Own			Rent			Share			None		
	BL	EL	P-val	BL	EL	P-val	BL	EL	P-val	BL	EL	P-val
Male	75.5	90.2	0.000	12.1	8.1	0.114	9.4	1.4	0.000	3.0	0.3	0.013
Female	75.0	86.0	0.001	8.9	6.7	0.341	11.8	6.5	0.059	4.3	0.8	0.009
Number of farmers[1]	1,258	828		190	86		145	48		58	7	

[1] Refers to the total number of farmers (female and male combined) that responded 'yes' to each of the land ownership categories (own, rent, share, none), respectively.

Table A7.8. Financial Services

Percentage of farmers by type of financial service [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		
	Total	Total	P-val	RFSA	Non-RFSA	P-val
Credit						
Yes	12.8	17.1	0.112	21.1	12.6	0.007
No	87.2	82.9				
Savings						
Yes	18.1	40.2	0.000	52.1	26.1	0.000
No	81.9	59.8				
Agricultural Insurance						
Yes	2.8	1.2	0.072	0.9	1.6	0.421
No	97.2	98.8				
Did not use any financial services	78.3	58.4	0.001	46.9	72.0	0.000
Number of responding farmers	1651	969		530	435	

Table A7.9. Value Chain Activities

Percentage of farmers by value chain activity [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		
	Total	Total	P-val	RFSA	Non-RFSA	P-val
Percentage of farmers who plant crops or raise/buy livestock with the specific intention to sell or resell to earn income	42.7	37.4	0.301	46.5	29.3	0.001
Value Chain Activities						
Procurement of inputs for crops	27.4	26.2	0.803	33.4	17.4	0.001
Procurement of inputs for livestock	3.8	5.5	0.273	8.3	2.4	0.000
Tillage of land	27.1	7.8	0.000	11.2	3.8	0.008
Bulk transporting of inputs produced	0.4	1.6	0.040	1.9	1.2	0.428
Bulk transporting of animals (on foot or by vehicle)	0.1	1.0	0.021	1.3	0.5	0.329
Sorting produce	17.6	9.5	0.001	14.8	3.4	0.000
Grading produce	7.0	2.6	0.019	4.3	0.6	0.012
Drying and processing produce	14.9	9.5	0.018	13.1	5.2	0.012
Trading or marketing (wholesale, retail, or export) for either animals or crops	6.8	2.6	0.045	3.1	2.0	0.154
Use of supplements to increase livestock production	0.6	0.5	0.724	0.7	0.2	0.340
Feed production	0.2	1.4	0.056	2.2	0.4	0.105
Other activity	0.3	0.2	0.633	0.1	0.3	0.399
Did not practice any of these activities	7.6	6.2	0.583	6.4	6.2	0.961
Total number of farmers who plant crops or raise/buy livestock	1,651	968		529	435	

Note: Highlighted cells represent project promoted value chain practices or technologies

