Baseline Study of the ViMPlus Resilience Food Security Activity (RFSA) in Burkina Faso: Final Report

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The Implementer-Led Evaluation & Learning (IMPEL) Associate Award works to improve the design and implementation of Bureau for Humanitarian Assistance (BHA)-funded resilience food security activities (RFSAs) through implementer-led evaluations and knowledge sharing. Funded by the United States Agency for International Development (USAID) BHA, IMPEL will gather information and knowledge in order to measure performance of RFSAs, strengthen accountability, and improve guidance and policy. This information will help the food security community of practice and USAID to design projects and modify existing projects in ways that bolster performance, efficiency, and effectiveness. IMPEL is a seven-year activity (2019-2026) implemented by Save the Children (lead), TANGO International, Tulane University, Causal Design, and Innovations for Poverty Action.

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Sincerely,

Tim Frankenberger

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ACRONYMS

ANC	Antenatal care
BHA	Bureau for Humanitarian Assistance
DFSA	Development Food Security Activity
RFSA	Resilience Food Security Activity
FAO	Food and Agriculture Organization
FCS	Food Consumption Score
FFP	Food for Peace
FMNR	Farmer-managed natural resource generation
GDI	Gender Development Index
GIEWS	Global Information and Early Warning System
HDI	Human Development Index
IMPEL	Implementer-Led Evaluation and Learning
IP	Implementing partner
MCHN	Maternal and child health and nutrition
MDD-C	Minimum dietary diversity – children
MDD-W	Minimum dietary diversity – women
ODK	Open Data Kit
OFDA	Office of Foreign Disaster Assistance
PBS	Population-based survey
RISE	Resilience in the Sahel-Enhanced
TANGO	Technical Assistance to Non-governmental Organizations
ToT	Training of trainers
USAID	United States Agency for International Development
USD	United States dollar
ViMPlus	Victory Against Malnutrition Plus
VSLA	Village Savings and Loan Association
WASH	Water, sanitation, and hygiene
WFP	World Food Programme

EXECUTIVE SUMMARY

This report is a baseline study of the five-year resilience food security activity (RFSA) Victory Against Malnutrition Plus (ViMPlus) funded by the United States Agency for International Development (USAID) Bureau for Humanitarian Assistance (BHA). VimPlus, part of the Resilience in the Sahel-Enhanced (RISE) initiative, is implemented in eight communes in the Centre Nord region of Burkina Faso by ACDI/VOCA in partnership with Save the Children and Tufts University. The goal of the RFSA is to address critical challenges in food security, nutrition, and poverty, and to improve the resilience of households and communities.

The RFSA implements activities across technical sectors, layering and sequencing interventions at individual and household levels. Key interventions are designed around improving food access and incomes through agriculture and other livelihoods initiatives; combating undernutrition, especially for children under two and pregnant and lactating women; enhancing natural resource and environment management; and mitigating disaster impact through early warning and preparedness activities.

Under the Implementer-Led Evaluation and Learning (IMPEL) Associate Award, Technical Assistance to NGOs (TANGO) International conducted the baseline study with its local partner, Bagna Solutions. The purpose of the study is to provide baseline population-level estimates for a limited number of intermediate but critical outcome indicators and a limited number of additional indicators proposed by the USAID Mission and implementing partners (IPs) as a comparison for the interim performance and final evaluations. Baseline study results will be used to refine program targeting and, where possible, inform program design.

Study Design

The baseline study included a representative population-based survey of 775 households. Data collection was scheduled to commence in early 2020 (March-April) and end by April 23, 2020, before the start of Ramadan, but due to the COVID-19 pandemic, fieldwork was suspended until local regulations and conditions indicated that face-to-face interviewing could safely resume with COVID-19 mitigation procedures in place. The survey was conducted in September 2020 and ended at the start of the harvest period in October 2020. A stratified multi-stage clustered sample design was used to provide a statistically representative sample. The questionnaire was streamlined for a non-permissive environment. Estimates of impact-level indicators pertaining to poverty and anthropometry were expected to be derived from the RISE II baseline survey, scheduled to occur a few months after the BHA RFSA baseline survey. To contextualize and help interpret PBS baseline quantitative findings, the baseline study incorporates qualitative data from relevant recent studies conducted in Burkina Faso, primarily qualitative data from the USAID RISE I impact evaluation endline conducted in September/October 2020.

Study Limitations

The first study limitation was that, data collection was rescheduled due to COVID-19 restrictions, and despite efforts to finish the survey before the harvest period in October, data collection ended on October 11. Because of this and because RFSA interventions began before the survey could be conducted, the estimates may not necessarily reflect a true baseline. Second, the plan to derive poverty and anthropometry indicators from the RISE II baseline survey was complicated by the delay of RISE II

baseline data collection, which could result in differences in price and market data, which will also likely be affected by the COVID-19 pandemic. Third, most data collected for the household survey are self-reported. Steps taken to minimize the effect of errors inherent in self-reporting include i) applying conversion factors to render non-standard units suitable for analysis; ii) obtaining and checking responses against plausible weight ranges for livestock; and iii) identifying outliers in plot size and livestock weights. Several post-data collection processing routines were performed to address outliers, but no further analysis of yield data was performed. Finally, the study design uses a higher-than-usual non-response factor of 25 percent to account for potential non-response and field teams were specially trained in how to address non-response.

Key Findings and Conclusions

This section outlines conclusions and recommendations for the BHA ViMPlus RFSA in Burkina Faso. Because the 2020 baseline study did not include a qualitative component, data from secondary qualitative sources were used to help interpret and contextualize the results and inform conclusions and recommendations. Conclusions and recommendations were refined based on feedback received from implementing partners during a baseline findings presentation.

Food Security

Baseline estimates indicated higher-than-expected food consumption with the majority of households meeting the threshold for acceptable food consumption. Consumption of staples, such as bread and sorghum, and pulses is widespread throughout the ViMPlus RFSA area. However, households across all three FCS groups are less likely to eat roots and tubers, animal-based proteins, and fruits and vegetables. Although statistical analyses did not indicate an association between the percentage of harvest completed and household food consumption, it is possible that the timing of the survey, which overlapped with the start of the harvest period, may have inflated results for food consumption: households that did not harvest any crops at the time of the survey may have received food items from households that harvested their crops, and/or may have purchased food items from the market. There is some evidence that household food consumption increases with access to financial services (participation in group-based savings groups), livestock holdings (sheep), and the application of soil-related fertility practices, and the adoption of post-harvest handling and storage practices.

Recommendations: Nutrition meetings and trainings could emphasize the importance of consuming diverse food groups and demonstrate ways to incorporate different food groups into daily meals. Agriculture-related trainings can focus on new types of fruits and vegetables to grow. However, limited financial resources, especially during the lean season, may constrain households' ability to incorporate diverse food groups frequently, and households that grow more-nutritious foods may opt to sell them. Increasing the use of improved post-harvest storage can help households extend food provisioning for a few months during the lean period. Qualitative research and/or cost-of-diet studies could help identify locally available nutritious wild foods and/or cheaper foods for household consumption and identify effective behavior change communication messaging to promote those items.

Land Ownership

Female farmers are more likely to own land than male farmers, but this difference is marginal, and their plot size is generally smaller compared to male farmers. Recommendations: Further research is needed to understand the structural factors (i.e., cultural, religious, economic, ecological, and institutional) that

impede women's access to land for cultivation, and to support initiatives that improve women's land rights.

Use of Financial Services

Half of all farmers, regardless of being male or female, used agriculture-related financial services in the ViMPlus RFSA area. Farmers are more likely to participate in saving schemes than to take out loans. Recommendations: Although utilization of financial services is relatively high, efforts to promote additional utilization of financial services to support adoption of improved livelihood practices should be continued. Adoption of practices that require substantial purchases of material inputs is relatively low. Agriculture-related meetings and trainings could focus on improving financial literacy and build on traditional community-based borrowing mechanisms to increase the use of financial services.

Use of Improved Storage Practices

Sealed/airtight bags are the most-used type of improved post-harvest storage practice, followed by triple bags for preserving grains. However, their use is relatively low. Recommendations: Extending access to credit can be one pathway for improving adoption of post-harvest handling and storage. A better understanding of post-harvest loss per crop, drivers of loss, and the role of the myriad factors that can reduce loss would be helpful for informing future initiatives.

Use of Improved Crop Practices

The most common crop management practices are applying organic and phosphatic manure, zai pits, crop association, sowing after first useful rains, and NRM approaches such as delimiting animal corridors and pasture areas, FMNR, and protecting ponds from silting. A moderate percentage of farmers indicate using modern agricultural equipment. Practices that are unfamiliar or require resources to purchase inputs, such as using improved seed varieties and pest and disease management practices, are less pervasive. RISE I endline qualitative data suggest that access to agricultural inputs, including tools, is difficult in the project areas, which affects their ability to pilot new practices, sustain the beneficial practices, and stimulate demand for the inputs they find effective. Qualitative data from the RISE I endline study also indicates that training participants shared improved agricultural practices with others, and that sharing of new agricultural knowledge was aided by documentation provided during the trainings that could be shown and passed on to others. Recommendations: ViMPlus should continue agricultural credit and saving schemes and agricultural trainings with informational handouts to reinforce learning and promote further socialization.

Use of Improved Livestock Practices

With the exception of vaccinations, application of most targeted improved livestock practice is low. Although the current baseline findings do show that livestock vaccination rates are high, future programs might consider supporting systems-level expansion into these areas as well as training community members in veterinary services, keeping in mind that monetary costs of veterinary products and services may restrict their adoption and should be factored into system design. Recommendations: Future initiatives should consider the extent to which livestock farmers are able to access existing veterinary services (such as government programs) on a permanent basis and farmers' ability to afford veterinary services and products. Further research should be undertaken to assess the extent of these potential barriers.

WASH

Access is low in the ViMPlus RFSA area to basic sanitation facilities, but households have more access to handwashing stations with water and soap/ash and improved drinking water sources that consistently meet the minimum daily needs. Nearly all households are knowledgeable about the importance of handwashing before eating. Recommendation: Sensitization should focus on other critical times that households are less aware of – namely, those relating to other food handling activities such as before cooking and food preparation and when engaging in activities posing a risk of fecal contact. It would also be good to assess the presence of animal feces in children's play spaces to develop interventions to separate animal feces from children's play areas. This can be done by penning animals, improving flooring, and/or promoting child playpens/mats.

Women's Dietary Diversity

Two-thirds of women of reproductive age in the ViMPlus RFSA area achieve a diet of minimum diversity. Sensitization on the importance of eating a variety of food types, particularly those that are less widely consumed such as dairy products, meat, poultry, fish and vitamin A-rich fruits and vegetables, could support VimPlus RFSA nutrition goals. Kitchen demonstrations in which women from the community show how to incorporate different food groups into daily meal preparation could also be useful. Results underscore that women consume more-diverse diets when they engage in income-earning activities, live in households that are more food secure, or participate in nutrition trainings/meetings, or if they live in households that raise goats and use improved livestock practices. Recommendations: Future projects should continue to promote savings and access to credit and other livelihood interventions that increase income, which in turn leads to improvements in women's dietary diversity.

Antenatal Care

More than two-third of births (most recent) that occurred in the five years prior to the survey received at least four ANC visits by a skilled health personnel. Behavior change communication efforts should continue to emphasize the importance of ANC, with a focus on how often to make ANC visits, when to make the visits (i.e., timing), and who is qualified to provide those services. In some cases, the lack of availability of ANC services or distance to a health center may be a barrier. Recommendations: Sensitization should target both mothers and fathers so that fathers can support women in going to their ANC visits and in other aspects of their pregnancy and delivery.

Family Planning

Knowledge of modern contraceptive methods among women in a union is widespread in the RFSA implementation area; however, very few women use any form of family planning. Further exploration is needed to identify and address barriers to using family planning, including affordability of consultation services, cost of purchasing contraception, and underlying cultural or religious beliefs. Results from the baseline survey point to the role of husbands in contraceptive decision-making; about one half of women who use family planning made the decision alone. Recommendations: Sensitization efforts should target both women and men and underscore the significance of family planning for women's well-being and the overall family (e.g., role of family planning and benefits of spacing births).

Children's Dietary Diversity

Vitamin-A-rich fruits and vegetables and grains and tubers are widely consumed by children 6-23 months, and half of the children in the ViMPlus RFSA area achieve a diet of minimum diversity (MDD-C).

Recommendations: Projects should continue to raise awareness among primary caregivers on the health benefits of complementary feeding, and the appropriate time to introduce complementary foods without cutting back on breastfeeding. Sensitization around complementary feeding could be rolled into ANC and perinatal care visits and through mothers' groups, GASPAs (female-led nutrition support groups), and other community nutrition groups with demonstrations on how to integrate appropriate quantity and frequency of nutrient-rich foods into children's meals. Sensitization for fathers through fathers' groups could also enhance the sharing of household decision-making affecting children's dietary diversity.

Gender, Group Participation and Access to Credit

Men are more likely than women to engage in cash-earning activities while three-quarter of women and men belong to community groups. Participation in community-based savings and credit groups is low for both men and women. Recommendations: A better understanding of the barriers to credit for both men and women and access to cash-earning activities for women is needed. Women's time constraints may limit their ability to engage in work and institutions that provide access to credit could be strengthened.

COVID-19 Knowledge, Practices, Impacts and Coping Strategies (See Annex 8)

The majority of households in the RFSA implementation area are aware of COVID-19. Most households experienced impacts to their food security and livelihoods due to COVID-19. The types of impacts suggest that the ramifications of COVID-19 at the time of the survey are mostly due to restrictions and closures rather than health impacts. Recommendation: Continued monitoring is needed to ensure continued public health and food security as the pandemic continues.

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1. INTRODUCTION

1.1 Overview of the Baseline Study

In fiscal year 2018, the United States Agency for International Development (USAID) Office of Food for Peace (FFP) funded Victory Against Malnutrition Plus (ViMPlus), a five-year resilience food security activity (RFSA) in eight communes in the Centre Nord region of Burkina Faso. In 2020, the Office of Food for Peace merged with the Office of Foreign Disaster Assistance (OFDA) to form the Bureau for Humanitarian Assistance (BHA) to streamline USAID humanitarian responses. BHA provides life-saving humanitarian emergency and non-emergency aid—including food, water, shelter, sanitation and hygiene, and nutrition services—to the world's most vulnerable and hardest-to-reach populations. The goal of the 2018 RFSA award is to address critical challenges in food security, nutrition, and poverty, and to improve the resilience of households and communities.

Under the Implementer-Led Evaluation and Learning (IMPEL) activity to improve RFSA design and implementation, Technical Assistance to NGOs (TANGO) was contracted to conduct a baseline study in the RFSA implementation area (see Annex 1, Protocol). TANGO contracted a local firm, Bagna Solutions, to perform the data collection for the baseline survey. The baseline study includes a population-based household survey (PBS) and qualitative information from secondary sources. The primary purpose of the PBS is to provide baseline population-level estimates for a limited number of intermediate but critical outcome indicators and a limited number of additional indicators proposed by the USAID Mission and implementing partners (IPs). These indicators will serve as points of comparison for the interim performance evaluation and future endline PBS. The baseline study results will be used to refine program targeting and, where possible, inform program design by exploring relationships among variables based on the project theory of change.

1.2 Background on BHA RFSA

ViMPlus, part of the Resilience in the Sahel-Enhanced (RISE) initiative, is implemented in the Centre Nord region of Burkina Faso by ACDI/VOCA in partnership with Save the Children and Tufts University. The goal of the RFSA is to address critical challenges in food security, nutrition, and poverty, and to improve the resilience of households and communities. Table 1 provides additional details on the geographic coverage of the RFSA.

Table 1: Geographic coverage BHA RFSA, Burkina Faso

Region	Communes[1]	Number of villages	Number of Households	Number of individuals
Centre Nord	Barsalogho, Bouroum, Nagbingou, Namissinguima, Pissila, Rollo, Tougouri, Yalgo	258	67,579	560,535

Source: Population and household estimates derived from baseline survey listing and roster data; village household counts provided by the IP. It was originally planned for ViMPlus to operate in 11 communes but due to insecurity, the RFSA is working in 8.

The theory of change guiding implementation of ViMPlus layers and sequences activities at the individual, household, and community levels. In addition to activities focused on promoting enhanced production and consumption of diverse agricultural products, the RFSA includes interventions aimed to improve the health and nutrition of especially vulnerable populations, with a particular focus on adolescent girls, pregnant and lactating women, and children under two years of age. In support of these outcomes, ViMPlus' theory of change also includes targeted support for inclusive community-level institutions and governance structures to equitable manage natural resources and mitigate the risk of natural disasters. The cross-cutting purpose of social inclusion is intended to ensure that all VimPlus activities enable youth and women to create and sustain positive change in their households and communities through skills acquisition and adoption of equitable practices.

This report begins with an overview of the current food security situation in Burkina Faso. Section 2 describes the methods used for the PBS and limitations of the study design. Section 3 presents the PBS findings, organized by sector. Where possible, the results of the quantitative analyses are integrated with qualitative data and information from secondary sources to gain additional context and understanding of prevailing conditions and perceptions of the populations in the RFSA implementation area. The report ends with conclusions and recommendations based on key findings.

1.3 Country Context

1.3.1 Background

Burkina Faso has an estimated population of 20.9 million people (2020).[1] It is among the ten fastest-urbanizing countries globally for the period 1990-2018;[2] in 2019, 30 percent of the population was living in urban areas.[3] Burkina Faso is considered a Least Developed Country by the United Nations General Assembly.[4] The country has faced significant insecurity and humanitarian crisis, including internal displacement related to frequent terrorist attacks since 2016, especially in northern areas bordering Niger and Mali.[5] The economy is currently led by the services sector, with declines in agricultural, mining, and construction. Economic growth was expected to fall slightly in 2020 due to the security and humanitarian situation and to be further impacted by the worsening of these crises, the COVID-19 pandemic, climate events, and a possible decline in cotton prices in the case of a global recession.

Burkina Faso ranks low on the Human Development Index (HDI) at 182nd out of 189 countries, with an HDI score of 0.452 (2020).[6] A substantial portion of the population (43.7 percent) lives below the income

[1] United Nations Population Fund. 2020. State of the World Population 2020. Available at: https://www.unfpa.org/data/world-population-dashboard
[2] United Nations, Department of Economic and Social Affairs, Population Division. 2019. World Urbanization Prospects: The 2018 Revision (ST/ESA/SER.A/420). New York: United Nations
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poverty line of $1.90 per day.[7] Burkina Faso's Gini coefficient, which measures income and wealth inequality, is 35.3.[8] Just 4.7 percent (2014 figure) of the rural population has access to electricity.[9] Almost half the population (44.5 percent) is age 14 or younger.[10] Primary school enrolment is widespread (80 percent males, 78 percent females; 2009-2019), but secondary school enrolment is much lower (30 percent males, 32 percent females; 2009-2019).[11] Mean years of schooling is 1.6.[12] The literacy rate of adults age 15 and older is 14.2 percent (2008-2018). Mobile phone subscription per 100 people is nearly universal at 97.9.

With a Gender Development Index (GDI) value of 0.867, Burkina Faso is in GDI Group 5, comprised of countries with low equality in HDI achievements between women and men.[13] The Gender Inequality Index value for Burkina Faso is 0.594 (2019), ranking it 147th out of 162 countries.[14]

1.3.2 Overview of the Current Food Security Situation

The Burkinabé economy is highly dependent on agriculture: almost 80 percent of the working population works in agriculture.[15] Nevertheless, the percentage of GDP derived from agriculture, forestry and fishing has been declining steadily, from 36.6 percent in 1998 to 20.2 percent in 2019.[16] Major crops include sorghum, millet, maize (the most important crops for household consumption),[17] and cowpea. Millet is the staple food of the most vulnerable households.[18]

The last FEWS NET Food Security Outlook available for Burkina Faso (July 2020) projected Stressed! (IPC Phase 2!) through September in Sanmatenga province, where ViMPlus operates, and in Loroum and Soum provinces. [19] The IPC Phase would likely be worse without planned and ongoing humanitarian food assistance, which was expected to reach 20–30 percent of the population and meet at least 80 percent of caloric needs.

