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Abbreviations and acronyms

ADF	Allied Democratic Forces
ASSP	Agriculture Sector Strategic Plan
BMI	Body Mass Index
CAADP	Comprehensive Africa Agricultural Development Program
CFSVA	Comprehensive Food Security and Vulnerability Analysis
DDI	Domestic direct investments
DSIP	Development Strategy and Investment Plan
ERH	Ending Rural Hunger
FCS	Food consumption score
FDI	Foreign direct investment
FNS	Food and nutrition security
GDP	Gross domestic product
HIV/AIDS	Human immunodeficiency virus/Acquired immunodeficiency syndrome
HSDP	Health Sector Development Plan
HSSIP	Health Sector Strategic and Investment Plan
ICT	Information and communication technology
IDP	Internally displaced people
LRA	Lord's Resistance Army
MAAIF	Ministry of Agriculture, Animal Industry, and Fisheries
MFPED	Ministry of Finance, Planning, and Economic Development
MGLSD	Ministry of Gender, Labor, and Social Development
MOH	Ministry of Health
NAADS	National Agricultural Advisory Services
NDP	National Development Plan
NGO	Non-governmental organization
ODA	Official development assistance
OWEC	Operation Wealth Creation
SDG	Sustainable Development Goal
UBOS	Uganda Bureau of Statistics
UFNP	Uganda Food and Nutrition Policy
UFNSIP	Uganda Food and Nutrition Strategy and Investment Plan
UGX	Uganda shilling

UIA	Uganda Investment Authority
UNAP	Uganda Nutrition Action Plan
UNECA	United Nations Economic Commission for Africa
UNPS	Uganda National Panel Survey
USAID	United States Agency for International Development
USD	United States dollar
UWEP	Uganda Women's Entrepreneurship Program
VAs	Village agents
WFP	World Food Program
YLA	Youth Leadership for Agriculture
YLP	Youth Livelihood Program

Abstract

This paper utilizes food and nutrition security (FNS) data from the global Ending Rural Hunger (ERH) project and various national sources to analyze the FNS status of Uganda and identify priority areas for improving the country's FNS status to achieve the SDG2 targets. The findings show that Uganda has made progress toward improving its FNS status, albeit food insecurity and malnutrition remain severe in rural areas, among female-headed households, in the Northern and Western regions of Uganda, and particularly in areas affected by conflict over the past two decades. We identify three priorities for Uganda to improve its FNS status: The first is the need for the government and its partners to stimulate improved agricultural productivity through increased access to productivity-enhancing inputs (e.g., credit, fertilizers, and improved seeds). Importantly, increasing productivity will also involve reducing the gender gap in access to, control over, and ownership of productive resources. Second is the need to design and implement interventions that foster resilience in households and communities to income and consumption shocks in order to mitigate the effects of these shocks on FNS. Potential mitigation mechanisms include promoting income diversification strategies in rural areas, developing strong credit and insurance markets for agriculture, upholding and strengthening food safety net programs (with increased attention to women), and supporting better on-farm storage facilities to stimulate savings culture, shield farm households against price volatility, and prevent postharvest losses. Third is the need for Uganda to design strategies for building a sustainable resource base to finance its FNS interventions, for example, through attracting foreign direct investment into the agriculture sector (and other FNS-related sectors) and committing more strongly to increasing public funding to agriculture and other sectors essential to eradicating malnutrition and food insecurity.

1. Introduction

Hunger, food insecurity, and malnutrition remain major challenges in most sub-Saharan African economies, including Uganda, where the majority of the population resides in rural areas and depends on agriculture for their livelihoods. The 2013 Comprehensive Food Security and Vulnerability Analysis (CFSVA) report conducted by the World Food Program (WFP) in Uganda revealed that about 5 percent of households in the country experience poor food consumption with unbalanced diets and 16 percent have borderline food consumption, with slightly more varied, but still nutritionally inadequate, diets (UBOS and WFP, 2013).[1] The International Food Policy Research Institute's global hunger index score for Uganda is 26.4—categorizing the country's level of hunger as "serious" and putting it in 87th place out of 118 countries ranked in 2016 (von Grebmer et al., 2016). The effects of malnutrition cost Uganda approximately $899 million annually—nearly 5.6 percent of its GDP, according to the 2014 United Nations Economic Commission for Africa (UNECA) report "Cost of Hunger in Uganda." Hunger alone reduces productivity in manual sectors like agriculture by roughly 1.3 percent of GDP, translating into a loss of $201 million annually. The UNECA report further estimates that 15 percent of child mortalities in Uganda over the period 2005-2009 were due to undernutrition.