Table A7.10. Sustainable Agricultural Practices

Percentage of farmers by type of agricultural practice [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		
	Total	Total	P-val	RFSA	Non-RFSA	P-val
Crops						
Soil preparation by hand	79.2	73.9	0.235	76.9	69.9	0.278
Soil preparation with ox plow	42.5	33.5	0.093	37.5	28.6	0.040
Soil preparation with tractor	1.7	4.2	0.014	3.8	4.8	0.560
Broadcasting seed	74.0	54.2	0.000	56.7	51.1	0.457
Planting seeds in rows	22.1	21.0	0.829	26.8	14.5	0.011
Crop rotation	12.2	9.0	0.301	10.3	7.6	0.141
Fertilizer application	1.5	1.5	0.976	0.8	1.9	0.200
Intercropping	43.1	27.0	0.002	27.7	25.8	0.753
Pest and disease control	4.6	11.5	0.019	14.9	7.7	0.002
Weed control	59.9	49.9	0.096	55.1	43.6	0.031
Mulching	9.0	4.4	0.102	5.5	3.2	0.034
Thinning	15.2	4.5	0.000	6.3	2.4	0.008
Contouring land with berms and swales	0.4	0.1	0.261	0.1	0.0	0.325
Other	3.0	0.7	0.187	1.0	0.3	0.340
None of these practices	0.2	6.2	0.017	5.5	7.1	0.713
Number of farmers that raised crops	1,649	965		528	433	
Livestock						
Animal shelters	43.8	40.1	0.625	48.8	22.3	0.003
Kraals	32.8	37.8	0.504	37.2	38.9	0.886
Vaccinations	39.0	44.0	0.459	44.1	43.9	0.984
Deworming	35.1	42.8	0.270	46.9	34.3	0.245
Homemade animal feeds made of locally available products	9.6	5.7	0.181	6.6	3.8	0.434
Used the services of community animal health workers	9.2	14.0	0.169	15.3	11.3	0.390
Purchased drugs/medicines to give to animals	22.3	19.0	0.454	18.7	19.5	0.913
Rotational grazing	10.6	5.4	0.090	3.7	8.9	0.228
Dehorning	3.5	7.1	0.218	7.0	7.3	0.961
Castration	9.7	10.2	0.866	9.2	12.4	0.632
Did not use any of these practices in the past 12 months	9.2	10.9	0.712	10.2	12.3	0.731
Number of farmers that raised livestock	437	238		161	77	
Natural resource management						
Management of watersheds or reforestation	1.5	5.5	0.019	5.8	5.3	0.875
Agro-forestry or cultivation of fruit trees	2.8	8.6	0.001	12.3	4.4	0.000
Management of forest plantation	1.3	4.5	0.044	5.3	3.7	0.541
Management of natural regeneration	5.8	7.6	0.519	11.8	2.8	0.007
Collectint products from forest plants	0.2	1.2	0.041	0.9	1.6	0.232
Soil conservation on hillsides	1.9	1.7	0.824	2.1	1.4	0.386
Construction of water catchments	8.5	5.5	0.164	5.7	5.3	0.815
Did not use any of these practices in the past 12 months	83.4	75.1	0.055	68.5	82.6	0.002
Number of farmers that raised crops or livestock	1,651	969		530	435	

Note: Highlighted cells represent project promoted practices or technologies

Table A7.11. Improved Storage Practices

Percentage of farmers by storage practice and project area [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		
	Total	Total	P-val	RFSA	Non-RFSA	P-val
Storage practices						
Cereal bank	0.1	0.4	0.360	0.2	0.6	0.244
Granary	50.5	35.9	0.002	40.9	29.2	0.008
Super grain / PICS bags	28.9	23.4	0.136	24.1	22.9	0.771
Manufactured silo	0.3	0.1	0.126	0.1	0.0	0.336
Other	4.9	4.3	0.658	3.8	5.0	0.238
Did not use any of these methods	25.9	44.6	0.000	41.0	49.2	0.019
Number of responding farmers	1,649	965		528	433	

Note: Highlighted cells represent practices that are considered improved storage practices