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[7] United Nations Development Program. 2020. Human Development Report 2020.
[8] A Gini coefficient of one (or 100 percent) represents maximal inequality of income/wealth. United Nations Development Program. 2020. Human Development Report 2020.
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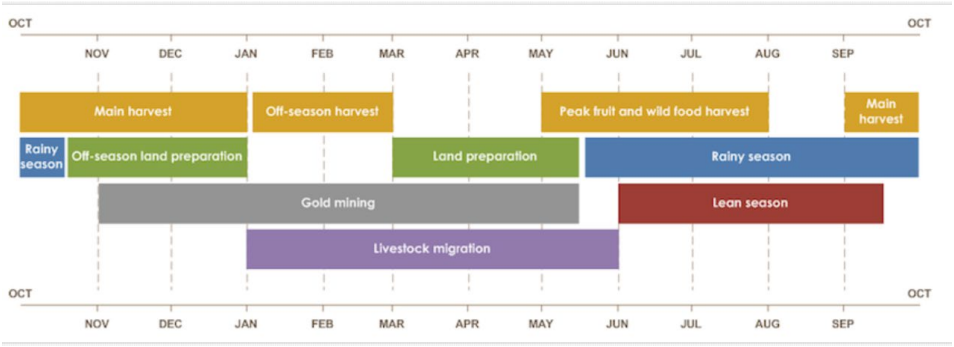
[17] FEWS NET. 2021. Price Bulletin. February 2021. Available at: https://fews.net/sites/default/files/documents/reports/Burkina_Faso_2021_02_PB_EN.pdf
[18] Phase 3! in the provinces of Bam, Namentenga, Séno, Oudalan, Yagha, Gnagna and Komondjari. FEWS NET. 2021. Price Bulletin. February 2021. Available at: https://fews.net/sites/default/files/documents/reports/Burkina_Faso_2021_02_PB_EN.pdf
[19] FEWS NET. 2020. West Africa Food Security Outlook. July 2020. Available at: https://fews.net/west-africa/food-security-outlook/july-2020

While rainfall projections for the end of 2020 were favorable, the worsening security situation was expected to disrupt agricultural activities. Figure 1 illustrates the agricultural calendar for Burkina Faso in a typical year. The July 2020 outlook stated, "In the provinces on and around the northern and eastern borders, agricultural production may remain below average because of displacement and the fact that households will have limited access to their fields. In the western and southern production zones, where the situation is calmer, lower prices could dissuade producers from increasing their planting areas. Production in these zones is expected to be roughly in line with the five-year average. The main factors that may affect the food security outlook are civil insecurity and possible desert locust invasions."[20] Phase 3 was expected in certain provinces until January 2021.

FAO's Global Information and Early Warning System (GIEWS) estimated in March 2021 that approximately 2.7 million people will need humanitarian assistance between June and August 2021, and that "In Centre-Nord and Sahel regions, insecurity continues to cause population displacements, further deteriorating the food security situation. Due to the conflict, about 1.07 million people have been displaced, of which 50 percent live in Centre Nord Region. In addition, about 20,250 [sic] refugees, mostly from Mali, are still residing in Sahel Region."[21] As reported by the World Food Programme (WFP) in September 2020, according to the most recent *Cadre Harmonisé* (Harmonized Framework), since the previous assessment in March 2010, acute food insecurity in Burkina Faso had increased by over 50 percent, exacerbated by the economic impacts of the COVID-19 pandemic, with subsistence farmers and livestock herders at heightened risk.[22]

Figure 1: Seasonal Calendar for a Typical Year, Burkina Faso



Source: FEWS NET

[20] FEWS NET. 2020. West Africa Food Security Outlook. July 2020.
[21] FAO. 2021. Global Information and Early Warning System (GIEWS) report on countries requiring external assistance for food. March. Available at: http://www.fao.org/giews/country-analysis/external-assistance/en/
[22] WFP. 2020. News release: "More than 3 million people facing acute food insecurity as Burkina Faso grapples with COVID-19 and conflict." 21 August 2020. Available at: https://www.wfp.org/news/more-3-million-people-facing-acute-food-insecurity-burkina-faso-grapples-covid-19-and-conflict

2. METHODOLOGY AND LIMITATIONS

2.1 Study Design

The baseline study is based on a pre-post (cross-sectional) design to allow for the detection of statistically significant change in key indicators between the baseline survey and interim performance evaluation, and between the baseline and endline surveys.

2.2 Sample Design

The baseline survey sampling is designed to adequately power a statistical test of differences between the baseline and endline estimates for key performance indicators in the RFSA. The indicators used for the sample size calculations were selected with BHA and include the proportion of respondents that have adopted: i) improved water, sanitation, and hygiene (WASH) practices, ii) improved agricultural storage practices and financial services, and iii) recommended maternal and child health and nutrition (MCHN) practices. The following parameter values were applied in the calculations: i) design effect of 5 for WASH and agricultural practices indicators and design effect of 2 for MCHN indicators, ii) 95 percent confidence level for one-tailed test, iii) 80 percent power for one-tailed test, (iv) expected change of 15 percentage points over the life of the project, and v) a non-response factor of 25 percent to account for estimated household non-response rate. The highest required sample size was selected based on these calculations. Additional details on the sampling methodology, including the indicators and parameters for determining the sample size are found on pages 7-9 in the study protocol (see Annex 1).

A stratified multi-stage clustered sample design was used with three stages of sampling: i) selection of villages (25 villages), ii) selection of households (31 households per village), and iii) selection of individuals.[23] A total of 25 villages were sampled, with 31 households sampled in each village, resulting in a sample size of 775 households.

2.3 Questionnaire Design

The questionnaire used for the baseline survey is derived from the core BHA PBS questionnaire. The survey was streamlined for a non-permissive environment (NPE). USAID describes an NPE as a context, at the national or sub-national level, in which uncertainty, instability, inaccessibility or insecurity constrain USAID's ability to operate safely and effectively. The streamlined survey uses fewer but critical lower-level indicators.[24] At the time of the study design, estimates of impact-level indicators pertaining to poverty and children and women's anthropometry were expected to be derived from the RISE II baseline survey, then scheduled for May/June 2020, a few months after the BHA RFSA baseline survey (March/April). [25] Although there are methodological limitations to combining results from different

[23] Annex 1 describes the criteria for defining "household" and household member selection procedures.
[24] The survey tool did not collect anthropometric measurements for children or women, or consumption expenditures data for households.
[25] This schedule was later changed; see study limitations in Sec. 2.6.1.

surveys,[26] this approach is considered acceptable given the geographic overlap of the target populations and the temporal overlap originally expected in the timing of the two surveys.

All questionnaire modules follow FFP and Feed the Future (FtF) guidelines, as described in the *FFP Indicators Handbook* (May 2020)[27] and questionnaire template.[28] The baseline survey questionnaire includes modules on the following topics:

- Module A: Household Identification and Informed Consent
- Module B: Household Roster
- Module C: Food Consumption Score
- Module D: Child Feeding Practices and Diarrhea
- Module E: Women's Dietary Diversity, Antenatal Care (ANC), Contraceptive Prevalence Rate, and Family Planning
- Module F: Water, Sanitation and Hygiene
- Module G: Agriculture (crop, livestock, natural resource management [NRM], storage, financial services)
- Module J: Gender and Cash
- Module KF: Access to Credit and Group Membership (youngest woman in a union)
- Module KM: Access to Credit and Group Membership (partner of youngest woman in a union)
- Module P: Activity Participation
- Module Q: COVID-19 Awareness, Impacts, and Coping Strategies
- Module R: Social Capital
- Module 7.51: Agricultural Production – Goats
- Module 7.52: Agricultural Production – Sheep
- Module 7.90 Plot/Land Map
- Module 7.91 Plot Area
- Module 7.92 Crop Yield

Questions and response options were adapted to the country context, such as those that involve food in Modules C, D and E, and the types of containers and sanitation facilities listed in Module F. The survey was also contextualized to capture information on different improved agricultural practices promoted in the RFSA area. A COVID-19 module was added to collect information on knowledge and adoption of COVID-19 mitigation practices, the impacts of COVID-19 on households' livelihoods and food security, and coping strategies to manage those impacts. Another module was included to collect information on households' participation in RFSA activities, given that RFSA interventions started before the

[26] There are limitations to the approach of combining outcome-level indicators from one source with impact-level indicators from another survey that relate to differences in study design and timing of data collection. The RISE II baseline survey will not be powered to provide estimates at the RFSA level, an approach approved by BHA. This contrasts with the BHA baseline survey, which is powered to provide RFSA-level estimates. Differences in the timing of the surveys may impact some indicators that are sensitive to seasonality.

[27] The FFP Indicators Handbook Part 1 May 2020 revision is available at: https://www.usaid.gov/food-assistance/documents/ffp-indicators-handbook-part-i-indicators-baseline-and-endline-surveys-dfsa

[28] The FFP core questionnaire template is available at: https://www.usaid.gov/food-assistance/documents/ffp-indicators-handbook-questionnaire-template.

implementation of the baseline survey.[29] These participation results are not indicative of full participation levels in the interventions as the RFSA moves forward.

Table 2 illustrates the indicators measured and the level of disaggregation as prescribed in the FFP Handbook supplement on indicator tabulations.[30]

Table 2: Indicators measured in the baseline NPE survey

Indicator	Disaggregation Level
FOOD SECURITY	
Percentage of households with poor, borderline and adequate Food Consumption Score (FCS) Mean FCS	Gendered household type[1]
WATER, SANITATION AND HYGIENE	
Percentage of households using basic drinking water services	Gendered household type
Percentage of households with access to a basic sanitation service	Gendered household type
Percentage of households with soap and water at a hand-washing station on premises	Gendered household type
AGRICULTURE	
Percentage of farmers who used financial services (savings, agricultural credit and/or agricultural insurance) in the past 12 months	Sex
Proportion of producers who have applied targeted improved management practices or technologies[2]	Commodity Sex Age (15-29, 30+) Management practice or technology type
Yield of targeted agricultural commodities within target areas[3]	Crops: commodity, farm size, sex, age (15-29, 30+) Livestock: commodity, production system, sex, age
WOMEN'S HEALTH AND NUTRITION	
Percentage of women of reproductive age consuming a diet of minimum diversity (MDD-W)	Age: <19, 19+ years
Percent of births receiving at least four antenatal care (ANC) visits during pregnancy	None
Contraceptive prevalence rate	Traditional, modern
Percent of women in union who have knowledge of modern family planning methods that can be used to delay or avoid pregnancy	Age: 15-19, 20-29 and 30-49

[29] The breakout of intervention data by those households indicating they participated in VimPlus and those that did not is given in Annex 3, Table A6.3.
[30] Available at https://www.usaid.gov/food-assistance/documents/ffp-indicators-handbook-supplement-part-1

Indicator	Disaggregation Level
Percent of women in union who made decisions about modern family planning methods in the past 12 months	Decision-making: alone, jointly, spouse Age: 15-19, 20-29, 30-49
CHILD HEALTH AND NUTRITION	
Prevalence of children 6-23 months consuming a diet of minimum diversity (MDD-C)	Sex
Percent of children under age five (0-59 months) who had diarrhea in the prior two weeks	Sex
Percentage of children under age five (0-59 months) with diarrhea treated with Oral Rehydration Therapy (ORT)	Sex
GENDER - CASH	
Percent of women/men in union who earned cash in the past 12 months	Sex Age: female 15-19, 20-29, 30-49, ≥50; male 15-19, 20-29, 30-49, ≥50
Percent of women in union and earning cash who report participation in decisions about the use of self-earned cash[4]	Age: 15-19, 20-29, 30-49, ≥50
Percent of women in union and earning cash who report participation in decisions about the use of spouse/partner's self-earned cash[4]	Age: 15-19, 20-29, 30-49, ≥50
Percent of men in union and earning cash who report spouse/partner participation in decisions about the use of self-earned cash[4]	Age: 15-19, 20-29, 30-49, ≥50
GENDER CREDIT AND GROUP PARTICIPATION	
Percent of women/men who are members of a community group	Sex Age: female 15-19, 20-29, 30-49, ≥50; male 15-19, 20-29, 30-49, ≥50
Percent of women/men in union with access to credit	Age: female 15-19, 20-29, 30-49; male 15-19, 20-29, 30-49, ≥50
Percent of women/men in a union who make decisions about credit	Decision actors: alone, jointly Sex Age: female 15-19, 20-29, 30-49, ≥50; male 15-19, 20-29, 30-49, ≥50
RESILIENCE-RELATED	
Proportion of households that believe local government will respond effectively to future shocks and stresses	Gendered household type
Index of social capital at the household level	Social capital components: overall index, bonding sub-index, bridging sub-index Gendered household type
Proportion of households participating in group-based savings, micro-finance or lending programs	Financing type Gendered household type

Notes:

[1] Following FFP indicator descriptions, Feed the Future defines four gendered household types: households with i) female and male adults, ii) adult female, no adult male, ii) adult male, no adult female, and iv) child, no adults. USAID, 2020. Food for Peace Indicators Handbook. Part I: Indicators for Baseline and Endline Surveys for Development Food Security Activities. May.

[2] This applies to crops and livestock of interest. For Burkina Faso, the crops of interest are sorghum, cowpeas, rice and onions. The livestock of interest are goats, sheep, and poultry.

[3] The survey collected information on agricultural yield; however, due to measurement challenges, particularly in relation to size of farmland and weight of livestock, no further analysis of the yield data was performed. Therefore, indicator estimates for agricultural yield are omitted from the report and Annex 5.

[4] The ODK skip logic was not programmed to allow for the calculation of the gender and cash indicators because the following groups were excluded: i) respondents who worked for a combination of cash and in-kind whereas all cash earners (i.e., respondents who worked for cash OR cash and in-kind); and ii) respondents who reported not discussing their earnings with anyone (information on self-earned cash decision-making should have been asked to all eligible respondents regardless of whether they discuss their earnings.

2.4 Field Procedures

2.4.1 Timing of the Survey

Data collection for the baseline study was scheduled to commence in early 2020 (March-April) and end by April 23, 2020, before the start of Ramadan. However, due to the onset of the COVID-19 pandemic, fieldwork for the baseline survey was suspended until local regulations and conditions (e.g., local transmission of virus, travel restrictions, willingness of households to be interviewed in-person) indicated that face-to-face interviewing could safely resume with COVID-19 mitigation procedures in place. Based on the revised schedule, the survey was conducted in September 2020 and ended at the start of the harvest period in October 2020.

In advance of fieldwork, TANGO, in partnership with Bagna, updated its fieldwork protocol to include COVID-19 safety measures to mitigate the risk of virus transmission and safeguard the well-being of staff, households, and communities.[31] See Annex 1 for additional details.

2.4.2 Listing Exercise

The listing training and exercise took place between August 24 and September 15, 2020. Bagna conducted the listing training, mapping of selected villages, and household listing. Listers were trained on how to locate a cluster (village), prepare sketch maps of the cluster, list households, and segment large clusters. The household listing operation was conducted by 10 listers across 25 clusters with oversight by one supervisor. During the listing exercise, GPS coordinates for each village were taken by using a commonly accepted central point in the village. GPS coordinates were also taken for each listed

[31] The underlying principle guiding the adaptations to the baseline survey data collection procedures is Do No Harm. Per the USAID/FFP and USAID/OFDA Interim Guidance for Applicants Engaging in COVID-19 Humanitarian Response: in all programming, the safety and security of community members and implementing partner staff are critical; and where remote monitoring is not feasible, update data collection tools and protocols to limit proximity, frequency, and duration of face-to-face contact.

household to facilitate locating sampled households during survey data collection. The results of the listing exercise were used for the second-stage sampling of households.

2.4.3 Training

Due to the COVID pandemic and security risks, trainings were held in Kaya to minimize travel and avoid large gatherings. Training curricula were mainstreamed with COVID-19 mitigation and safety protocols (see Annex 1, Protocol for details).[32]

2.4.3.1 Training of Trainers

TANGO led a virtual training of trainers (ToT) for Bagna field supervisors, local independent survey monitors, and team leads. The ToT was conducted via Zoom from August 31 to September 6. TANGO trained a total of one field supervisor, five team leads, and four local survey monitors. The ToT focused on roles and responsibilities, organization and supervision of fieldwork, data quality assurance, and performance monitoring. Sessions also involved a question-by-question review of the instrument. To capitalize on the time zone differences, the training schedule was adapted to begin in the afternoon in local Burkina Faso time so that the mornings could be used for to review manuals, conduct mock interviews, and role play to ensure that all participants were well versed in the instrument and in navigating the electronic survey.

2.4.3.2 Main Training

The enumerator training was conducted from September 13 to September 18. A total of 30 enumerators were trained.[33] Bagna field supervisors and the independent survey monitors, previously trained by TANGO during the ToT, conducted the main training with remote support from TANGO.[34] Local independent survey monitors, previously trained during the ToT, participated in the main training, observed the mock interviews, and provided feedback. Training topics included data gathering, sampling strategy, human subjects research, a review of the survey questionnaire, how to gather data using mobile devices, data checks for quality control, creating backup copies of data, and data archiving and transfer. The training included a combination of plenary sessions for question-by-question guidance and break-out groups to practice and role-play using the tablets. The break-out groups were followed by a plenary session to discuss issues experienced and how to handle them. An events calendar for Burkina Faso was developed as a reference to help enumerators estimate the age of respondents when the age could not be ascertained. Photographs of sanitation facilities and water containers were provided to improve accuracy in recoding responses. Local IP staff participated in the training and provided technical presentations about the RFSA.

[32] In addition to the standard training on the instrument and tablets, participants were trained on Do No Harm principles and COVID-sensitive data collection protocols. Trainings included a background on how COVID-19 is transmitted and methods to prevent its spread.

[33] Bagna recruited and trained 25 enumerators plus an additional 20 percent to serve as replacements if needed and to reduce the number of days in the field to mitigate COVID-19-related risks. This resulted with a total of 30 enumerators trained.

[34] TANGO and the trainers were connected on a WhatsApp group and communicated daily and as needed when issues arose during the training. In addition, TANGO staff connected via ZOOM and participated in the daily de-brief plenary sessions where issues were discussed among trainers and participants.

2.4.4 Pilot

At the end of the enumerator training, a one-day pilot test was conducted on September 19 in Kaya. Each enumerator completed two full interviews during the pilot test. Each interview took approximately two hours, depending on the size of the household. Team leads and the field supervisor observed enumerators and took notes on their performance. On September 20, the Bagna survey manager, field supervisors, and team leads debriefed their teams to discuss challenges and issues experienced during the pilot. The debrief sessions were attended virtually by TANGO staff.

2.4.5 Fieldwork

Fieldwork commenced on September 29, nearly a week after the pilot. During this period, TANGO revised the Open Data Kit (ODK) program based on the results of the pilot, and data collection teams were provided with a refresher training before travelling to their respective first clusters. A total of five teams collected data. Each team was comprised of one team lead and five enumerators. In addition, Bagna's field team included one survey manager, one coordinator, three field supervisors, and two IT specialists for a total of 31 field staff. One local survey monitor, independent of Bagna and hired directly by TANGO, accompanied the teams for the entire duration of data collection to provide quality control and oversight of fieldwork.[35] Data were collected using tablets programmed with ODK, an open-source data capture program. Data from completed interviews were uploaded daily to a TANGO cloud server via secure transmission.[36] TANGO convened daily de-briefs with the Bagna survey manager and the local survey monitors to discuss and resolve issues (e.g., issues with the instrument, data collection program/tablet, survey protocols) as they emerged.

2.5 Data Analysis

2.5.1 Sampling Weights

Separate sampling weights were calculated for indicators and adjusted to compensate for household and individual non-response. Sampling weights were calculated for each of the following distinct groups by taking the inverse of the probabilities of selection from each stage of sampling:

- Households (Modules C, F, P, Q, R)
- Children under five (Module D)
- Women 15-49 (Module E)
- Female cash earners in a union (Module J)
- Male cash earners in a union (Module J)
- Youngest female in household (Module KF)
- Spouse of youngest female in household (Module KM)
- All farmers (Module G)

Refer to Annex 4 for details on the calculation of sampling weights. Table 3 (next page) presents response rates by sampling group.

[35] Annex 3 provides a list of the study personnel.
[36] The data were managed and maintained on a secure TANGO server.

Table 3: Response rates by sampling group, Burkina Faso 2020 RFSA Baseline Survey

Sampling group	Number eligible	Number interviewed	Response rate (%)
Households (Modules, C, F, P, Q, R)	770	750	97.4
Children under five (Module D)	1,675	1,406	86.5
Women 15-49 (Module E)	1,636	1,529	93.5
Female cash earners married or in a union (Module J)	296	244	82.4
Male cash earners married or in a union (Module J)	463	398	87.0
Youngest female in a union (Module KF)	725	711	98.0
Spouse of youngest female in a union (Module KM)	691	638	92.3
All Farmers (Module G)	1,374	1,077	78.4
Goat herders (Module 7.51)	465	465	100
Sheep herders (Module 7.52)	545	545	100

Notes: The response rate is calculated by dividing the number interviewed by the number eligible and multiplying the result by 100. The number eligible is derived from the responses to the household roster.

2.5.2 Indicator Definitions and Tabulations

Indicators were calculated and tabulated based on FFP and FtF guidance as described in the FFP Indicators Handbook Part 1 and the Supplement to Part 1. Annex 4 describes data processing routines, including the handling of missing data, and the full suite of analyses conducted for the baseline study. Results are weighted to represent the full target population in the RFSA area.[37] Point estimates with 95 percent confidence intervals and variance estimations were derived for all indicators using Taylor series expansion and considering the design effect associated with the complex sampling design. Annex 5 provides a tabular summary of the indicator estimates and sampling statistics. Annex 6 presents the results of additional descriptive analyses. Results of the bivariate and multivariate analyses are included in Annex 7.

2.6 Study Limitations and Issues Encountered

2.6.1 Study Limitations

Timing of the Survey: Data collection was originally planned to take place in March/April 2020 but due to COVID-19 restrictions was re-scheduled to September, ahead of the main harvest season in October, to avoid an upward bias in food security estimates in the RFSA area.[38] The timeline for pre-fieldwork

[37] Because the estimates are based on a sample of the target population rather than the full target population (i.e., a census), sampling weights are applied to correct for unequal selection probabilities, coverage issues and non-response. If sampling weights are not applied to survey data, the results can be biased.

[38] The timing of data collection can exert an upward bias on food consumption scores (i.e., overstate the extent to which households are food secure) if data collection spills further into the harvest period when households are likely to have better access to diverse and nutritious food.

activities and data collection was thus condensed from its original schedule (i.e., the timeline established prior to the COVID-19 pandemic) and correspondingly, the number of enumerators was increased from four to five per team to complete data collection before the start of the harvest. Despite efforts to avoid spillover into the harvest period, data collection ended on October 10. Delays occurred due to several issues that were encountered in the field that are described below. To assess the possible effects of the timing of data collection on food security estimates, households were asked whether they cultivated any crops at any time directly before or during data collection that would affect their consumption of the food items covered in the survey. Additionally, because RFSA interventions began before the survey could be conducted, the estimates may not necessarily reflect a true baseline. Therefore, the study collected information on direct participation in RFSA interventions to assess differences in baseline estimates between direct and indirect participants.

Limitations of Combining Data Sources: The original plan to derive impact-level indicators pertaining to poverty and children and women's anthropometry from the RISE II baseline survey was complicated by the delay of RISE II baseline data collection to August/September 2021. The timing of the RISE II baseline study coincides with about the same timeframe as the current study, avoiding any differences in seasonality, so the impact-level indicators will be separated in time by approximately 12 months from the indicators presented in this study. Conditions such as prices, markets, as well as the COVID-19 pandemic, to name a few factors, could differ and should be taken into consideration in the interpretation of results.

Validity and Reliability of Self-reported Data: Most of the data collected for the household survey are self-reported. Limitations of self-reported data include the potential for exaggeration or omission of information, inaccurate recall, reporting of untruthful information, reduced validity if respondents do not fully understand a question, and the potential for respondents to give responses they perceive as desirable, expected, or acceptable.[39] Enumerators were trained in techniques to help mitigate these types of measurement bias.

The reliability of self-reported data is particularly challenging for questions related to agricultural yield. The baseline survey relied on self-reported data rather than direct measurement to collect information on cultivated plot area, amount of crop harvested per plot, and weight of livestock. [40] While direct (i.e., physical) measurement by experts can generate more accurate estimates of agricultural yield, this approach is more expensive and time-consuming.[41] Farmer estimates (i.e., self-reported information)

[39] In addition, while the informed consent protocol reiterates the privacy and anonymity of responses and enumerators are trained to conduct interviews in a quiet and private place, this is often difficult to achieve, therefore we cannot rule out the influence of the presence of other household members on the responses.

[40] Several factors can influence the quality of estimates of agricultural yield, including but not limited to method of data collection (i.e., direct measurement versus farmer estimates), inter-cropping, continuous harvesting, and use of non-standard units. For a more comprehensive review of issues related to the measurement of agricultural indicators refer to the 2013 Feed the Future Agricultural Indicators Guide: Guidance on the collection and use of data for selected Feed the Future Agricultural Indicators by Suzanne Nelson and Anne Swindale available at https://www.agrilinks.org/sites/default/files/resource/files/FTF_Agriculture_Guide_Jan2014.pdf.

[41] Diskin, Patrick. 1997. *Agricultural Productivity Indicators Measurement Guide.* Washington, D.C.: Food and Nutrition Technical Assistance Project, Academy for Educational Development. Available at: https://reliefweb.int/sites/reliefweb.int/files/resources/842682301AA98504C1256F070044D507-USAID_Agricultural_indicators_December_1997.pdf.

are a simpler, less costly, and more efficient method of data collection but can introduce measurement error due to recall bias (for longer recall periods or if data collection does not occur soon after harvest), lack of knowledge, and perceived incentives for under- or over-reporting production estimates.[42] Accurate measures of both area and production are ideal, but accurate measurement of area is more crucial for reducing errors in the calculation of agricultural yield.[43] Preliminary analysis of yield-related data collected from the baseline survey indicated outliers in plot size and weight of livestock data. This is unsurprising given that farmers in the RFSA area may lack the knowledge or equipment needed to measure the size of their plots, and in the case of livestock production, very few farmers weigh their cattle (see Section 3.4.5). This issue was discussed prior to the start of fieldwork, and several steps were taken to minimize the effect of errors associated with self-reported estimates. The survey was fitted to collect information in non-standard units, and conversion factors for non-standard units were compiled.[44] Plausible ranges for the weight of female and male adult and young goats and sheep were obtained from the IPs and used to validate survey responses. Several post-data collection processing routines were performed to identify and address outliers,[45] but considering the measurement challenges described above, no further analysis of the yield data was performed.

Non-response: Respondents may be reluctant to participate in the survey due to general mistrust that may arise in politically volatile situations and fears of falling ill in the baseline context of the COVID-19 pandemic. It is also possible that households may relocate or move due to the political situation. The study employed various measures to account for potential non-response, emphasize the anonymous and voluntary nature of study participation, and implement COVID-19 safety measures. As a methodological measure, the study design uses a higher-than-usual non-response factor of 25 percent. In terms of implementing the survey, field teams were trained to explain to respondents the objectives of the study and measures taken to preserve the anonymity of their responses. TANGO also updated the interview consent statement to include potential exposure to COVID-19 risks: enumerators were trained and required to explain to each eligible household the risks associated with participating in a face-to-face interview in the context of the pandemic.

2.6.2 Issues Encountered During Fieldwork

Poor network connectivity: Poor and intermittent network connectivity resulted in the need to extend the training period to schedule make-up training sessions.

Impassable roads due to seasonal rains: Deployment of data collection teams to the field was slowed down by heavy rains that made roads impassable.

Compact schedule: To complete data collection at the start of the harvest period and to reduce the duration of data collection in the communities, the timeline for the pre-fieldwork activities and data collection was condensed. TANGO modified the training agenda as needed to keep with the schedule.

[42] Nelson and Swindale 2013 and Diskin 1997.
[43] Nelson and Swindale 2013.
[44] Conversion factors for non-standard units were obtained based on the 2018 *Enquête Harmonisée sur les Conditions de Vie des Ménages* (EHCVM).
[45] Two approaches were used to adjust producer-level yield to mitigate the effects of extreme values (outliers): trimming the top five percent (i.e., exclusion of outliers from analysis) and winsorizing (retaining observations but capping numeric outliers so that they fall at the edge of the distribution using the 95th percentile). Thresholds for capping were determined for each RFSA area separately.

TANGO coordinated closely with its independent survey monitors and the local firm supervisors to ensure that fieldwork was progressing as planned.

2.7 Qualitative Data

In accordance with the baseline study protocol (see Annex 1), the baseline study did not collect primary qualitative data; qualitative data will be collected for the interim performance evaluation. To contextualize and help interpret the PBS baseline quantitative findings, the baseline study incorporates qualitative data available in relevant recent studies conducted in Burkina Faso, primarily the qualitative data TANGO collected for the USAID RISE I impact evaluation endline in the same time period as this baseline. Because the endline data were collected from a larger geographic coverage area than that of ViMPlus, we have referred only to the information from the six endline focus groups in Centre Nord, the region where ViMPlus operates. Use of existing data reinforces the focus by USAID on the use and dissemination of data and lessons learned across countries and within the IDEAL-supported food security and nutrition community of practice of IPs. The baseline study report also draws contextual information from external sources that are publicly available, e.g., FEWS NET, World Bank, and United Nations agencies. The final baseline report was additionally informed by review of the draft report by BHA staff and IPs and by input provided in a baseline results presentation that TANGO conducted with technical and M&E staff from each of the IPs. These exercises seek to provide further triangulation of findings, discuss and try to explain unexpected quantitative results, and validate the relevance, utility, and feasibility of baseline recommendations.

3. FINDINGS

This section presents the baseline survey findings by topic, integrating information from secondary qualitative data sources where possible. Results are provided for the RFSA area. Findings are considered statistically significant at the level of $p<0.05$. Annex 4 summarizes the full set of analyses performed as part of the baseline study, including the methodology for the bivariate and multivariate analyses. Annex 5 provides a tabular summary of indicator estimates and sampling statistics. The results of the descriptive analyses are presented in Annex 6, and the results of the bivariate and multivariate analyses are presented in Annex 7. Annex 8 presents the results of the COVID-19 module.

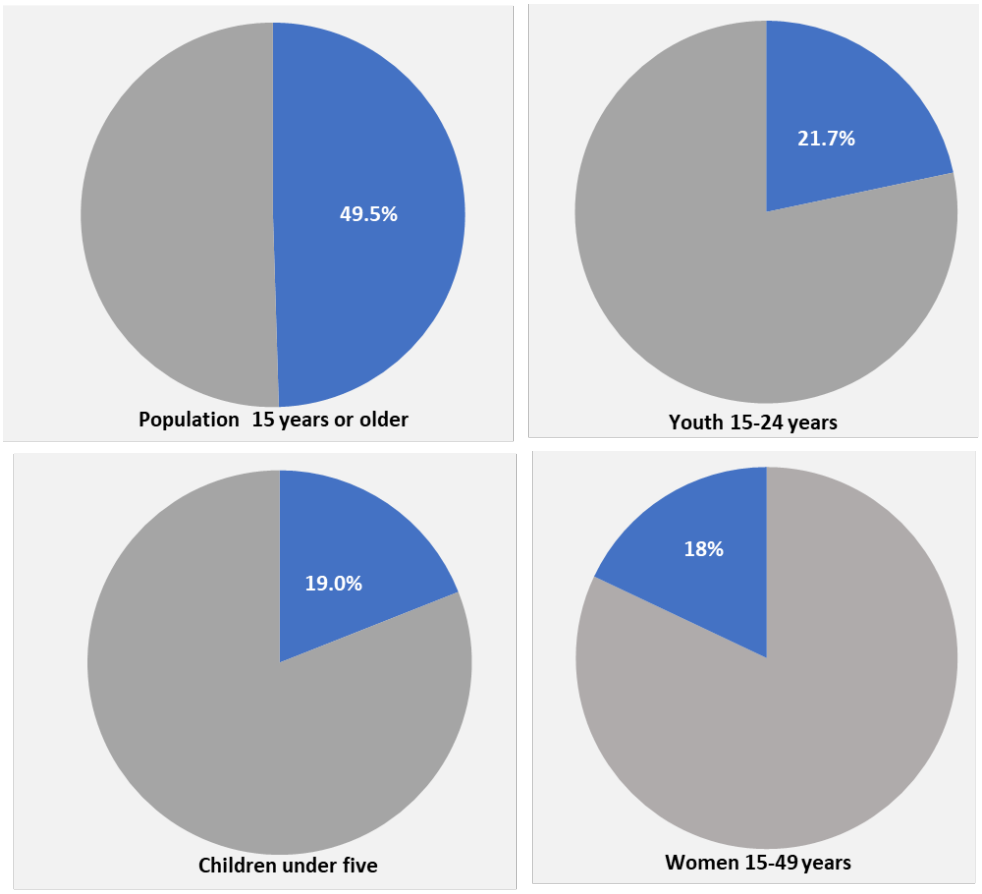
3.1 Characteristics of the Study Population

In 2020, the estimated population of Burkina Faso was 20.9 million.[46] The population in the RFSA area (project participants and non-participants) is estimated at 1.14 million, approximately 5.5 percent of the country's total population. Population and household estimates were derived from the baseline survey listing and roster data, and village household counts were provided by the IPs.

Figure 2 (next page) illustrates the share of key demographic groups from the overall population in the RFSA area. See Annex 6, Table A6.1 for additional details on estimated population counts in the RFSA area by key subgroups.

[46] United Nations Population Fund. 2020. State of the World Population 2020. Available at: https://www.unfpa.org/data/world-population-dashboard.

Figure 2: Share of Key Demographic Groups from the Overall Population



There are an estimated 116,236 households in the RFSA area. Household size and composition may have implications for women and children's health and nutrition and for overall food security of the household because these factors influence access to income-generating opportunities and other resources, the division of labor, and the distribution of resources among household members. Larger households may have fewer resources depending on the ratio of working-age adults to dependents.

Table 4 provides details on the characteristics of households in the RFSA area. The average household has about 9.8 members, substantially higher than the national average household size of 5.7 in the last Demographic and Health Survey (2010). The RFSA survey found that 4.9 household members are adults 15 years or older. Most households are comprised of both adult males and females (94.8 percent). Adult-female-only households, defined as households with at least one adult female and no adult males, account for 4 percent of all households. Adult-male-only households constitute a relatively smaller percentage of the overall household population (1.2 percent). Most households have at least one child under the age of five (81.6 percent). Just under half of households (42.9 percent) have at least one child 6-23 months of age.

Table 4: Household Characteristics

	ViMPlus
Gendered household type (Number of households)[1]	116,236
Male and female adults	108,069
Female adult(s) only	6,318
Male adult(s) only	1,849
Child(ren) only (no adults)	^
Gendered household type (Percentage of households)	100.0
Male and female adults	93.0
Female adult(s) only	5.4
Male adult(s) only	1.6
Child(ren) only (no adults)	^
Average household size (Number of persons)	9.8
Average number of adults 15 years of age or older per household	4.9
Percentage of households with children under 5 years of age	81.6
Percentage of households with a child 6-23 months of age	42.9
Household headship (Percentage female)	13.7
Number of responding households	750
Male and female adults	711 (84.8%)
Female adult(s) only	30 (4.6%)
Male adult(s) only	9 (1.2%)
Child(ren) only (no adults)	0 (0%)

Source: BHA 2020 Burkina Faso baseline survey weighted population estimates. Based on household counts from the baseline listing operation which defined villages based on the natural boundaries of the "main village."

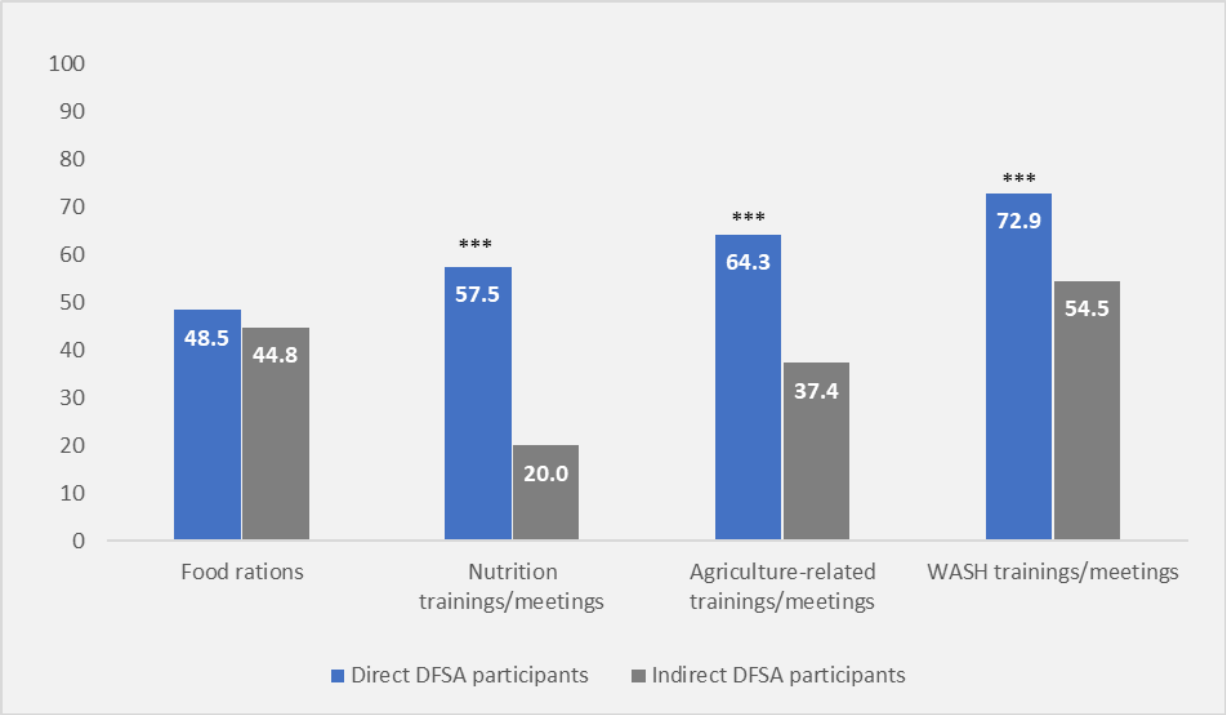
Notes: As stipulated in USAID's Feed the Future guidelines, adults for gendered household type are defined as individuals 18 years of age or older. For the interviews and all other analyses, the age for adults is 15 or older. Following FFP indicator descriptions, FTF defines four gendered household types: households with i) female and male adults, ii) adult female, no adult male, ii) adult male, no adult female, and iv) child, no adults. USAID, 2020. Food for Peace Indicators Handbook. Part I: Indicators for Baseline and Endline Surveys for Development Food Security Activities. May.
^ Results not statistically reliable, n<30.