Table A7.12. Household Sanitation and Drinking Water
Sanitation facility, source of drinking water and treatment for drinking water [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		
	Total	Total	P-val	RFSA	Non-RFSA	P-val
Improved, not shared sanitation facility						
Flush to piped sewer system	0.0	0.0		0.0	0.0	
Flush to septic tank	0.0	0.0		0.0	0.0	
Ventilated improved pit latrine	0.3	1.2	0.133	1.5	0.9	0.572
Pit latrine with slab	6.2	6.7	0.854	9.4	4.1	0.003
Ecosan Latrine	0.2	0.0	0.323	0.0	0.0	
Improved, shared sanitation facility						
Flush to piped sewer system	0.0	0.0		0.0	0.0	
Flush to septic tank	0.0	0.0		0.0	0.0	
Ventilated improved pit latrine	2.0	3.6	0.172	2.1	5.2	0.112
Pit latrine with slab	12.3	11.2	0.741	14.6	7.7	0.006
Ecosan Latrine	0.3	0.0	0.297	0.0	0.0	
Non-improved sanitation facility						
Flush to somewhere else	0.0	0.0		0.0	0.0	
Flush to don't know where	0.0	0.0		0.0	0.0	
Latrine Without Slab/Open Pit	10.5	11.2	0.809	10.9	11.8	0.793
Latrine with Open Pit/Hole	0.0	0.0		0.0	0.0	
Hanging toilet	0.4	0.7	0.333	0.6	0.8	0.676
Dig and bury	1.0	1.4	0.543	1.7	1.1	0.500
No Facility/Bush/Field	66.5	63.1	0.667	57.7	68.2	0.093
Other	0.1	0.5	0.132	0.9	0.2	0.101
Improved source of drinking water						
Piped into dwelling	0.1	0.2	0.731	0.2	0.2	0.868
Piped into yard/plot	0.0	0.8	0.172	1.4	0.2	0.224
Piped to public tap/standpipe	1.4	1.7	0.791	1.4	2.0	0.554
Tubewell or borehole	86.6	92.0	0.318	91.4	92.5	0.621
Protected well	0.2	0.6	0.482	0.4	0.7	0.555
Protected spring	0.1	0.1	0.908	0.2	0.0	0.304
Rainwater	0.0	0.0		0.0	0.0	
Bottled water	0.0	0.0		0.0	0.0	
Non-improved source of drinking water						
Unprotected well	0.8	0.3	0.215	0.5	0.0	0.058
Unprotected spring	1.5	0.9	0.561	1.0	0.8	0.312
Rock catchments	0.0	0.0		0.0	0.0	
Surface water (river/dam/ lake/ponds/stream/canal/irrigation channel)	0.0	0.0		0.0	0.0	
Other	0.9	0.3	0.327	0.3	0.3	0.872
Water availability						
Water is generally available from this source year round (% 'Yes')	56.3	74.9	0.001	71.7	78.4	0.151
Water was unavailable for a day or more during the last two weeks (% 'No')	73.1	69.5	0.352	73.7	65.0	0.013
Water treatment prior to drinking						
Chlorination	2.0	0.0	0.013	0.0	0.0	
Flocculent/Disinfectant	0.2	0.2	0.876	0.3	0.1	0.321
Filtration	1.3	0.8	0.431	0.7	0.9	0.782
Solar Disinfection	0.0	0.1	0.311	0.0	0.1	0.311
Boiling	5.4	8.8	0.035	11.6	6.2	0.005
Other	0.1	0.9	0.152	0.7	1.0	0.427
No treatment	92.0	90.0	0.291	87.9	91.8	0.032
Number of households	1,259	782		392	386	

[1] After consultation with FFP Washington Office and ICF data collection team, responses recorded in "Flush to pit latrine" are determined as open pit facilities (hence not improved). These facilities are not presented under Non-improved sanitation facility category.

Table A7.13. Nutritional Status of Non-pregnant Women of Reproductive Age

Women's height and BMI levels [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL	P-val
Percent less than 145 cm	0.4	0.5	0.806
Mean Body Mass Index (BMI)	19.5	19.3	0.431
Normal			
18.5-24.9 (total normal)	57.8	54.3	0.240
Underweight			
<18.5 (total underweight)	38.6	42.7	0.204
17.0-18.4 (mildly underweight)	14.8	14.8	0.989
<17 (moderately and severely underweight)	23.8	27.9	0.135
Overweight/obese			
≥25 (total overweight or obese)	3.6	3.0	0.698
25.0-29.9 (overweight)	2.5	2.3	0.889
≥30.0 (obese)	1.1	0.7	0.515
Number of non-pregnant women of reproductive age	872	499	

Table A7.14. Women's Dietary Diversity
Percentage of women 15-49 years of age consuming 10 MDD-W food groups [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		RFSA vs. Non-RFSA	RFSA vs. BL
	Total	Total	P-val	RFSA	Non-RFSA	P-val	P-val
Grains, roots and tubers	76.6	71.7	0.360	76.5	66.3	0.151	0.972
Legumes and beans	29.3	41.4	0.021	42.7	39.6	0.628	0.008
Nuts and seeds	4.0	3.0	0.379	3.5	2.4	0.383	0.680
Dairy products (milk, yogurt, cheese)	16.4	17.3	0.776	15.6	19.4	0.167	0.830
Eggs	2.4	3.7	0.336	3.0	4.5	0.258	0.652
Flesh foods including organ meat and misc. small animal protein	11.1	13.0	0.373	14.2	11.6	0.304	0.198
Vitamin A dark green leafy vegetables	35.6	40.0	0.341	38.1	41.9	0.354	0.650
Other Vitamin A rich vegetables and fruits	33.1	24.6	0.040	26.3	22.7	0.493	0.054
Other vegetables	73.8	76.5	0.430	78.4	74.0	0.380	0.307
Other fruits	9.3	12.5	0.226	13.7	11.0	0.466	0.195
Number of responding women 15-49 years	1,062	614		338	275		

Table A7.15. Contraceptive Prevalence

Percentage of women 15-49 years married or in a union that used a contraceptive method by type of contraceptive method [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL	P-val
Modern Methods			
Female sterilization	0.6	0.4	0.605
Male sterilization	0.0	0.0	
Inter-uterine device	1.1	0.5	0.344
Injectables	2.0	4.3	0.127
Implants	2.7	3.7	0.575
Pill	0.6	0.1	0.178
Condom	1.6	0.6	0.159
Female condom	0.2	0.0	0.320
Emergency contraception	0.0	0.0	
Standard days method	2.2	4.3	0.307
Lactational amenorrhea method	0.7	5.3	0.003
Other modern method	3.2	1.1	0.042
Any modern method	14.2	18.8	0.235
Traditional Methods			
Rhythm	0.1	0.0	0.327
Withdrawal	0.2	1.4	0.195
Other traditional method	0.0	0.0	
Any traditional method	0.4	1.4	0.251
Any Method	14.5	19.8	0.188
Number of women 15-49 years married or in a union	636	405	

Table A7.16. Children's Nutritional Status
Prevalence of stunted, underweight, and wasted children by age in months [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL	P-val
Prevalence of stunted children 0-59 months			
<6	11.5	7.3	0.293
6-11	18.4	23.5	0.525
12-17	45.7	27.9	0.025
18-23	39.6	36.5	0.707
24-29	40.7	40.7	0.998
30-35	39.4	52.9	0.135
36-41	39.5	40.5	0.904
42-47	39.8	48.9	0.319
48-53	35.8	46.8	0.073
54-59	47.2	37.5	0.397
Number of children 0-59 months with valid height measurement	1,186	726	
Prevalence of underweight children 0-59 months			
<6	14.0	6.6	0.071
6-11	30.4	25.8	0.606
12-17	39.5	25.6	0.098
18-23	25.3	34.6	0.166
24-29	32.4	32.9	0.955
30-35	20.4	35.1	0.171
36-41	27.4	27.7	0.966
42-47	20.8	35.7	0.065
48-53	26.6	40.3	0.043
54-59	43.7	20.4	0.023
Number of children 0-59 months with valid weight measurement	1,196	726	
Prevalence of wasted children 0-59 months			
<6	10.9	5.2	0.175
6-11	19.8	20.8	0.901
12-17	21.1	15.8	0.506
18-23	9.3	23.0	0.007
24-29	12.2	13.8	0.791
30-35	6.0	17.1	0.062
36-41	8.6	2.6	0.042
42-47	2.5	13.4	0.040
48-53	12.1	19.5	0.100
54-59	13.0	10.4	0.750
Number of children 0-59 months with valid measurements	1,188	722	