3.2 Activity Participation

The baseline survey collected information on households' participation in RFSA activities, given that implementation of RFSA interventions commenced before the baseline survey began. The estimates are based on self-reported information; households are considered direct participants of the RFSA if someone in the household participated in any RFSA intervention(s). Households in which no member participated in any RFSA intervention are considered indirect participants. A total of 47 percent of surveyed households were direct participants (see Annex 6, Table A6.3). Figure 3 illustrates the percentage of direct and indirect participant households that received social assistance (from any

source) in the RFSA area by type of assistance received. Significance tests indicated that direct RFSA participants were more likely than indirect RFSA participants to participate in agriculture, nutrition, and WASH trainings and meetings. Activities provided by other organizations could explain the lack of difference in food rations between direct and indirect RFSA participants.[47]

Figure 3: Household Receipt of Social Assistance (From Any Source) Among Direct and Indirect RFSA Participants



Notes: Households were asked, "Have you or someone in your household participated in ViMPlus?" Households that responded "Yes" are considered direct participants of the RFSA, and households that responded "No" are considered indirect RFSA participants because although no household member participated directly in any of the RFSA interventions, the household falls in the RFSA intervention area.

3.3 Household Food Security

The US Government Global Food Security Strategy FY 2017-2021 defines food security as "access to—and availability, utilization, and stability of—sufficient food to meet caloric and nutritional needs for an active and healthy life."[48] The main measure of food security used in this survey is the food consumption score (FCS). The FCS is a proxy indicator for food intake and is calculated considering dietary diversity, food frequency, and the relative nutritional value of nine different food groups consumed by the household in the seven days prior to the survey.[49] Based on weighted scores and using WFP thresholds,

[47] VimPlus does not provide food rations.
[48] Available at: https://www.usaid.gov/sites/default/files/documents/1867/USG-Global-Food-Security-Strategy-2016.pdf.
[49] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities. Available at: https://www.usaid.gov/food-assistance/documents/ffp-indicators-handbook-part-i-indicators-baseline-and-endline-surveys-dfsa.

households are categorized into three groups: *poor, borderline,* or *acceptable* food consumption.[50] Although the FCS can give an idea of the caloric sufficiency of diet, it does not account for any micronutrient deficiencies.[51] Figure 4 illustrates the mean (average) FCS and percentage of households with *poor, borderline,* and *acceptable* FCS. The baseline results suggest that most households achieve *acceptable* FCS (83.3 percent). The average FCS exceeds 35 (the threshold for *acceptable* food consumption). The distribution of households by FCS groups and mean FCS does not vary across gendered household types. Refer to Annex 5 for estimates of mean FCS and the percentage of households with *poor, borderline,* and *acceptable* FCS by gendered household type.

Figure 4: Mean FCS and Distribution of Households by FCS Group

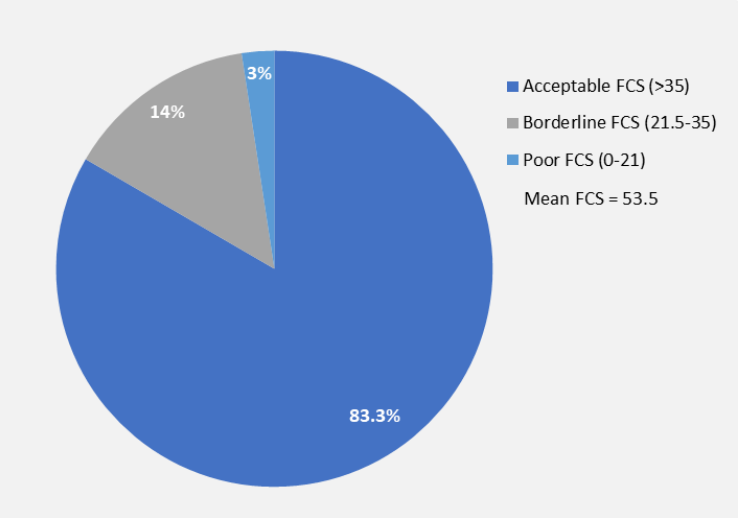
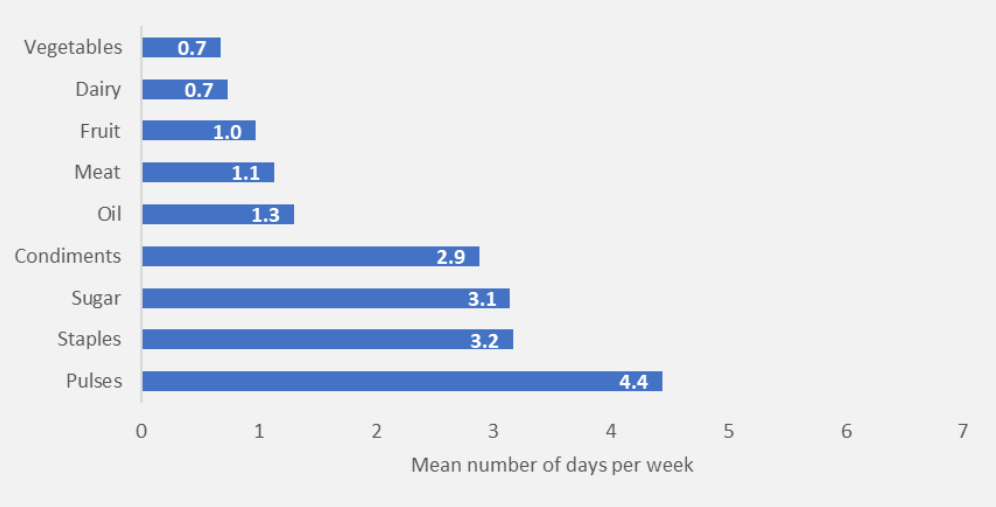


Figure 5 (next page) illustrates the frequency of consumption of food groups in the RFSA area. Households consume pulses an average of four days per week. Staples are consumed three days per week. Intake of dairy and animal-based proteins, such as beef, lamb, fish, and eggs, is infrequent. Intake of fruits and vegetables is also rare. While condiments, sugar, and oil have relatively less nutritional value, they are frequently consumed by households (approximately one to three days per week). For additional details on the components of the FCS score (i.e., percentage of households consuming each food group and frequency of consumption by FCS group), refer to Annex 6, Table A6.4.

[50] Households are categorized into consumption groups based on the following thresholds: poor (0 - 21); borderline (21.5 - 35); and acceptable (>35). For more details refer to Supplement to Part 1 - FFP Baseline/Endline Questionnaire and Indicator Tabulations for Development Food Security Activities.

[51] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.

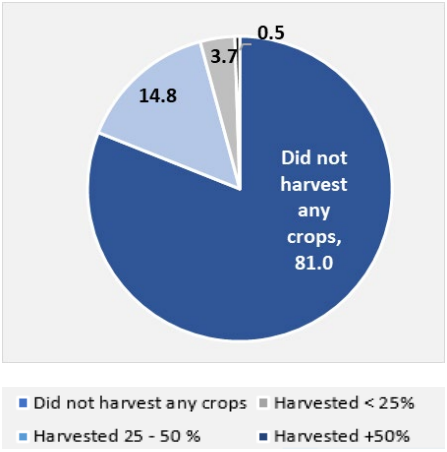
Figure 5: Frequency of Consumption of Food Groups



3.3.1 Relationship between Crops Harvested and FCS

Given that data collection extended into the first week of the harvest period and FCS is expected to be higher in the harvest period compared to the lean season, the survey asked farmers[52] in the household how much of their crops they had harvested in the current season as a proxy for assessing the impact of the timing of the survey on household food consumption. Figure 6 illustrates that about eight in ten households had not harvested any of their crops.

Figure 6: Distribution of Households by Percentage of Harvest Completed



Households that harvested at least some of their crops are expected to achieve higher food consumption. However, results of bivariate analyses indicate no statistical association between the percentage of harvest completed and households' FCS group or mean FCS. Households that did not harvest may have received food items from households that did harvest, and/or they could have purchased food items from the market (though price may still be a limiting factor for food access and consumption). This could be one explanation for the lack of statistically significant difference in FCS groups between households that harvested and those that did not. Since the survey did not collect information on income or consumption expenditures, the study cannot assess the indirect (i.e., income) effects of harvest on food consumption.

[52] "Farmer" is defined as a person 15 years or older with access to a plot of land over which they make decisions, for example, what will be grown, how it will be grown, or how to dispose/sell/store the harvest." See further discussion in Section 3.4.

3.3.2 Practices Associated with Household Food Security

Additional bivariate and multivariate analyses were performed to explore the association between FCS and intervention-specific factors expected to contribute to household food consumption, for example, improving access to credit to invest in productivity-enhancing inputs and adopting targeted agricultural practices, reducing post-harvest loss, and/or increasing income.[53] This analysis assumes that if a single household member participates in a particular practice, e.g., taking agricultural credit, participating in group-based savings, or adopting an improved agricultural technology or technique, then the benefits of this practice accrue to the household as a whole. Details on the methodology for the bivariate and multivariate analyses can be found in Annex 4.

The results of the bivariate analyses of FCS groups[54] and FCS score[55] indicate that households that have access to or use financial services, possess livestock holdings, and adopt a few targeted improved management practices are more likely to have better food security (i.e., achieve *acceptable* FCS rather than *borderline* or *poor* FCS compared to households that do not, and/or have a higher FCS score). There were a few select cases in which the bivariate analysis of the FCS score indicates that adoption of certain agricultural practices by households is associated with a lower FCS score. It should be noted that in the limited number of instances where this occurred, the average levels of FCS for both groups, those that adopted the practice and those that did not, remain quite high—above the threshold for *acceptable* food security based on the FCS score. The results of the bivariate analyses of household food consumption groups and FCS are summarized in Figure 7.

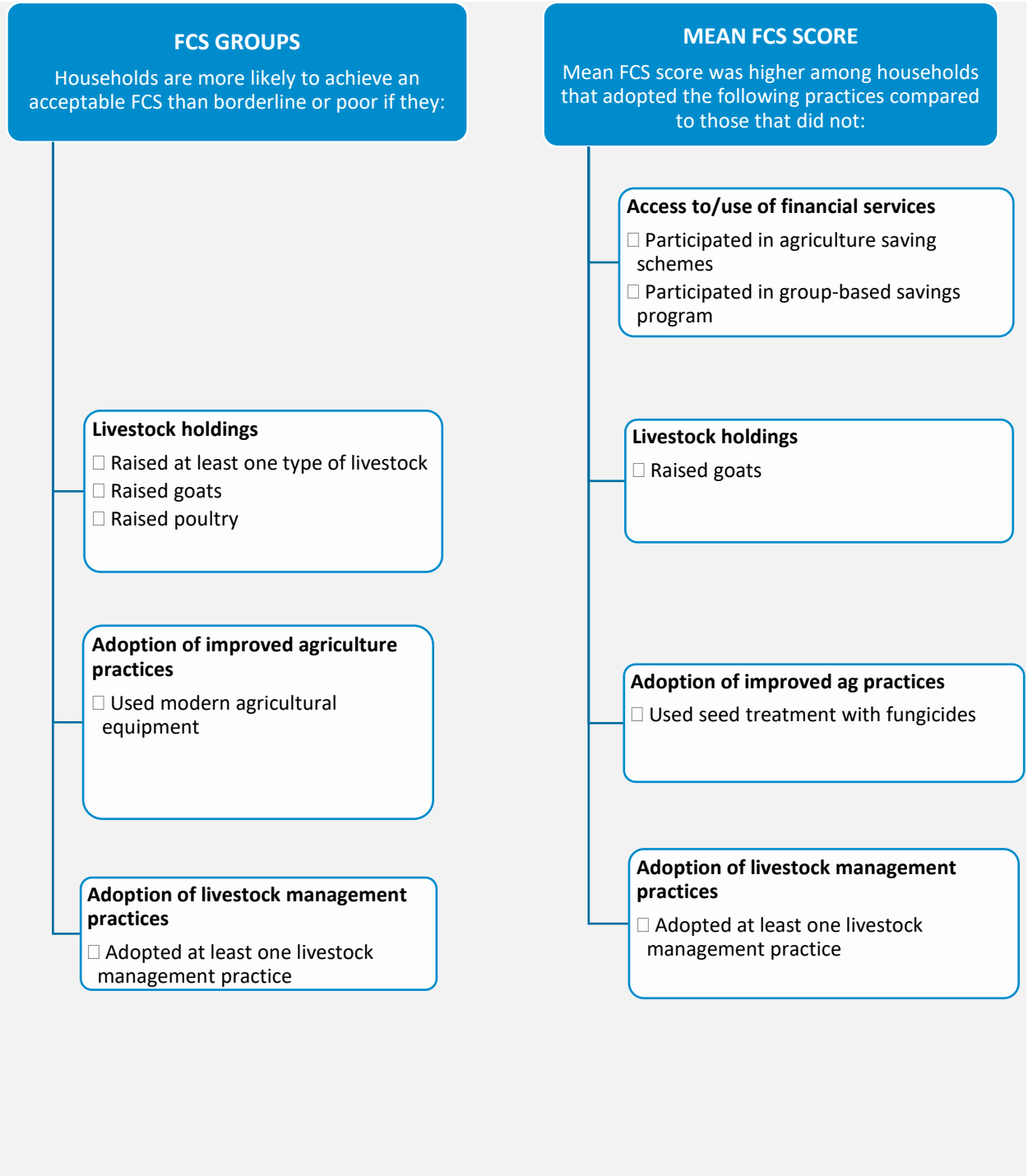
Multivariate analyses were conducted to explore whether intervention-specific factors such as access to financial services, application of improved management practices, or participation in social assistance may influence FCS, while controlling for background socio-economic factors and village-specific influences that are unrelated to the RFSA. The results of the multivariate analyses suggest that the following factors are associated with higher FCS[56]:

- Participation in group-based savings programs;
- Use of seed treatment with fungicides;
- Use of climate information;
- Delaying seedlings until the 3rd or 4th rain to control pests; and
- Participation in nutrition trainings or meetings.

One factor to keep in mind is that the FCS is a snapshot of a household's "usual" food consumption over the past week, which is useful for comparisons when data are collected cyclically across seasons or years. The FCS typically varies with the agricultural calendar, which itself is subject to variation based on weather conditions and trends. Agricultural planning—by farmers and by development interventions—seeks to account for this year-round fluctuation that directly affects food security over the seasons.

[53] See Annex 7, Tables A7.1a – A7.1c.
[54] See Annex 7, Table A7.1a for details.
[55] See Annex 7, Table A7.1b for details.
[56] See Annex 7, Table A7.1c for detailed results of the OLS regression of FCS.

Figure 7: Summary of Statistically Significant Findings from the Bivariate Analyses of Household Food Consumption Score



3.4 Agriculture

The baseline survey collected information on size of farmland, use of financial services, and adoption of improved crop, livestock, and post-harvest handling and storage practices for the commodities of interest (i.e., sorghum, cowpeas, rice, and onions) and livestock of interest (i.e., goats, sheep, and poultry) in the RFSA area. Enumerators interviewed all farmers with access to a plot of land over which they make decisions[57] and farmers with livestock over which they make decisions. In this study, characterizing farmers as having access to a plot of land does not require legal ownership.[58] Similarly, identifying farmers as having livestock does not require that they own the livestock, but they should be able to make decisions about their management or how to dispose of, store, or sell production. Demographic characteristics of farmers (e.g., age, sex) by commodity are provided in Annex 6, Tables A6.5a – A6.5f.

It is worth noting that, according to the qualitative data collected for the RISE I endline, there were few agriculture and livelihood projects in the Centre Nord region; the emphasis in this area was more on health and hygiene interventions. RISE I endline respondents noted specifically an absence of interventions in Centre Nord focused on livestock, savings groups, market gardens, and lowland farming, which is useful background for understanding some of the baseline results for agriculture indicators.

Another relevant point from Centre Nord focus group respondents in the RISE I endline is that it is not uncommon for households to both cultivate crops and raise livestock; an agriculture agent described farming and breeding as going “hand in hand.” This diversification was reported as already existing in the area and reinforced and encouraged by project interventions. Households were reported to employ a combination of crop and livestock production for income generation and home consumption and to be able to cope with shocks.

3.4.1 Type of Land Access and Farmland Size

Table 5 (next page) illustrates the percent distribution of farmers in the RFSA area by sex and age for each crop. Due to the small sample size of onion farmers, further disaggregated analyses for improved agricultural practices/technologies and other bivariate analyses for that group are not included in the report.

[57] Decisions over a plot of land include what will be grown, how it will be grown, or how to dispose of/sell/store the harvest.
[58] The survey asked, "Do you own, rent, or sharecrop the land over which you make decisions?" A “yes” response puts that respondent in the general category of having access to land. The analysis also uses this response to disaggregate by type of access (i.e., access by virtue of owning, renting, or sharecropping); these results are discussed below in Sec. 3.4.1.

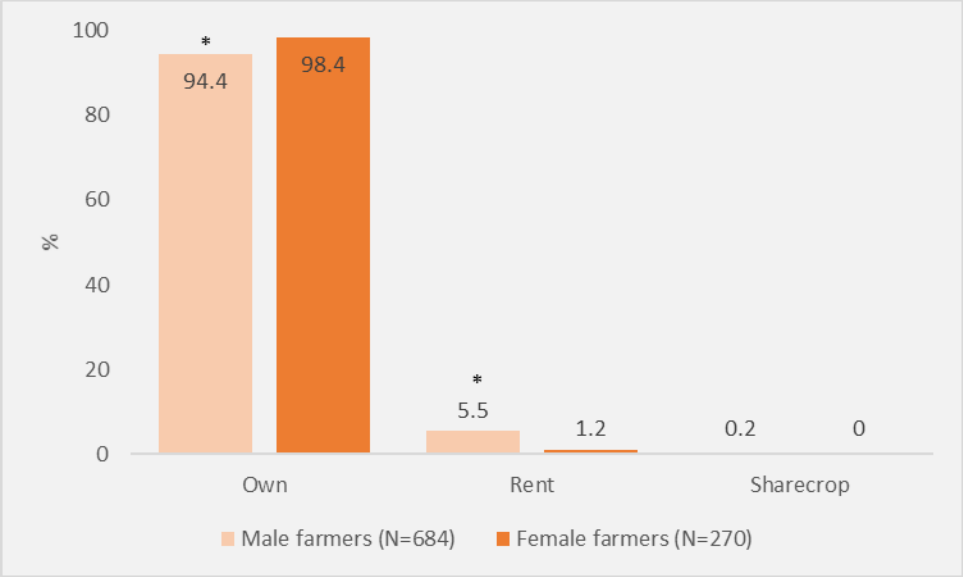
Table 5: Percent distribution of farmers in the RFSA area by crop, sex, and age

	ViMPlus	Sorghum	Cowpea	Rice	Onion
SEX					
Male	64.9	76.8	71.9	87.4	74.3
Female	35.1	23.2	28.1	12.6	25.7
Total	100.0	100.0	100.0	100.0	100.0
AGE					
15-29	21.3	14.7	17.2	19.2	13.6
30+	78.7	85.3	82.8	80.8	86.4
Total	100.0	100.0	100.0	100.0	100.0
NUMBER OF FARMERS	**1,077**	**751**	**822**	**114**	**39**

Note: Includes all farmers with access to a plot of land over which they make decisions.

Baseline results indicate most farmers in the RFSA area own the farmland they access and have decision-making authority over. Male farmers are less likely to own farmland than female farmers, but this difference is slight. Male farmers are more likely to rent compared to female farmers (see Figure 8). [59]

Figure 8: Type of Land Access by Farmer's Sex



** p<0.05, ** p<0.01, *** p<0.001*

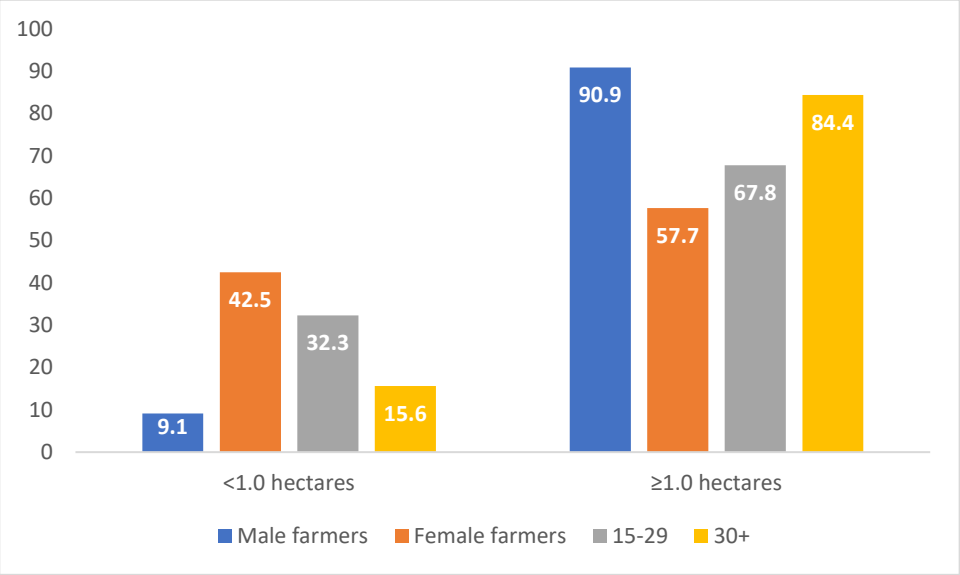
Note: Includes all farmers with access to a plot of land over which they make decisions. Access includes owning, renting, or sharecropping the land.

Figure 9 illustrates the percentage of farmers owning less than one hectare and one or more hectares. Female farmers are significantly more likely than male farmers to own less than one hectare. In turn, owning one or more hectares is significantly more common among male farmers compared to female farmers (90.7 percent and 57.7 percent, respectively). A similar pattern is seen for older farmers relative to younger farmers. See Annex 5, Table A6.6a for total farmland size by farmers' sex and age.

[59] See Annex 6, Table A6.6a for additional details on land tenure by farmer age and sex.

Disaggregating the farmland size by crop type illustrates similar sex and age disparities. See Annex 6, Table A6.6b – A6.6e for details by crop.

Figure 9: Farmland Owned (Hectares) by Sex and Age of Farmer (% of Farmers)



3.4.2 Use of Financial Services

Access to financial services enables households to make investments in productivity-enhancing inputs, manage risk, and diversify livelihood strategies.[60] Financial services include credit (loans), savings schemes, and insurance plans provided by formal and informal groups. Examples of financial services providers include banks, micro-finance institutions (MFIs), farmer associations, savings and loan facilities, Village Savings and Loan Associations (VSLAs), and other types of communal social funds. As noted at the beginning of this section, the qualitative data collected for the RISE I endline indicated an absence of interventions in Centre Nord in savings groups, a background point relevant to understanding the starting context for ViMPlus.

Half of the farmers in the RFSA area used any financial services in the 12 months prior to the survey (49.4 percent) (see Annex 5). Male farmers are just as likely to use any financial services as female farmers.[61]

3.4.3 Use of Improved Post-Harvest Handling and Storage Practices

Use of improved storage practices can help minimize post-harvest losses due to pests (insects, rodents), micro-organisms (molds), or chemical alterations within grains due to environmental factors such as temperature and humidity.[62]

[60] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.
[61] Annex 6, Table A6.7 provides additional details on use of financial services in the RFSA area.
[62] See FAO definition of post-harvest losses. Available at: http://www.fao.org/3/t0522e/T0522E04.htm.

A total of 31.6 percent of farmers used improved storage. Annex 5 provides details on the percentage of farmers using at least one improved storage practice.

Sealed/airtight bags are the most commonly used type of improved post-harvest storage practice, followed by triple bags for preserving grains. Between 15 and 20 percent of sorghum and cowpea farmers use sealed/airtight bags. Triple bags for seed or grain preservation are used by five percent of sorghum farmers and ten percent of cowpea farmers.

In general, use of improved storage practices does not differ by farmer's sex or age, with a few exceptions.[63]

There was some indication in the RISE I endline qualitative data that households appreciated the benefits of managing food stocks. As one Centre Nord respondent stated, "There is a change in the way people deal with shocks, for example in the household, when women learn better management of food input stocks so that there is no shortage of food during the year."

3.4.4 Use of Improved Crop Practices

The baseline survey collected information on the use of improved crop practices or technologies promoted by the RFSA to increase agricultural productivity or support more-resilient and better-functioning systems.[64] Table 6 (see next page) illustrates the extent to which targeted improved crop practices are adopted by farmers in the RFSA area.[65] The subsequent sections discuss the use of targeted improved crop practices in more detail.

[63] See Annex 6, Tables A6.8a – A6.8d for details.
[64] See Annex 6, Tables A6.8a – A6.8d for details.
[65] Annex 5 provides sampling statistics for the percentage of farmers using improved practices by type and crop.

Table 6: Heat Map of Adoption of Targeted Improved Crop Practices and Technologies by Crop

		Sorghum	Cowpeas	Rice
Crop genetics	Use of improved seeds*			
Cultural	Control of *sida cordifolia*			NA
	Crop association			NA
	Crop rotation			NA
	Sowing after useful rain			NA
	Respect cultural calendar	NA	NA	
	Nursery preparation	NA	NA	
Natural resources or ecosystem management	Farmer managed natural regeneration (FMNR)			
	Animal corridors/pasture areas			
	Pond protection			
	Community conflict mgmt.			
	Recovery of degraded lands			
	Develop low-lying and/or market gardens			
Pest and disease management	Delay of seedlings (3rd/4th rains)			NA
	Seed treatment w/ fungicides			NA
	Weed control	NA	NA	
	Pest control	NA	NA	
Soil-related fertility and conservation	*Zai* pits			NA
	Organic manure			
	Phosphatic manure			
	Compost			
	Micro-doses of fertilizer			NA
	Mineral fertilizer	NA	NA	
	Soil preparation	NA	NA	
Agriculture water management non-irrigation	Agricultural half-moons			
Climate adaptation/risk management	Use of climate information			
Other practices	Performing 3+ weedings			NA
	Use of modern agricultural equipment			
	Use of agricultural credit			

Wide application (~50 percent or more)
Moderate application (~20 – 49 percent)
Some application (~11 – 19 percent)
Low/no application (~10 percent or less)

** Per BHA definition,* improved seed *includes varieties bred by local or international research institutions (e.g., ICRISAT) and private seed companies, mostly for the characteristics of yield, drought tolerance, disease resistance, ease of preservation, and taste.*

The baseline survey results indicate the following over-arching findings for the use of crop and natural resource management (NRM) practices:

- Crop association (i.e., intercropping) and sowing after first useful rains are the most popular targeted improved cultural practices among sorghum and cowpea farmers; adoption rates range between moderate (about 20 to 49 percent) to widespread (about 50 percent or more). Between 20 and 49 percent of rice farmers prepare nurseries.
- Among the suite of soil-fertility related conservation practices, application of organic manure is widespread, followed by phosphatic manure. Construction of *zai* pits is most common among sorghum and cowpea farmers. Half or more rice farmers prepare soil.
- FMNR, delimitation of animal corridors and pasture areas, and protecting ponds from silting are the leading improved NRM practices among sorghum, cowpea, and rice farmers.
- Less than 10 percent of sorghum, cowpea, and rice farmers use improved seed varieties that are high-yielding, drought-tolerant, or disease-resistant.
- Sorghum and cowpea farmers rarely use targeted pest and disease management practices, but weed and pest control is more common among rice farmers. Non-irrigation-based agricultural watering practices are most common among rice farmers. Performing at least three weedings and using modern agricultural equipment (e.g., harnessed cultivation equipment, carts, small equipment)[66] is practiced by a moderate percentage of sorghum and cowpea farmers.
- Other infrequently applied targeted practices include climate adaptation and risk mitigation practices, agricultural credit to enhance production, development of low-lying or market gardens, crop rotation, pond protection, functional community-based conflict management, recovery of degraded lands, and controlling growth of *sida cordifolia*.

3.4.4.1 Sorghum

The survey interviewed a total of 751 sorghum farmers. See Table 7 for the percent distribution of sorghum famers by sex and age in the RFSA area.

Table 7: Percent Distribution of Sorghum Farmers by Sex and Age in the RFSA Area

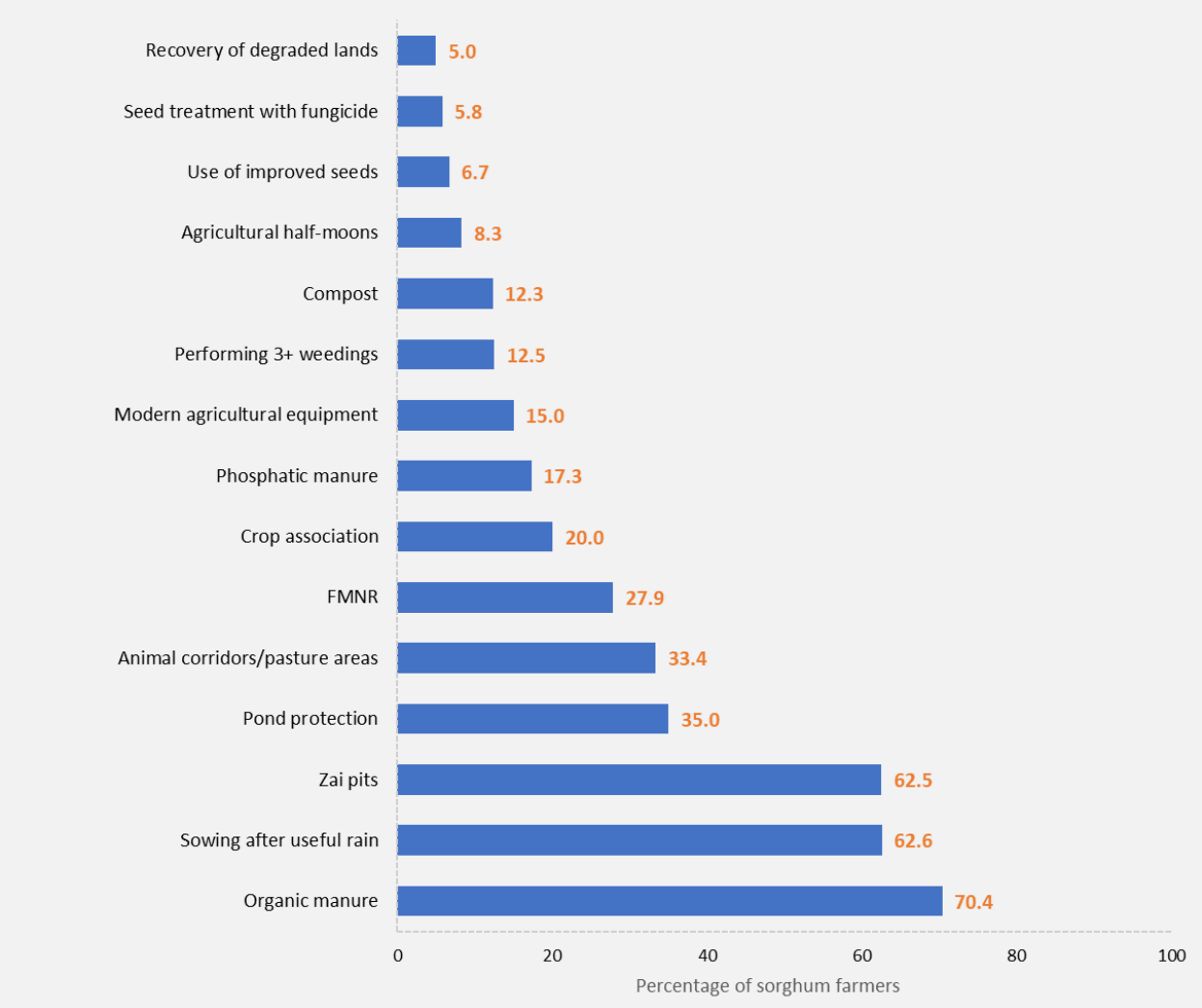
ViMPlus	
SEX	
Male	76.8
Female	23.2
Total	100.0
AGE	
15-19	0.8
20-24	6
25-29	7.8
30-34	12.6
35-39	12.1

[66] Modern agricultural practices include the use of manga hoes, donkey plows and / or cattle for plowing, hoeing and ridging, carts, wheelbarrows, and rippers as well as small equipment (e.g., pickaxes, shovels, crowbar, forks, sloping triangle). Definitions of these practices are provided in the Enumerator's Question-by-Question Module and are described in the FFP Indicator Handbook. A summary of the definitions is provided in Annex 4.

40-44	12.8
45-49	10.8
50-54	11.2
55-59	7.8
60+	18.1
Total	100.0
NUMBER OF SORGHUM FARMERS	**751**

Figure 10 illustrates the use of improved crop practices among sorghum farmers. Results are presented for practices used by five percent or more of farmers. Use of improved practices by sorghum farmers generally does not differ statistically by farmer sex or age, with a few exceptions.[67]

Figure 10: Sorghum Farmers Adopting Targeted Improved Crop Practices (%)



Note: Results are presented for practices used by five percent or more of farmers. See Annex 6, Table A6.5a for details, including disaggregation by age and sex.

[67] See Annex 6, Table A6.9a for details.

3.4.4.2 Cowpeas

The baseline survey interviewed a total of 822 cowpea farmers. Table 8 illustrates the percent distribution of cowpea farmers by age and sex in the RFSA area.

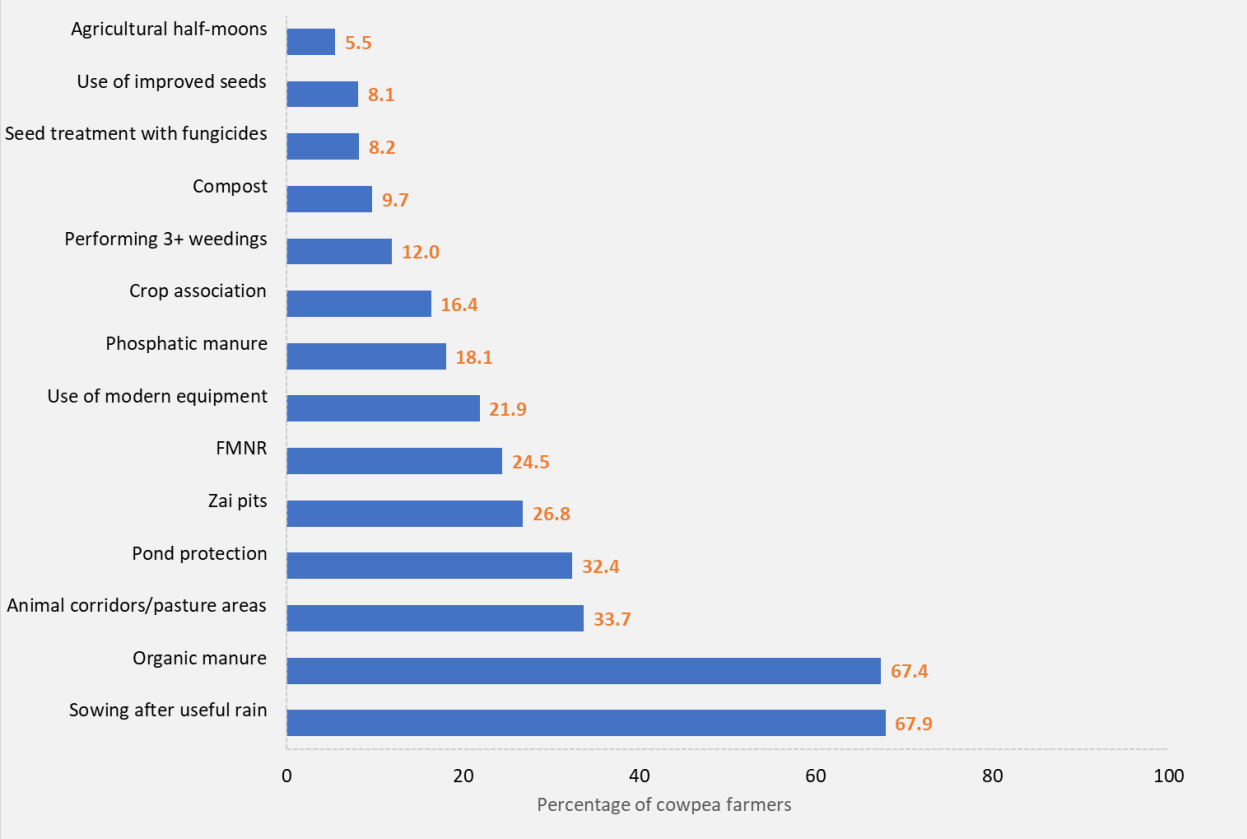
Table 8: Percent Distribution of Cowpea Farmers by Sex and Age in the RFSA Area

	ViMPlus
SEX	
Male	71.9
Female	28.1
Total	100.0
AGE	
15-19	1.5
20-24	7.9
25-29	7.8
30-34	13.6
35-39	12.8
40-44	11.9
45-49	9.9
50-54	10.4
55-59	7
60+	17.3
Total	100.0
NUMBER OF COWPEA FARMERS	**822**

Figure 11 illustrates use of improved crop practices among cowpea farmers. Use of improved practices among cowpea farmers generally does not differ statistically by farmer sex or age, with a few exceptions.[68]

[68] See Annex 6, Table A6.5b for details.

Figure 11: Cowpea Farmers Adopting Targeted Improved Crop Practices (%)



Note: Results are presented for practices used by five percent or more of farmers. See Annex 6, Table A6.5b for details, including disaggregation by age and sex.

3.4.4.3 Rice

The baseline survey interviewed a total of 114 rice farmers. See Table 9 for the percent distribution of rice famers by sex and age in the RFSA area.