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

Table A7.17. Breastfeeding Status

Breastfeeding status for children 0-23 months by age in months [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL	P-val
Not breastfeeding			
<2	0.0	0.0	
2-3	0.0	1.4	0.309
4-5	0.0	0.0	
6-8	0.0	0.0	
9-11	2.0	9.3	0.207
12-17	10.1	1.7	0.017
18-23	35.2	26.3	0.199
Exclusively breastfed			
<2	90.5	88.3	0.811
2-3	91.8	69.4	0.059
4-5	38.2	49.1	0.602
6-8	13.1	0.0	0.009
9-11	0.4	0.0	0.338
12-17	1.9	0.0	0.100
18-23	0.6	0.0	0.329
Breastfed and plain water only			
<2	7.5	1.9	0.202
2-3	2.5	13.4	0.071
4-5	10.5	10.9	0.971
6-8	8.3	3.9	0.467
9-11	5.9	0.0	0.132
12-17	0.0	4.1	0.191
18-23	1.7	0.0	0.312
Breastfed and non-milk liquids			
<2	0.0	0.0	
2-3	0.0	1.4	0.309
4-5	10.5	21.6	0.570
6-8	8.0	0.0	0.028
9-11	8.4	2.6	0.266
12-17	1.5	0.0	0.162
18-23	0.0	0.0	
Breastfed and other milk			
<2	0.0	0.0	
2-3	5.7	0.0	0.185
4-5	2.1	3.3	0.758
6-8	2.3	0.0	0.167
9-11	0.0	2.5	0.326
12-17	0.4	0.0	0.325
18-23	0.0	0.0	
Breastfed and complementary foods			
<2	2.0	9.8	0.228
2-3	0.0	14.3	0.081
4-5	38.7	15.1	0.081
6-8	68.3	96.1	0.000
9-11	83.3	85.6	0.813
12-17	86.0	94.2	0.104
18-23	62.6	73.7	0.128
Number of children	490	306	568

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

Table A7.18. Minimum Acceptable Diet (MAD)
Components of MAD indicator for children 6-23 months [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL	P-val
Breastfed children 6-8 months			
Percent with minimum meal frequency (2 or more)	51.1	77.0	0.050
Percent with minimum dietary diversity (4 or more)	12.5	23.2	0.297
Grains, roots, and tubers	44.1	87.7	0.716
Legumes and nuts	22.2	45.7	0.006
Dairy products (milk, yogurt, cheese)	20.0	27.7	0.872
Flesh foods (meat, fish, poultry, and liver/organ meats)	2.1	7.6	0.274
Eggs	5.3	7.6	0.893
Vitamin A-rich fruits and vegetables	24.0	37.6	0.232
Other fruits and vegetables	38.8	50.8	0.503
Number of children	53	30	
Breastfed children 9-23 months			
Percent with minimum meal frequency (3 or more)	16.1	33.7	0.010
Percent with minimum dietary diversity (4 or more)	20.1	29.5	0.095
Grains, roots, and tubers	82.6	83.1	0.716
Legumes and nuts	30.3	49.9	0.006
Dairy products (milk, yogurt, cheese)	27.8	26.4	0.872
Flesh foods (meat, fish, poultry, and liver/organ meats)	9.4	15.0	0.274
Eggs	4.8	4.5	0.893
Vitamin A-rich fruits and vegetables	42.2	37.8	0.232
Other fruits and vegetables	66.0	70.3	0.503
Number of children	254	156	
Non-breastfed children 6-23 months			
Percent with minimum meal frequency (4 or more + 2 milk)	14.2	18.1	0.764
Percent with minimum dietary diversity (4 or more)	19.5	17.6	0.856
Grains, roots, and tubers	90.7	75.7	0.716
Legumes and nuts	25.6	50.5	0.006
Dairy products (milk, yogurt, cheese)	26.1	43.2	0.872
Flesh foods (meat, fish, poultry, and liver/organ meats)	11.0	9.3	0.274
Eggs	0.0	2.1	0.893
Vitamin A-rich fruits and vegetables	59.5	41.5	0.232
Other fruits and vegetables	60.4	80.5	0.503
Number of children	48	27	39

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

Table A7.19. Livelihoods
Percentage of households reporting engaging in livelihood in the past 12 months [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		RFSA vs. Non-RFSA	RFSA vs. BL
	Total	Total	P-val	RFSA	Non-RFSA	P-val	P-val
Farming/crop production and sales	73.1	64.6	0.222	73.5	55.5	0.000	0.950
Livestock production/fattening and sales	15.0	18.7	0.337	26.6	11.1	0.000	0.006
Agricultural wage labor	60.6	56.6	0.504	63.2	49.7	0.004	0.674
Non-agricultural wage labor	32.4	22.7	0.026	27.2	18.4	0.023	0.287
Salaried work	8.9	9.1	0.932	10.1	8.3	0.342	0.632
Sale of wild/bush products (including charcoal, firewood)	39.6	53.2	0.041	50.6	55.7	0.136	0.088
Honey production and sales	2.4	4.6	0.101	7.2	2.1	0.039	0.039
Petty trade (selling other products)	6.4	15.0	0.001	19.5	10.7	0.035	0.000
Petty trade (selling own products)	17.4	12.0	0.062	17.0	7.2	0.012	0.920
Other self-employment/own business (agricultural)	5.5	5.7	0.855	6.8	4.3	0.157	0.469
Other self-employment/own business (non-agricultural)	3.2	5.2	0.192	5.6	4.9	0.613	0.223
Rental of land, house, rooms	2.0	2.0	0.942	1.6	2.5	0.524	0.660
Remittances	8.8	12.3	0.281	12.9	10.8	0.475	0.243
Gifts/inheritance	24.2	21.4	0.509	22.8	19.9	0.391	0.783
Safety net food/cash assistance	10.6	25.1	0.001	34.9	15.8	0.000	0.000
Artisanal mining/quarrying	2.8	6.5	0.143	7.8	4.8	0.141	0.126
Other	1.1	4.2	0.021	5.1	3.0	0.093	0.012
Livelihood diversity (0-17)	3.1	3.4	0.317	3.9	2.8	0.000	0.007
Number of households	1,251	774		388	383		

Table A7.20 Shocks
Percentage of households reporting in the past 12 months [Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		RFSA vs. Non-RFSA	RFSA vs. BL
	Total	Total	P-val	RFSA	Non-RFSA	P-val	P-val
Climate shocks (at least one)	**97.7**	**95.4**	**0.141**	**97.3**	**93.4**	**0.068**	**0.719**
Excessive rains	86.6	23.6	0.000	24.6	22.5	0.620	0.000
Flooding	72.1	15.6	0.000	15.5	15.8	0.938	0.000
Drought	61.3	83.1	0.000	85.7	80.8	0.129	0.000
Variable rain (early/late)	32.0	45.1	0.058	52.6	37.5	0.002	0.005
Hail/frost	20.0	11.6	0.063	14.1	9.1	0.153	0.258
Landslides/Erosion	14.0	1.9	0.000	1.8	1.5	0.727	0.000
Biologic shocks (at least one)	**73.6**	**80.0**	**0.106**	**85.9**	**74.0**	**0.005**	**0.005**
Crop disease	41.4	50.9	0.026	58.2	43.2	0.000	0.002
Crop pests	45.9	26.6	0.000	23.6	29.7	0.157	0.000
Weeds	40.7	50.8	0.065	58.1	43.3	0.001	0.002
Livestock disease	21.4	17.7	0.294	26.2	9.7	0.000	0.265
Human disease outbreaks	15.7	21.7	0.184	24.0	19.6	0.309	0.074
Conflict shocks (at least one)	**24.8**	**59.5**	**0.000**	**66.5**	**52.2**	**0.000**	**0.000**
Theft of destruction of assets	7.9	27.3	0.000	30.7	23.7	0.040	0.000
Theft of livestock	4.9	39.3	0.000	46.1	32.0	0.000	0.000
Land conflict	10.3	8.4	0.505	9.7	6.7	0.199	0.869
Water conflict	2.2	3.9	0.056	3.6	4.3	0.669	0.203
Gender-based violence	7.5	7.8	0.911	10.5	4.8	0.005	0.224
Economic shocks (at least one)	**58.7**	**81.3**	**0.000**	**83.7**	**78.8**	**0.058**	**0.000**
Delay in food assistance	12.8	32.7	0.000	29.5	35.8	0.106	0.001
Increasing food prices	57.8	76.3	0.002	80.9	71.5	0.012	0.000
Number of shocks (0-18)	**5.5**	**5.4**	**0.769**	**6.0**	**4.9**	**0.000**	**0.301**
Shock exposure index (0-144)	**31.9**	**28.7**	**0.049**	**30.4**	**26.9**	**0.002**	**0.376**
Number of households	1,251	774		388	383		