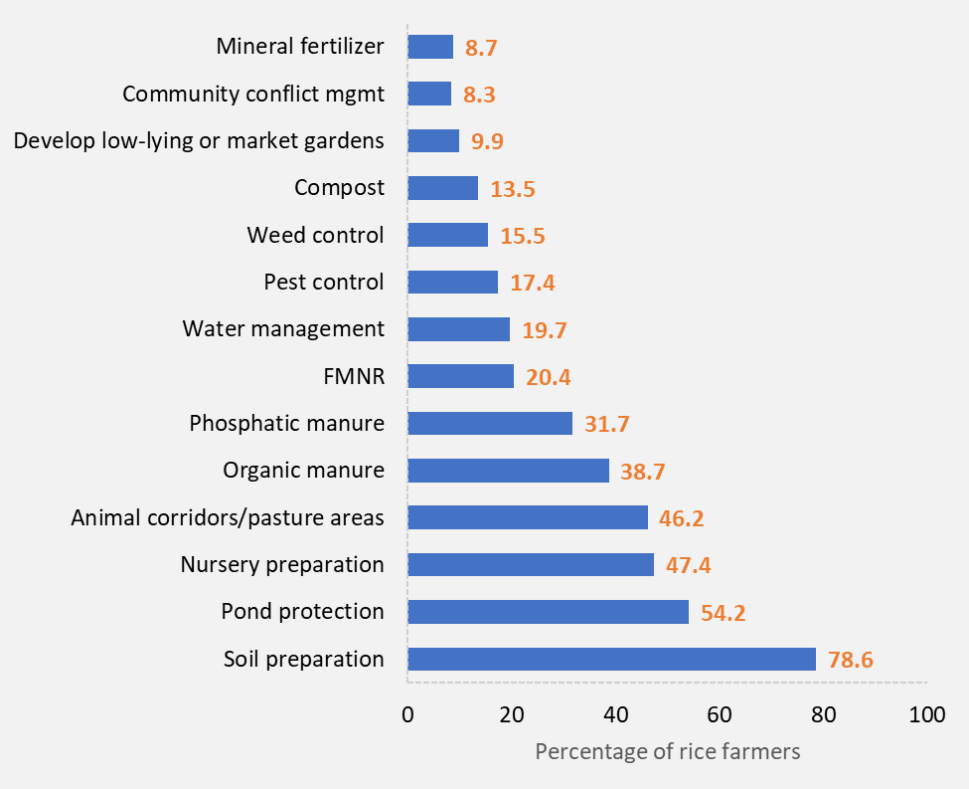
Table 9: Percent Distribution of Rice Farmers by Sex and Age in the RFSA Area

ViMPlus	
SEX	
Male	87.4
Female	12.6
Total	100.0
AGE	
15-19	7
20-24	12.1
25-29	10.9
30-34	8.8
35-39	11.4
40-44	11.5

ViMPlus	
45-49	5.6
50-54	11
55-59	21.6
60+	7
Total	100.0
NUMBER OF RICE FARMERS	**114**

Figure 12 illustrates the percentage of rice farmers using improved practices in the RFSA area. Use of targeted improved practices among rice farmers generally does not differ statistically by farmer sex or age, with a few exceptions.[69]

Figure 12: Rice Farmers Adopting Targeted Improved Crop Practices (%)



Note: Results are presented for practices used by five percent or more of farmers. See Annex 6, Table A6.5c for details, including disaggregation by age and sex.

[69] See Annex 6, Table A6.5c for details.

3.4.5 Use of Improved Livestock Practices

The baseline study interviewed a total of 464 goat herders, 545 sheep herders, and 430 poultry farmers. See Table 10 for the percent distribution of goat, sheep, and poultry farmers by age and sex.

Table 10: Percent Distribution of Goat, Sheep, and Poultry Farmers by Sex and Age

	Goats	Sheep	Poultry
SEX			
Male	70.2	69.2	82.7
Female	29.8	30.8	17.3
Total	100.0	100.0	100.0
AGE			
15-19	1.6	1.3	0.9
20-24	5.9	8.7	7.7
25-29	7.3	10.3	7.4
30-34	12.8	10.9	9.5
35-39	13.4	13.8	12.7
40-44	12.6	12.5	14.3
45-49	12.5	7.9	10.2
50-54	10.1	9.9	11.5
55-59	82	8.9	8.1
60+	15.5	15.7	17.6
Total	100.0	100.0	100.0
NUMBER OF FARMERS	**464**	**545**	**430**

Table 11 provides a "heat map" illustrating the extent of adoption of targeted improved livestock practices and technologies.[70] As noted at the beginning of this section, the qualitative data collected for the RISE I endline indicated an absence of interventions in Centre Nord in livestock, a background point relevant to understanding the starting context for ViMPlus.

Table 11: Heat Map of Adoption of Targeted Improved Livestock Practices and Technologies

	Goats	Sheep	Poultry
Vaccinations			
Antiparasitic treatments			NA
Improved fodder production			NA
Use of licking and/or multi-nutritional block			NA
Animal selection			NA
Use of para-veterinary services for goats and sheep			NA
Veterinary monitoring of food quality and quantity over time			NA

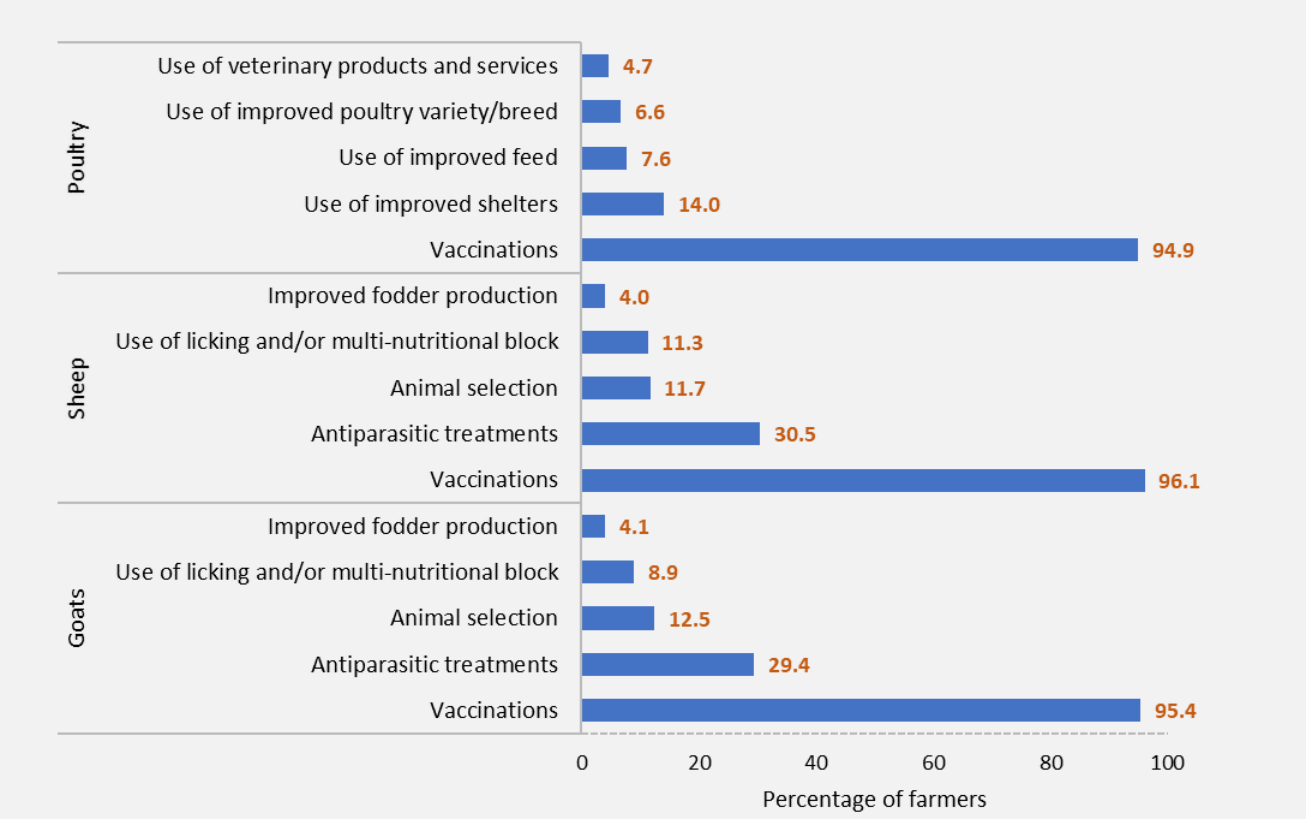
[70] Definitions of these practices are provided in Enumerator's Manual 2020 Baseline Survey of the Food for Peace Development Food Security Activities in Burkina Faso and described in the FFP Indicator Handbook. Refer to Annex 5 for sampling statistics for the percentage of farmers using improved livestock practices by commodity.

	Goats	Sheep	Poultry
Weight monitoring			NA
Optimum weight-market price criteria for the sale decision			NA
Use of improved poultry variety/breed	NA	NA	
Use of improved shelters	NA	NA	
Use of veterinary products and services (antibiotics, vitamins, etc.)	NA	NA	
Use of improved feed	NA	NA	

Wide application (~50 percent or more) | Moderate application (~20 – 49 percent) | Some application (~11 – 19 percent) | Low/no application (~10 percent or less)

Antiparasitic treatments and vaccinations are the most-used targeted improved practices (see Figure 13). Relatively few goat or sheep herders use animal selection, improved fodder production, licking and multi-nutritional blocks, improved fodder production, or paraveterinary services. Fifteen percent or less of poultry farmers use improved shelters, improved feed, improved poultry breeds, or consult with public or government animal workers for veterinary services. There are generally few statistically significant differences by farmers' sex or age in the application of targeted improved livestock practices among goat and sheep herders. See Annex 6, Tables A6.10a, A6.10b, and A6.10c for details.

Figure 13: Farmers Adopting Targeted Improved Livestock Practices, by Livestock Type (%)



Note: Results are presented for practices used by five percent or more of farmers. See Annex 6, Tables A6.10a, A6.10b, and A6.10c for details, including disaggregation by age and sex.

3.4.6 Factors Affecting Adoption of Improved Practices

Use of financial services is expected to contribute to the adoption of improved agricultural practices, particularly those that require cash for the purchase of inputs, such as fertilizer, improved seeds, equipment, and feed, or payment for services such as labor or veterinary services. Table 12 summarizes targeted improved agricultural practices that are more likely to be applied by farmers using a financial service compared to those who are not, by commodity.

There is some evidence that obtaining agricultural credit or participating in agricultural saving schemes is associated with higher percentages of farmers adopting improved practices that require cash inputs.

Table 12: Summary of Targeted Improved Practices

	Obtained agri-credit	Participated in agri-saving schemes
CROP PRACTICES		
Use of improved seeds	S, C	S, C
Control of *sida cordifolia* growth	C	
Delimitation of animal corridors/pasture areas		C
FMNR	S, C, R	S, C
Developed low-lying/market gardens	S, C	
Seed treatment with fungicides		S, C
Zai pits		S
Organic manure	S	
Agricultural half-moons (W)		
Use of climate information (G)		
Performing 3+ weedings	S, C	S, C
Grain treatment with agro-chemicals	S	S
POST-HARVEST STORAGE PRACTICES		
Use of solar or fuel-powered dryers to reduce post-harvest moisture	C	
Sealed/airtight bags		
LIVESTOCK PRACTICES		
Optimum weight-market price criteria for the sale decision		GO
Veterinary monitoring of food quality and quantity over time	SH	
Improved feed		PO
Vaccines		PO

NOTES: S = sorghum; C = cowpeas; R = rice, GO = goats; SH = sheep, PO = poultry.

The baseline survey results also show positive and statistically significant associations between the use of agriculture-related financial services and the adoption of improved practices that do not necessarily require cash inputs (e.g., applying organic manure, sowing after first useful rains, performing at least three weedings, controlling for *sida cordifolia* growth). This suggests that underlying factors associated with the use of financial services may also be contributing to the adoption of improved agricultural practices. For example, farmers who participated in agricultural saving schemes or took agricultural credit may also have participated in agricultural trainings or meetings where they gained exposure to those practices.

The qualitative component of the RISE I endline study provides some insights into factors that contribute to the adoption of improved agricultural practices in Burkina Faso, as discussed below.

Demonstrated results: Farmer focus groups in the RISE I endline study noted with appreciation that using certain project-promoted practices had demonstrated effects in improving crop yields. Most-often mentioned were the use of organic manure, improved seed varieties, diversified cultivation practices, and agricultural tools/implements.

Training approach: According to RISE I endline focus groups, the projects employed a farmer field school and cascade approach to training on agricultural practices, and there was also a multiplier effect whereby training participants shared their newly learned information with neighbors and with surrounding villages that did not participate in RISE I projects directly. One focus group stated that women who had received training were in turn training men who had not participated, which changed the gender dynamic, especially when coupled with women's increased ability to earn income after adopting some project-promoted practices. This sharing of new agricultural knowledge was aided by documentation provided during the trainings that could be shown and passed on to others, and also served to reinforce concepts presented because these tangible materials could be reviewed after the trainings. Sharing information also helped to build social cohesion.

Adherence to traditional methods: While project trainings were generally described in RISE I endline focus groups as important, some focus group discussants stated that adoption of promoted methods was not universal, describing some farmers as "linked to their old traditions." When probed for examples of promoted practices that farmers had adopted, none of the six Centre Nord focus groups named *zai* pits; two mentioned "line of stones" water retention barriers (*cordon pierreux*); two mentioned organic fertilizer.

3.5 Water, Sanitation and Hygiene

Household access to and use of basic water and sanitation facilities coupled with the adoption of proper hygiene practices, such as handwashing with water and soap (or ash) at critical moments, can help reduce the spread of waterborne illnesses such as diarrhea and other diseases among all household members, especially children under five.[71] Annex 6, Table A6.11 provides details on household WASH. This section describes household access to WASH facilities. While the indicators discussed provide a robust measure of access to basic facilities, they do not measure actual use of those facilities.

3.5.1 Drinking Water Source

BHA defines basic drinking water services as improved sources or delivery points that fulfill the following criteria: [72]

- Protected from fecal contamination
- Collection time is 30 minutes or less (round-trip including wait time)
- Consistently produce (i.e., year-round) 20 liters per person per day of basic drinking water

[71] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.
[72] FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.

- No interruptions in service in the two weeks prior to data collection

Because the survey did not collect information on year-round water access, the official indicator for access to a basic water source cannot be calculated. Instead, the percentage of households whose water source meets all other criteria (i.e., improved source, 30 minute or less round trip, production of at least 20 liters per person per day, and no interruptions in the last two weeks) was calculated.

A drinking water source protected from fecal contamination is available to most households in the RFSA area (97 percent). Among households with access to a protected water source, the most common source is a tubewell/borehole (50.1 percent), followed by public tap/standpipe (36.4 percent).

About one-quarter of the households can access a water source in 30 minutes or less round-trip (24.3 percent). However, for many households, those sources do not produce the daily minimum requirement to meet their drinking, sanitation, and hygiene needs. Household access to a water source that produces at least 20 liters per person per day is 53.8 percent of the sample. A majority of households did not experience interruptions in service in the two weeks prior to the survey (68.2 percent).

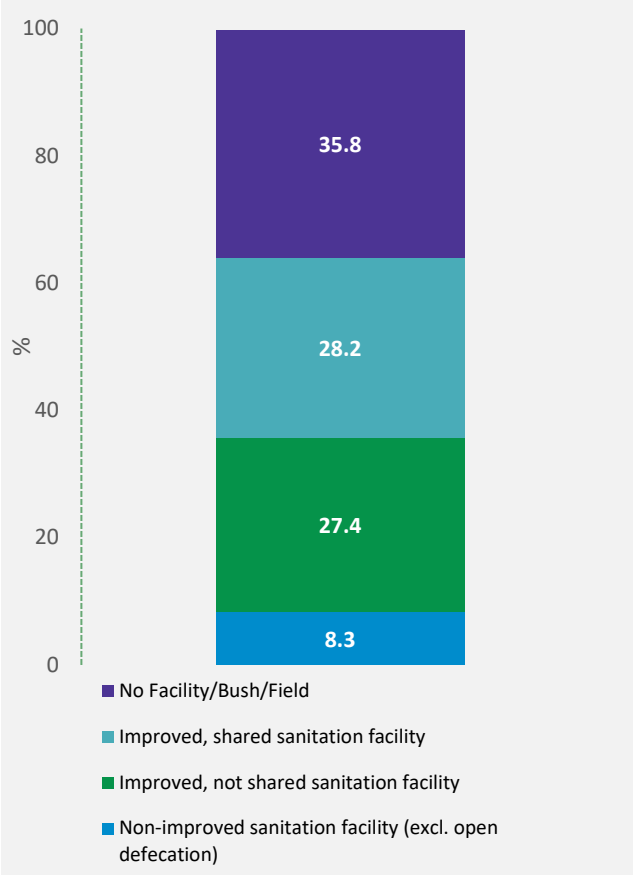
The analysis indicates that few households have access to a drinking water source that meets all four criteria collected for the baseline survey (8.9 percent). Few households do anything to make their water safer to drink (9.7 percent).[73]

[73] Household respondents were asked "Do you do anything to the water to make it safer to drink?" Possible response options are 'YES', 'NO,' and 'DON'T KNOW.' Households were not asked about the technique used to make water safer to drink (e.g., boiling, chlorination, etc.,). Therefore, conclusions on the use of correct treatment methods cannot be made.

3.5.2 Sanitation Facility

According to the WHO/UNICEF Joint Monitoring Program, a "basic sanitation facility" must meet two conditions: i) it must be an "improved sanitation facility" (i.e., hygienically separates excreta from human contact)[74] and ii) it is not shared with other households. As shown in Figure 14, under a third of households in the RFSA area have access to a basic sanitation facility (27.4 percent). Another third of the households have "limited service," i.e., access to an improved sanitation facility that is shared (28.2 percent). The most common improved sanitation facility used (in both the shared and unshared categories) is a pit latrine with a slab (see Annex 6, Table A6.11). Just over one-third of households have no facility and/or practice open defecation (35.8 percent). Finally, about one in ten households has a non-improved sanitation facility (8.3 percent). Annex 6, Table A6.11 provides additional details on sanitation facilities accessed by households.

Figure 14: Household Sanitation Facility



3.5.3 Handwashing Station

A handwashing station is a fixed or mobile location where household members wash their hands with water and soap or ash.[75] The measurement of this indicator is based on observation by the enumerator rather than self-reported information: the enumerator is shown the station where household members commonly wash their hands; water and soap or ash must be observed there. Nearly six out of ten households were observed to have a handwashing station (58.7 percent) with soap or ash present. See Annex 5 for the percentage of households with a handwashing station by gendered household type.

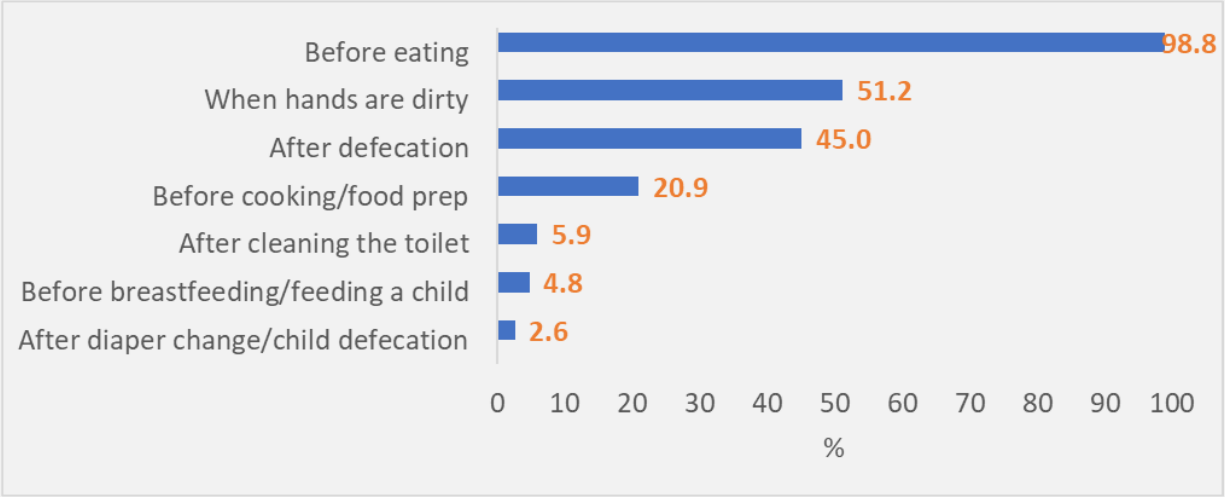
3.5.4 Knowledge of Critical Moments for Handwashing

Handwashing with water and soap or ash at critical moments can lower the incidence of diarrhea and other illnesses. Critical moments for handwashing include: i) after possible fecal contact, for example, after defecation, changing a diaper, or cleaning the toilet, and ii) before handling food, such as prior to

[74] Improved sanitation facilities include those that flush or pour to a piped sewer system, septic tanks or pit latrines; ventilated improved pit latrines, composting toilets and pit latrines with slabs. See https://washdata.org/monitoring/sanitation.
[75] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.

eating, preparing food, or feeding a child.[76] Figure 15 presents the percentage of households with knowledge of the critical moments for handwashing.[77] Nearly all households are knowledgeable about the importance of handwashing before eating. Few households are aware of critical junctures for handwashing that relate to other food-handling activities such as before cooking and food prep (20.9 percent) and before breastfeeding or feeding children (4.8 percent). Many households understand the importance of handwashing when hands are dirty, but fewer are aware of the need to do so when engaging in activities posing a risk of fecal contact. Forty-five percent of households are knowledgeable of the need for handwashing after defecation, 5.9 percent after cleaning a toilet, and 2.6 percent after changing a diaper.