Table A7.21 Coping Strategies
Percentage of households reporting in the past 12 months
[Nuyok RFSA, Uganda, 2018, 2023]

	BL	EL		EL		RFSA vs. Non-RFSA	RFSA vs. BL
	Total	Total	P-val	RFSA	Non-RFSA	P-val	P-val
Livestock and Land Holdings							
Send livestock in search of pasture	0.8	5.7	0.119	7.2	4.2	0.287	0.149
Sell livestock	4.5	8.1	0.223	10.4	6.0	0.115	0.164
Slaughter livestock	2.1	1.9	0.873	2.4	1.5	0.298	0.791
Lease out land	4.3	0.8	0.000	0.3	1.4	0.341	0.000
Migration							
HH member migrated	3.8	2.5	0.188	3.5	1.5	0.337	0.862
Migrate (the whole family)	1.4	1.2	0.715	1.0	1.4	0.673	0.563
Send children or an adult to stay with relatives	1.9	5.4	0.034	3.1	7.7	0.075	0.299
Coping Strategies to Reduce Current Expenditure							
Take children out of school (to work, or can't pay school fees)	1.7	3.0	0.175	2.6	3.5	0.571	0.495
Move to less expensive housing	1.6	1.0	0.417	0.4	1.6	0.150	0.037
Reduce food consumption (quantity/meal; # of meals/day)	30.2	23.4	0.154	22.6	24.4	0.695	0.103
Reduced non-essential HH expenses	8.9	9.8	0.743	10.2	9.5	0.815	0.612
Gotten food on credit from a local merchant	2.9	4.5	0.181	6.2	2.8	0.018	0.008
Coping Strategies to Get More Food or Money							
Take up new/additional work (casual labor, wage labor)	21.0	21.3	0.935	19.7	23.1	0.320	0.745
Sell household items (e.g., radio, bed)	0.1	1.4	0.026	1.4	1.5	0.957	0.057
Sell productive assets (e.g., plough, water pump)	0.4	2.6	0.103	1.3	4.0	0.297	0.232
Take out a loan (with interest) from a (formal) bank	0.2	1.0	0.116	1.1	0.9	0.607	0.088
Take out a loan (with interest) from an MFI or village savings group	1.2	6.9	0.003	8.5	5.3	0.035	0.003
Take out a loan (with interest) from a money-lender	0.6	0.5	0.814	1.0	0.0	0.095	0.659
Take out a loan (no interest) from friends or relatives within the community	1.6	2.1	0.610	2.3	1.9	0.726	0.500
Take out a loan (no interest) from friends or relatives outside of the community	0.8	1.5	0.377	1.1	1.9	0.530	0.737
Gift of money (not remittances) or food from within community	0.8	3.9	0.028	3.1	4.8	0.195	0.130
Gift of money (not remittances) or food from outside of community	0.6	2.9	0.036	2.0	3.8	0.124	0.149
Send children to work for money (e.g., domestic service)	0.5	1.7	0.216	2.0	1.4	0.435	0.245
Receive emergency food aid from the government or NGO	0.0	10.9	0.000	10.9	11.0	0.970	0.006
Receive emergency cash transfer from the government or NGO	2.5	1.1	0.355	1.3	1.0	0.549	0.406
Participate in government or NGO food-for-work or cash-for-work activities	0.2	0.5	0.155	0.3	0.6	0.446	0.442
Use money from savings	0.7	2.3	0.044	3.0	1.6	0.164	0.027
Remittances from a relative that migrated	0.6	1.4	0.103	0.7	2.0	0.273	0.797
Other	3.8	12.3	0.000	12.2	12.5	0.912	0.002
Number of households	1,251	774		388	383		

Table A7.22 Resilience capacity indexes and sub-indicators
[Nuyok RFSA, Uganda, 2018, 2023]

	Factor Loading	BL	EL		EL		RFSA vs. Non-RFSA	RFSA vs. BL
		Total	Total	P-val	RFSA	Non-RFSA	P-val	P-val
Absorptive Capacity Index (0-100)		**20.8**	**26.4**	**0.008**	**30.6**	**22.3**	**0.000**	**0.000**
Shock preparedness and mitigation (0-4)	0.71	0.6	0.8	0.012	1.0	0.6	0.000	0.000
Index of asset ownership (0-71)	0.63	8.3	9.4	0.026	10.4	8.4	0.000	0.000
Access to savings (0-1)	0.55	0.24	0.36	0.018	0.46	0.26	0.000	0.000
Access to agricultural insurance (0-1)	0.45	0.04	0.01	0.015	0.01	0.01	0.897	0.025
Availability of humanitarian assistance (0-1)	0.39	0.12	0.28	0.001	0.33	0.23	0.037	0.001
Bonding social capital index (0-6)	0.29	2.4	2.7	0.089	2.8	2.5	0.003	0.008
Access to remittances (0-1)	0.25	0.09	0.13	0.268	0.13	0.12	0.632	0.267
Availability of informal safety nets (0-6)	n/a	2.1	2.8	0.001	2.9	2.8	0.533	0.001
Adaptive Capacity Index (0-100)		**39.7**	**45.1**	**0.021**	**51.3**	**39.0**	**0.000**	**0.000**
Index for exposure to information (0-19)	0.70	5.4	7.4	0.006	8.7	6.0	0.000	0.000
Index of asset ownership (0-71)	0.62	8.3	9.4	0.026	10.4	8.4	0.000	0.000
Index for education and training (0-2)	0.60	0.7	1.0	0.011	1.2	0.7	0.000	0.000
Livelihood diversification (0-17)	0.55	3.1	3.4	0.317	3.9	2.8	0.000	0.007
Index of aspirations/confidence to adapt (0-16)	0.48	10.8	10.6	0.330	10.9	10.3	0.006	0.621
Linking social capital index (0-4)	0.48	1.0	1.1	0.194	1.4	0.9	0.000	0.013
Access to financial resources (0-2)	0.33	1.2	1.5	0.067	1.7	1.4	0.056	0.009
Adoption of improved practices (0-1)	0.31	0.85	0.78	0.039	0.86	0.69	0.000	0.826
Bridging social capital index (0-6)	0.24	2.4	2.6	0.291	2.7	2.4	0.006	0.050
Transformative Capacity Index (0-100)		**36.2**	**44.3**	**0.116**	**47.7**	**40.9**	**0.039**	**0.063**
Access to infrastructure (0-4)	0.80	1.2	1.3	0.776	1.4	1.2	0.059	0.465
Access to livestock services (0-2)	0.70	0.5	0.5	0.997	0.5	0.4	0.130	0.663
Access to basic services (0-5)	0.62	1.7	1.8	0.376	1.8	1.9	0.744	0.520
Access to markets (0-3)	0.57	1.8	2.2	0.100	2.1	2.4	0.025	0.318
Access to extension (0-2)	0.47	0.1	0.3	0.043	0.4	0.2	0.002	0.011
Linking social capital index (0-4)	0.26	1.0	1.1	0.194	1.4	0.9	0.000	0.013
Collective action (0-10)	0.14	0.3	0.4	0.622	0.5	0.2	0.000	0.003
Formal safety nets (0-6)	0.00	0.1	0.5	0.005	0.5	0.5	0.435	0.005
Index for local government responsiveness (0-1)	n/a	0.83	1.00	0.017	1.00	1.00		0.017
Participation in local decision making (0-1)	n/a	0.51	0.78	0.000	0.84	0.73	0.025	0.000
Access to communal natural resources (0-4)	n/a	0.4	0.6	0.067	0.8	0.4	0.002	0.013
Number of households		1,251	774		388	383		