Figure 15: Percentage of Households with Knowledge of the Critical Moments for Handwashing



3.6 Women's Health and Nutrition

As noted in Section 3.4, the qualitative data collected for the RISE I endline indicated a strong project emphasis on health interventions in the Centre Nord region, which is relevant background for understanding some of the baseline results for health indicators.

3.6.1 Women's Minimum Dietary Diversity

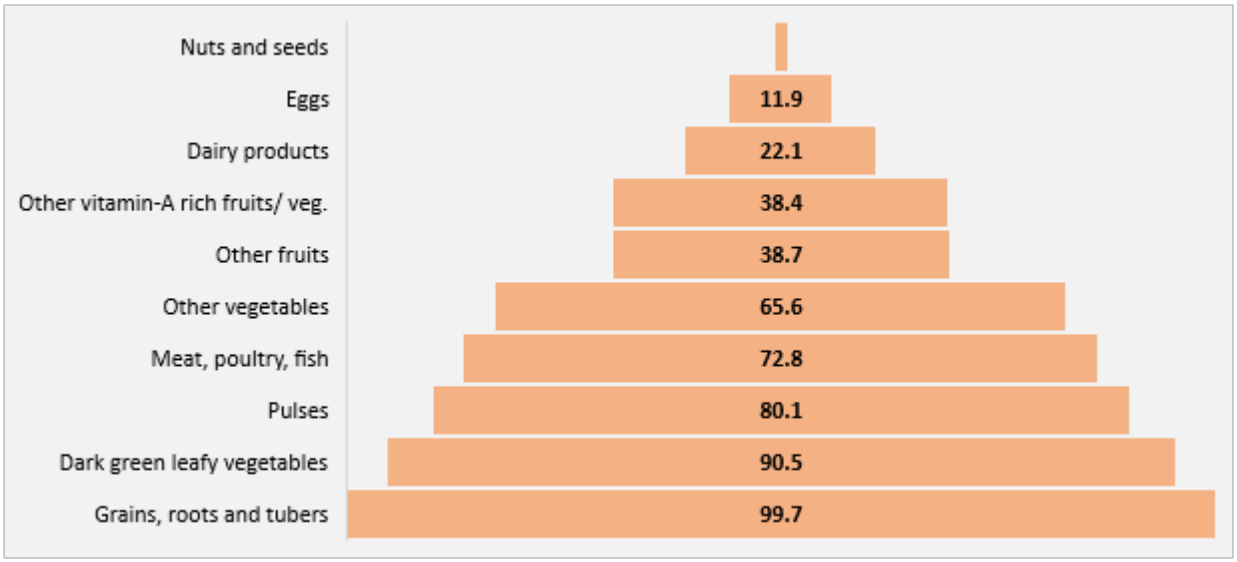
Diverse diets are associated with better micronutrient content, which in turn contributes to better health and nutrition.[78] The women's minimum dietary diversity indicator (MDD-W) captures the percentage of women of reproductive age (15-49 years) who consume five or more of ten food groups

[76] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.
[77] Respondents were asked about the important moments to wash hands. Multiple responses were allowed. Percentages can add up to more than 100.
[78] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.

in the day and night before the survey. Though this indicator does not capture the frequency of consuming food items, the threshold of five groups is correlated with higher micronutrient adequacy.[79]

The baseline survey results show that 61.7 percent of women 15-49 years receive an MDD-W (see Annex 5), with no statistically significant difference between women 15-19 years and women 20-49 years.[80] Figure 16 illustrates the food groups consumed by women in the 24 hours prior to the survey. Nearly all women of reproductive age (99.7 percent) consume grains, roots, and tubers. Most women's diets include dark green leafy vegetables (90.5 percent), pulses (80.1 percent), and meat, poultry, and fish (72.8 percent). A little over two-thirds consume other vegetables (65.6 percent); more than one-third consume fruits (38.7 percent) and other vitamin-A rich fruits and vegetables (38.4 percent), and close to one quarter (22.1 percent) consume dairy.

Figure 16: Food Groups Consumed by Women 15-49 Years



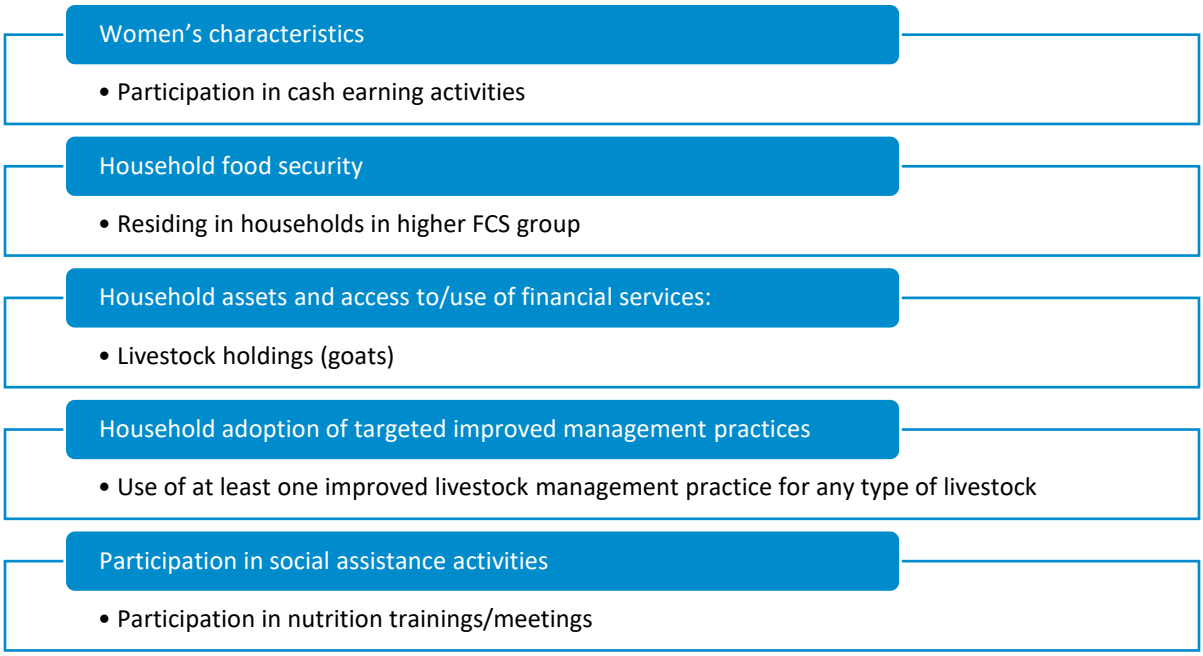
Bivariate and multivariate analyses of MDD-W were conducted to identify differences by background characteristics and intervention-specific factors expected to contribute to women's nutrition. Figure 17 summarizes the determinants that are related to achievement of MDD-W resulting from the bivariate analysis.[81]

The results show that women are more likely to achieve a diet of minimum diversity if they:

- Engage in cash-earning activities;
- Reside in households in higher FCS groups;
- Reside in households with livestock holdings (in particular, goats);
- Reside in households that apply targeted improved livestock management practices; or
- Reside in households that participated in nutrition trainings/meetings (whether RFSA-specific or from any other donor).

[79] See FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.
[80] Refer to Annex 5 for details on MDD-W by age.
[81] See Annex 7, Table 9a for full results from the MDD-W bivariate analysis.

Figure 17: Statistically Significant Associations between MDD-W and Intervention-Specific Factors



Multivariate analyses were conducted to explore whether intervention-specific factors such as access to financial services or application of improved management practices may influence women's dietary diversity while controlling for individual and household characteristics and village-specific influences. The results of the multivariate analyses show that women are more likely to achieve a diet of minimum diversity if they resided in households that:[82]

- Participated in agricultural activities;
- Raised goats or raised poultry;
- Took out an agricultural loan or used agricultural credit;
- Adopted the application of organic manure, performed at least three weedings, delayed seedlings to control pests, or performed crop association; or
- Used locally made storage or solar/fuel-powered dryers.

Participation in social assistance activities, whether in a BHA RFSA activity or activities promoted by other donors, was not associated with women consuming a diet of minimally adequate diversity when controlling for other factors.

3.6.2 Antenatal Care

Antenatal care (ANC) can help reduce maternal and perinatal morbidity and mortality through early detection and treatment of complications that may arise during pregnancy, as well as through the management of concurrent diseases and illnesses such as HIV and malaria via integrated health care

[82] See Annex 7, Table A7.9b for detailed results of the logistic regression of MDD-W.

delivery.[83] ANC should be provided by skilled health personnel such as a doctor, midwife, or nurse. To detect and effectively treat underlying problems, the first ANC visit should occur as early as possible, and within the first trimester.[84]

A total of 898 live births occurred in the RFSA area in the five years prior to the survey.[85] Of these, the percentage of most-recent births receiving at least four ANC visits by a skilled health professional was 61.3.[86] The majority of live births received at least one ANC visit with a skilled health professional (99.5 percent). Among those births that received at least one ANC visit, 61.5 percent received their first ANC visit during the first three months of pregnancy.[87]

3.6.3 Contraceptive Methods

Voluntary and safe family planning are central to improving women and children's health, reducing HIV/AIDS, advancing gender equality and women's empowerment, and reducing poverty.[88] Knowledge of family planning methods is a prerequisite to accessing and using those methods. Women's ability to make educated and voluntary choices about childbearing, including the use of contraception, is critical to their empowerment and overall well-being.

The survey considers women to be knowledgeable of modern contraception if they are aware of at least three modern family planning methods that can be used to delay or avoid pregnancy.[89] Knowledge of modern contraceptive methods among women in a union is widespread in the RFSA implementation area (92.5 percent).

Most women in the RFSA area do not use any form of contraception (modern or traditional) (75.2 percent).[90] The contraceptive prevalence rate (modern and traditional methods combined; see Annex 5) was 24.8 percent. Of those who do, most rely on modern methods (24.6 percent). Injectables and implants are the most-used methods of modern contraception. Less than one percent of women use fertility awareness methods such as the Standard Days Method or Lactational Amenorrhea Method. Those results and additional details on contraceptive use by type for modern and traditional methods are shown in Annex 6, Table A6.14. That analysis finds that more than two-thirds of women who use modern contraception participated in the decision to use modern family planning (69.4 percent). Among these women, half (53.2 percent) decided alone and 16.2 percent decided jointly with their spouse.

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[83] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.

[84] WHO. 2004. *Standards for Maternal and Newborn Health: Provision of Effective Antenatal Care (Section 1.6)*. Geneva, Switzerland: World Health Organization. Available at: http://whqlibdoc.who.int/hq/2007/a91272.pdf.

[85] Refers to the most recent live birth because a woman may have had more than one birth in the five years preceding the survey. However, the survey collected information only for the most recent birth (as opposed to all births).

[86] As of 2019, the WHO revised its recommendation for the minimum number of visits from four to eight. WHO 2016 Guidelines on Antenatal Care are available at: https://www.who.int/publications/i/item/978924154991.

[87] Annex 6, Table A6.13 provides additional details on the use of ANC services, including information on ANC provider.

[88] Refer to https://www.usaid.gov/global-health/health-areas/family-planning.

[89] The modern family planning methods used for the calculation of this indicator are female sterilization, male sterilization, intrauterine devices, injectables, implants, contraceptive pills, male condom, female condom, diaphragm with spermicide, emergency contraception, standard days method, and lactation amenorrhea method. Refer to Annex 5 for details on knowledge of modern family planning methods by age group.

[90] In this survey, traditional family planning methods are the rhythm method, withdrawal, and other traditional methods.

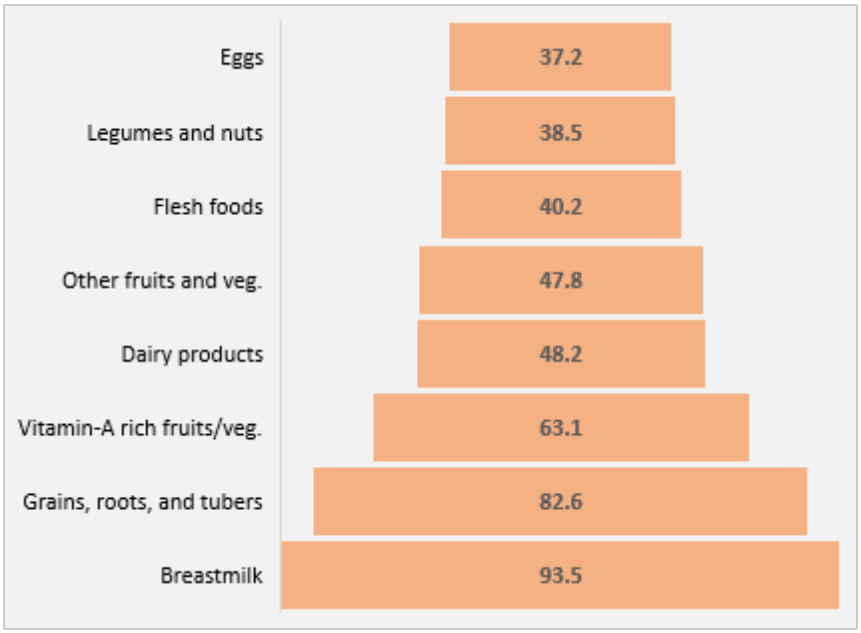
Refer to Annex 5 for additional disaggregation of contraceptive decision-making by age and actor(s) (i.e., alone or jointly with spouse).

3.7 Children's Health and Nutrition

3.7.1 Children's Minimum Dietary Diversity

Like women's dietary diversity, children's dietary diversity has been linked to micronutrient adequacy. A child is considered to achieve a diet of minimum diversity (MDD-C) if they consumed five or more of eight food groups during the day or night before the survey. The indicator is restricted to children 6-23 months and includes both breastfed and non-breastfed children. Although breastmilk is included as one of the food groups, this indicator does not capture breastfeeding status but rather serves as a proxy measure for complementary feeding. The percentage of children 6-23 months consuming MDD-C was 50.8 percent.[91] Figure 18 illustrates the food groups consumed by children 6-23 months. In addition to breastmilk (93.5 percent), grains, roots, and tubers (82.6 percent) and vitamin-A rich fruits and vegetables (63.1 percent) are widely consumed by children 6-23 months. Although one-half of children 6-23 months achieve MDD-C, and the consumption of grains, roots, tubers and vitamin-A rich fruits and vegetables is widespread, the frequency and quantity consumed is not known.

Figure 18: Food Groups Consumed by Children 6-23 Months, Past 24 Hours



Most results of the bivariate analyses of MDD-C were statistically non-significant owing to small sample size.[92, 93] Key findings indicate:

[91] Based on a sample size of 405 children 6-23 months.
[92] The analytical sample for the bivariate analyses of MDD-C was restricted to children 6-23 months with data available across all variables (N=390).
[93] Detailed results are provided in Annex 7, Table A7.10.

- The percentage of children achieving MDD-C generally did not differ by the child's background characteristics or household sociodemographic characteristics, with one exception. The percentage of children with MDD-C is higher for children aged 12-17 months and children aged 18-23 months compared to children aged 6-8 months and children aged 9-11 months.
- Children in households with food security impacted by COVID-19 were less likely to achieve an MDD-C compared to children living in households that did not report that their food security was impacted by COVID-19.
- Children living in households that adopted the improved agricultural practices of seed treatment with fungicides or using modern agricultural equipment were more likely to achieve an MDD-C compared to children in households that did not use either of these practices.
- Children living in households who used at least one improved livestock management practice are more likely to achieve MDD-C compared to children living in households that do not use at least one improved livestock management practice.
- Participation in social assistance programs was not related to differences in the prevalence of MDD-C.

3.7.2 Diarrhea and Oral Rehydration Therapy

Diarrhea is the leading cause of mortality for children under five, despite the availability of low-cost management treatments such as oral rehydration therapy.[94] Prolonged and repeated bouts of diarrhea are also linked to malnutrition. In the RFSA area, 20.4 percent of children under five experienced diarrhea in the two weeks preceding the survey. Among children who experienced diarrhea, nearly all received oral rehydration therapy (80.3 percent).[95]

Bivariate analysis of the prevalence of diarrhea among children under five did not differ statistically by improved sanitation facility, drinking water source, water treatment, access to a handwashing station with water and soap (or another cleaning agent), or knowledge of the critical moments for handwashing in the RFSA area (see Annex 7, Table A7.11).

Several factors may partially explain the lack of statistical significance between diarrhea prevalence and other WASH indicators. While most households have access to an improved water source (97 percent) and over half are able to obtain enough water to meet their daily cooking, cleaning, and hygiene needs (53.8 percent), only one-quarter (24.3 percent) can obtain water in 30 minutes or less round trip. A smaller percentage of households (8.9 percent) have access to a water source that meets four of the five criteria of a basic water source, and only 9.7 percent do something to make their water safer to drink. Although access to an improved drinking water source and handwashing station with water and soap or ash serve as proxies for use, it does not guarantee households are using those facilities, let alone in any consistent fashion. Moreover, environmental hygiene could also be a factor. The presence of animal feces (e.g., from chickens) near/in the household is a source of pathogens that children may ingest directly or by mouthing objects.

As with agriculture, RISE I adopted a cascade training approach in health and nutrition, and the endline qualitative data suggest that this was well received and effective in transmitting information across

[94] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.
[95] Annex 4 provides additional disaggregation of the prevalence of diarrhea and treatment via ORT, by sex.

households, even those that did not directly participate in project activities. Some of this knowledge sharing was informal and undirected – women sharing with other women they knew – whereas some was an express component of project design, e.g., made possible by working through village chiefs, village development committees, or women's associations. Another component of the approach noted as helpful was the distribution of health and hygiene manuals and displaying posters on family well-being at health centers and places of worship.

3.8 Gender

This section discusses gender findings related to cash-earning, access to credit, and participation in community groups. The baseline survey collected information on women and men's participation in cash-earning activities, group membership, and access to credit. Cash can be used toward making investments in productivity-enhancing inputs and for the purchase of diverse and more nutritious food. For women, partaking in cash-earning activities can contribute toward empowerment and gender equality, for example by giving women a greater say in the allocation of household resources and other decisions regarding their own well-being and that of their children. Access to credit, like participation in cash-earning activities, provides access to productive resources and is important for gender equality and women's economic empowerment.[96]

Participation in community groups facilitates access to information and resources. By strengthening social networks and community bonds, participation in community groups also enhances the resilience of households and communities in the face of shocks and stressors.

3.8.1 Gender and Cash-Earning Activities

In this survey, a household member is considered to participate in cash-earning activities if they are paid for their work in cash or a combination of cash and in-kind. Individuals who are unpaid or paid in-kind-only are excluded. Work includes employment in the formal and/or informal sectors, including full-time, part-time, or seasonal work performed within and/or outside the home.[97] Care work, such as looking after children and other household members, is not included. The survey asked all household members aged 15 years and older in a union about their work participation in the past 12 months. However, the indicator on cash-earning is based on the response of women and men in a union rather than all cash earners.[98]

The percentage of women in a union partaking in paid work is significantly less than one-half that of men in a union in the RFSA area. Close to half of men in a union (45.9 percent) are paid in cash or a combination of cash and in-kind compared to 19.1 percent of women in a union ($p<0.001$). Participation in cash-earning activities is generally low for both men and women in a union, suggesting few opportunities for cash-earning activities in the RFSA area.[99]

[96] For additional details refer to the FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.
[97] Examples of cash-earning activities include agricultural daily wage labor, off-farm daily wage labor, sale of goods produced or processed outside the home or at the home, homestead garden or farm or petty trading, cash for work, food for work, conditional cash transfers and/or productive safety net programs.
[98] Refer to Section 3.1 and Annex 6, Table 6.1 for estimates of the percentage and number of cash earners in the RFSA area.
[99] Annex 5 provides additional details on the percentage of women and men in a union participating in cash-earning activities by age.

According to the RISE I endline qualitative data for Centre Nord, women's adoption of project-promoted production practices had led to increased income, which in turn helped them participate in household expenses and diversify their income-earning activities. These changes, as well as women's participation in trainings in and of itself, also contributed to an increased status and role in household decisions vis-à-vis their husbands. This finding provides support for the potentially transformative impacts of increasing women's access to income and cash alongside relevant livelihood trainings.

3.8.2 Gender and Group Participation

Community groups can be formal or informal and include agricultural and livestock producers' groups, land users' groups, water users' groups, credit, or microfinance groups (e.g., VSLAs), savings groups, local government, religious groups, mothers' groups, and women's groups. Questions on participation in community groups were asked only to the youngest female in a union and her spouse.[100] Where the household was comprised of only one married woman, that woman and her spouse were interviewed.

Men's participation in community groups is significantly greater than women's (77.1 percent, 73.5 percent, respectively) ($p<0.05$). Men and women both tend to join producers' groups, water groups, mutual help or insurance groups, religious groups, safe spaces and conflict resolution groups. Women tend to join mothers' groups, whereas men are likely to participate in civic groups, youth groups, and sport groups.[101]

3.8.3 Gender Differences in Access to and Decisions About Credit

Women and men are considered to have access to credit if anyone in their household took out a loan or borrowed cash or in-kind from a formal or informal source in the 12 months preceding the survey. Formal channels of borrowing include banks, NGOs, and group-based microfinance/VSLAs. Informal channels of credit include family and friends, money lenders, and informal credit and savings groups. Questions on gender differences in access to credit and group membership were asked to the youngest woman in a union and her partner.[102] A woman or man is considered to "access credit" if anyone in the household took out a cash or in-kind loan from any of the six formal and informal sources mentioned in the survey. As shown in Figure 19, 29.4 percent of men and 27.1 percent of women accessed credit in the past 12 months. Figure 19 provides details about decision-making by households that took a loan in the last 12 months. A woman or man is considered to participate in credit decisions if they made the decision, alone or jointly, on whether to borrow or what to do with the loan for at least one of the loan sources accessed by the household.[103] A woman or man is considered to decide alone on credit decisions if they decided alone whether to borrow and what to do with the loan for each loan accessed by the household.

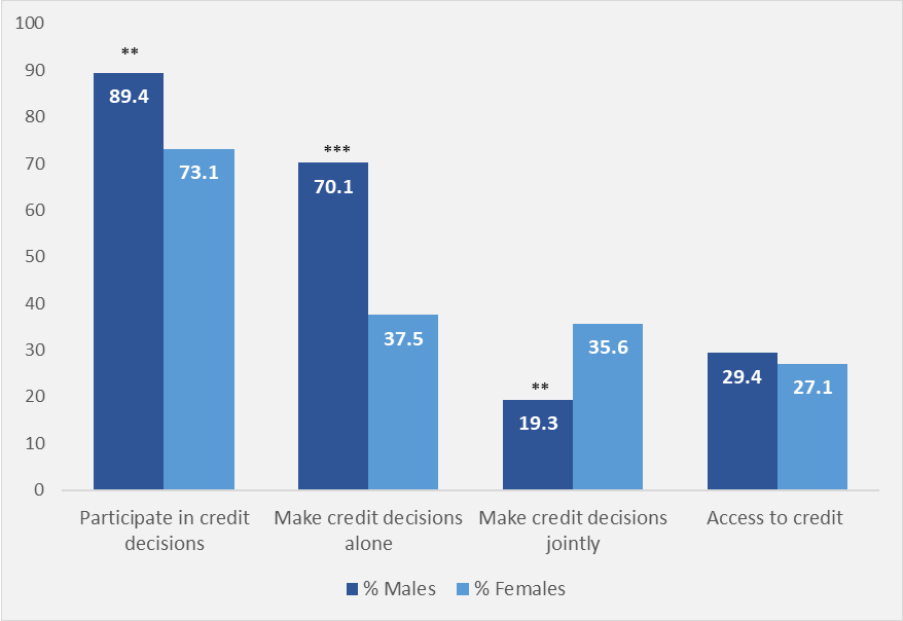
[100] The survey was streamlined for a non-permissive environment. Thus, in order to reduce the length of the interview, rather than interviewing all women and men in a union the youngest female in a union and her partner were selected. The youngest female in a union was selected in order to get a more conservative estimate of access to credit and community participation since interviewing the eldest female might upward bias the results because of hierarchical relationships in polygamous and extended households.

[101] Refer to Annex 6, Table A6.16ag for the percentage of women and men participating in community groups by type of group.

[102] Because of the prevalence of polygamy and multigenerational households in the region, the youngest woman in a union was selected to obtain a more accurate understanding of gender equality and female empowerment, since the youngest married female often faces the most challenges and is actually the least empowered.

[103] The survey has two questions on credit decision-making for each lending source that the respondent reported someone in the household took out loan from. Response options for each of the credit decision questions are 'self,' 'partner/spouse,' 'other

Figure 19: Gender Gap in Access to and Decisions about Credit



** p<0.05, ** p<0.01, *** p<0.001*

Most women and men belonging to households that took out a loan in the past 12 months had some input into the decision to borrow and/or what to do with the loan.[104] The percentage of men participating in decisions about credit was high (89.4 percent); the rates were lower for women (73.1 percent). Gender differences in participation in credit decisions are statistically significant.

The baseline survey findings indicate that men are more likely than women to make credit decisions alone (70.1 percent and 37.5 percent, respectively) ($p<0.001$). Joint decision-making about credit is generally less prevalent, where 19.3 percent and 35.6 percent of men and women, respectively, decide jointly ($p<0.01$).[105]

3.9 Resilience

Shocks and stresses such as droughts, floods, and loss of income threaten progress toward food and nutrition security. The RFSA aims to build the resilience of chronically poor and vulnerable households as a conduit for achieving sustainable food and nutrition security. USAID defines resilience as "the ability of

household member,' 'other non-household member' and 'not applicable.' Multiple responses are allowed. For example, a respondent can report 'self,' 'partner/spouse' and 'other household member.' In this case they would be considered to participate in the decision (jointly).

[104] Includes individuals who decide alone and those who decide jointly with someone else. Two decisions are considered: (1) whether to borrow; and (2) what to do with the loan. Multiple responses are allowed for the lending source and decision actors. Joint decision-making includes individuals who decide with their partner, with another household member, or with a non-household member on whether to borrow or what to do with the loan for at least one of the loans made by the household. Sole decision-making (i.e., making decisions alone) includes individuals who decide alone on whether to borrow and what to do with the loan for all loans taken by the household.

[105] Additional details on access to credit and decisions about credit by age are provided in Annex 5.

people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth."[106] The baseline survey collected information on the financial and social aspects of households' resilience capacities that are critical for mitigating the effects of shocks and stresses. Specifically, the baseline gathered data on perceptions of local government capacity to respond to future shocks and stressors, households' social capital, and access to group-based savings and cash.

3.9.1 Perceptions of Local Government Capacity to Respond Effectively to Future Shocks and Stressors

Perceptions of local government capacity to respond to future shocks and stressors is a proxy measure of trust and belief in the efficacy and legitimacy of public institutions, one of the underlying dimensions of transformative capacity. The baseline survey results indicate that most households in the RFSA area believe the local government institutions can respond effectively to future shocks and stresses (89.6 percent).[107]

3.9.2 Social Capital

Social capital refers to the network of relationships that foster support and collaboration among individuals, households, and communities. Social capital is an important predictor of households' ability to manage shocks and stressors.[108] The social capital index is constructed from two sub-indices: an index of bonding social capital and an index of bridging social capital. The bonding social capital index measures the strength of households' support networks within their community (i.e., ability to give and receive support from family and friends in times of need). The bridging social capital index measures the strength of households' social support networks with outside communities. Both indices range from 0 to 4 and are subsequently normalized to range from 0 to 100. The overall social capital index is the average of the bonding and bridging sub-indices. A higher score reflects stronger networks of mutual obligation that households can draw on in difficult times. The bonding social capital score is generally higher than the score for bridging social capital (71.2 and 62.4, respectively), suggesting that social obligation networks are stronger within the community than outside.

3.9.3 Household Participation in Group-Based Savings, Micro-Finance, or Lending Programs

The use of financial services enables households to diversify livelihood strategies and manage risks.[109] The indicator measuring participation in group-based savings, micro-finance, or lending program includes both formal and informal groups such as VSLAs, credit unions, and other formal or informal group-based finance or lending groups. This indicator differs from estimates of access to credit and savings among farmers and estimates of access to credit among women and men in a union in that the

[106] https://www.usaid.gov/sites/default/files/documents/1870/USAIDResiliencePolicyGuidanceDocument.pdf.
[107] Chi squared tests of differences in proportions were performed and indicated no statistically significant difference ($p<0.05$) by gendered household type in the percentage of households that believe local government will respond effectively to future shocks and stresses.
[108] FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.
[109] FFP Indicators Handbook Part 1: Indicators for Baseline and Endline Surveys for Development Food Security Activities.

latter include a broader range of service providers or sources, and therefore are likely to be higher than the estimates of group-based access to credit and savings discussed in this section.[110] The results indicate that only 4.8 percent of households in the RFSA area participate in group-based savings, micro-finance, or lending programs;[111] 3.6 percent participate in community-based savings groups; and 1.6 percent participate in community-based credit groups. See Annex 5 for additional details.

[110] Refer to FFP Indicators handbook for detailed description. Available at: https://www.usaid.gov/food-assistance/documents/ffp-indicators-handbook-part-i-indicators-baseline-and-endline-surveys-dfsa.

[111] The chi-squared test of statistical differences in proportions indicated no differences in the proportion of households participating in group-based savings, micro-finance, or lending programs by gendered household type.

4. CONCLUSIONS AND RECOMMENDATIONS

This section describes the conclusions and recommendations for the BHA ViMPlus RFSA baseline study in Burkina Faso. Because the 2020 baseline study did not include a qualitative component, data from secondary qualitative sources were used to help interpret and contextualize the results and inform conclusions and recommendations. Conclusions and recommendations were refined based on feedback received from IPs during a baseline findings presentation.

FOOD SECURITY: Baseline estimates indicated higher-than-expected food consumption with the majority of households meeting the threshold for *acceptable* food consumption. Consumption of staples, such as bread and sorghum, and pulses is widespread throughout the ViMPlus RFSA area. However, households across all three FCS groups are less likely to eat roots and tubers, animal-based proteins, and fruits and vegetables. Although statistical analyses did not indicate an association between the percentage of harvest completed and household food consumption, it is possible that the timing of the survey, which overlapped with the start of the harvest period, may have inflated results for food consumption: households that did not harvest any crops at the time of the survey may have received food items from households that had, and/or may have purchased food items from the market. There is some evidence that household food consumption increases with access to financial services (participation in group-based savings groups), livestock holdings (sheep), the application of soil-related fertility practices, and the adoption of post-harvest handling and storage practices.

Recommendations: Nutrition meetings and trainings could emphasize the importance of consuming diverse food groups and demonstrate ways to incorporate different food groups into daily meals. Agriculture-related trainings can focus on new types of fruits and vegetables to grow. However, limited financial resources, especially during the lean season, may constrain the ability of households to incorporate diverse food groups frequently, and households that grow more-nutritious foods may opt to sell them. Increasing the use of improved post-harvest storage can help households extend food provisioning for a few months during the lean period. Qualitative research and/or cost-of-diet studies could help identify locally available nutritious wild foods and/or cheaper foods for household consumption and identify effective behavior change communication messaging to promote those items.

LAND OWNERSHIP: Female farmers are more likely to own land than male farmers, but this difference is marginal, and their plot size is generally smaller compared to male farmers.

Recommendations: Further research is needed to understand the structural factors (i.e., cultural, religious, economic, ecological, and institutional) that impede women's access to land for cultivation, and to support initiatives that improve women's land rights.

USE OF FINANCIAL SERVICES: Half of all farmers, regardless of being male or female, used agriculture-related financial services in the ViMPlus RFSA area. Farmers are more likely to participate in saving schemes than to take out loans.

Recommendations: Although utilization of financial services is relatively high, efforts to promote additional utilization of financial services to support adoption of improved livelihood practices should be continued. Adoption of practices that require substantial purchases of material inputs is relatively low.

Agriculture-related meetings and trainings could focus on improving financial literacy and build on traditional community-based borrowing mechanisms to increase the use of financial services.

USE OF IMPROVED STORAGE PRACTICES: Sealed/airtight bags are the most-used type of improved post-harvest storage practice, followed by triple bags for preserving grains. However, their use is relatively low.

Recommendations: Extending access to credit can be one pathway for improving the adoption of post-harvest handling and storage. A better understanding of post-harvest loss per crop, drivers of loss, and the role of the myriad factors that can reduce loss would be helpful for informing future initiatives.

USE OF IMPROVED CROP PRACTICES: The most common crop management practices are applying organic and phosphatic manure, *zai* pits, crop association, sowing after first useful rains, and NRM approaches such as delimiting animal corridors and pasture areas, FMNR, and protecting ponds from silting. A moderate percentage of farmers indicate using modern agricultural equipment. Practices that are unfamiliar or require resources to purchase inputs, such as using improved seed varieties and pest and disease management practices, are less pervasive. RISE I endline qualitative data suggest that access to agricultural inputs, including tools, is difficult in the project areas, which affects their ability to pilot new practices, sustain the beneficial practices, and stimulate demand for the inputs they find effective. Qualitative data from the RISE I endline study also indicate that training participants shared improved agricultural practices with others, and that sharing of new agricultural knowledge was aided by documentation provided during the trainings that could be shown and passed on to others.

Recommendations: ViMPlus should continue agricultural credit and saving schemes and agricultural trainings with informational handouts to reinforce learning and promote further socialization.

USE OF IMPROVED LIVESTOCK PRACTICES: With the exception of vaccinations, application of most targeted improved livestock practice is low. Although the current baseline findings show that livestock vaccination rates are high, future programs might consider supporting systems-level expansion into these areas as well as training community members in veterinary services, keeping in mind that monetary costs of veterinary products and services may restrict their adoption and should be factored into system design.

Recommendations: Future initiatives should consider i) the extent to which livestock farmers are able to access existing veterinary services (such as government programs) on a permanent basis and ii) farmers' ability to afford veterinary services and products. Further research should be undertaken to assess the extent of these potential barriers.

WASH: Access is low in the ViMPlus RFSA area to basic sanitation facilities, but households have more access to handwashing stations with water and soap/ash and improved drinking water sources that consistently meet the minimum daily needs. Nearly all households are knowledgeable about the importance of handwashing before eating.

Recommendation: Sensitization should focus on other critical times that households are less aware of – namely, those relating to other food handling activities such as before cooking and food preparation and when engaging in activities posing a risk of fecal contact. It would also be good to assess the presence of animal feces in children's play spaces to develop interventions to separate animal feces from children's play areas. This can be done by penning animals, improving flooring, and/or promoting child playpens/mats.

WOMEN'S DIETARY DIVERSITY: Two-thirds of women of reproductive age in the ViMPlus RFSA area achieve a diet of minimum diversity. Sensitization on the importance of eating a variety of food types, particularly those that are less widely consumed such as dairy products, meat, poultry, fish and vitamin A-rich fruits and vegetables, could support VimPlus RFSA nutrition goals. Kitchen demonstrations in which women from the community show how to incorporate different food groups into daily meal preparation could also be useful. Results underscore that women consume more-diverse diets when they engage in income-earning activities, live in households that are more food secure, or participate in nutrition trainings/meetings, or live in households that raise goats and use improved livestock practices.

Recommendations: Future projects should continue to promote savings and access to credit and other livelihood interventions that increase income, which in turn leads to improvements in women's dietary diversity.

ANTENATAL CARE: More than two-thirds of (most-recent) births that occurred in the five years prior to the survey received at least four ANC visits by a skilled health personnel. Behavior change communication efforts should continue to emphasize the importance of ANC, with a focus on how often to make ANC visits, when to make the visits (i.e., timing), and who is qualified to provide those services. In some cases, the lack of availability of ANC services or distance to a health center may be a barrier.

Recommendations: Sensitization should target both mothers and fathers so that fathers can support women in going to their ANC visits and in other aspects of their pregnancy and delivery.

FAMILY PLANNING: Knowledge of modern contraceptive methods among women in a union is widespread in the RFSA implementation area; however, very few women use any form of family planning. Further exploration is needed to identify and address barriers to using family planning, including affordability of consultation services, cost of purchasing contraception, and underlying cultural or religious beliefs. Results from the baseline survey point to the role of husbands in contraceptive decision-making; about one half of women who use family planning made the decision alone.

Recommendations: Sensitization efforts should target both women and men and underscore the significance of family planning for women's wellbeing and the overall family (e.g., role of family planning and benefits of spacing births).

CHILDREN'S DIETARY DIVERSITY: Vitamin-A-rich fruits and vegetables and grains and tubers are widely consumed by children 6-23 months, and half of the children in the ViMPlus RFSA area achieve a diet of minimum diversity (MDD-C).

Recommendations: Projects should continue to raise awareness among primary caregivers on the health benefits of complementary feeding, and the appropriate time to introduce complementary foods without cutting back on breastfeeding. Sensitization around complementary feeding could be rolled into ANC and perinatal care visits and through mothers' groups, GASPAs (female-led nutrition support groups), and other community nutrition groups with demonstrations on how to integrate appropriate quantity and frequency of nutrient-rich foods into children's meals. Sensitization for fathers through fathers' groups could also enhance the sharing of household decision-making affecting children's dietary diversity.

GENDER, GROUP PARTICIPATION AND ACCESS TO CREDIT: Men are more likely than women to engage in cash-earning activities while three-quarter of women and men belong to community groups. Participation in community-based savings and credit groups is low for both men and women.

Recommendations: A better understanding of the barriers to credit for both men and women and access to cash-earning activities for women is needed. Women's time constraints may limit their ability to engage in work and institutions that provide access to credit could be strengthened.

COVID-19 KNOWLEDGE, PRACTICES, IMPACTS AND COPING STRATEGIES (see Annex 8): The majority of households in the RFSA implementation area are aware of COVID-19. Most households experienced impacts to their food security and livelihoods due to COVID-19. The types of impacts suggest that the ramifications of COVID-19 at the time of the survey are mostly due to restrictions and closures rather than health impacts.

Recommendation: Continued monitoring is needed to ensure continued public health and food security as the pandemic continues.