The government of Uganda has made commitments both domestically and internationally towards ensuring food and nutrition security (FNS) in the country as a pathway to improving public health, labor productivity, and economic growth. For instance, the government has set national targets to eliminate stunting among children under five years by the year 2040 (NDPII, 102). Uganda also subscribes to several regional and international FNS agendas with time-bound targets. Uganda was one of the first African countries to implement the Comprehensive Africa Agricultural Development Program (CAADP) and the agricultural Development Strategy and Investment Plan (DSIP)[2] concurrently, which were signed on March 16 and March 31, 2010, respectively. Currently, Uganda is a signatory to the African Union's Malabo Declaration of June 2014 and the United Nations' Sustainable Development Goals (SDGs) set in September 2015. Among other goals, the Malabo Declaration aims to reduce childhood malnutrition (under-5 stunting to 10 percent and under-5 wasting to 5 percent) by 2025.[3] The second sustainable development goal (SDG2) seeks

[1] The CFSVA report measures food security based on the FAO (1996) definition, which is: "a situation in which all people at all times have physical and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life."
[2] The agricultural DSIP outlines how Uganda plans to meet the CAADP pledge of allocating 10 percent of the national budget to the agricultural sector.
[3] The targets set under the Malabo Declaration include sustaining agricultural growth at an annual rate of at least 6 percent, halving poverty, doubling agricultural productivity and income, building resilience, and maintaining an agricultural spending target of 10 percent of public spending set by the CAADP.

to end *all* forms of malnutrition by ensuring access to food for all people by 2030. These agendas outline implementation strategies ranging from reducing poverty, improving agricultural productivity, and building resilient agricultural practices.

Uganda is seeing some improvements in food and nutrition security. For instance, the proportion of under-5 stunting in children declined from 38 percent in 2006 to 33 percent in 2011. The proportion of under-5 wasting and underweight children fell from 6 percent to 5 percent and from 16 percent to 14 percent, respectively. In addition, the prevalence of anemia among women of reproductive age declined by half (from 49 percent to 24 percent) over the same period. Importantly, poverty has also been on the decline, with the percentage of Uganda's population living below the poverty line falling by more than half, from 56 percent to 19.7 percent over the period from 1992 to 2013 (NDP 2010/11-2014/15). Nevertheless, the prevalence of food and nutritional insecurity remains high in rural areas, the Northern and Western regions (particularly in conflict-affected areas), and among female-headed households. Achievement of sustained FNS is hampered by income and consumption shocks and the low productivity of the agriculture sector.

This report utilizes the baseline Ending Rural Hunger (ERH) data and data from national sources to provide evidence regarding the status of and the progress made towards achieving food and nutrition security in Uganda. In Section 2, the report specifically identifies the strategies devised by the government to improve FNS in the country. In Section 3, it documents the status of FNS needs in Uganda. In Section 4, it reviews the policy environment for FNS and provides brief overviews of current relevant policies. In Section 5, it identifies the challenges faced by Uganda in mobilizing sufficient resources to address FNS needs. The final section concludes with policy recommendations for Uganda for achieving the SDG zero hunger target by 2030.

2. Review of Uganda's strategies to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture

2.1 Uganda's institutional and policy framework for achieving food security and improved nutrition

Over the years, the government of Uganda has refined its approach to strengthening food and nutrition security within the framework of its national poverty reduction strategy. Currently, the government is implementing the National Development Plan (NDP), a holistic framework for poverty eradication in Uganda.[4] The NDP recognizes the agriculture sector as a major driver of economic growth and development, and it incorporates nutrition as a cross-cutting issue that requires multi-sectoral action in key sectors: health, agriculture, education, trade and industry, local government, and gender and social development. The plan has six principal objectives: (1) uplifting household standards of living; (2) enhancing the quality and availability of gainful employment; (3) improving social, economic, and trade infrastructure nationwide; (4) developing efficient, innovative, and internationally competitive industries; (5) developing and optimally exploiting the natural resource base and ensuring environmental and economic sustainability; and (6) strengthening good governance and improving human security.

The government is implementing the NDP in six phases, each lasting five years. The first phase (NDP) was implemented from fiscal year 2010/11 to 2014/15. The second phase (NDPII) started in the fiscal year 2015/16 and will end in 2019/20. This plan has four objectives including: (1) increasing sustainable production, productivity, and value addition in key growth opportunities;[5] (2) increasing the stock and quality of strategic infrastructure to accelerate the country's competitiveness; (3) enhancing human capital development; and (4) strengthening mechanisms for quality, effective, and efficient service delivery. In NDPII, the government also sets targets and strategies that enhance human capital development, including addressing malnutrition. (For a detailed summary of select NDPII targets and indicators, see Appendix I.)

Below we summarize selected sectoral policies and strategies that contribute to the NDP's overall objective of achieving food and nutrition security in Uganda. The most important of these

[4] NDP is consistent with the SDGs and was formulated based on lessons learned from the Poverty Eradication Action Plans, the overarching planning framework for the country implemented between 1997 and 2008 (NDPII).
[5] The government strives to increase agriculture labor productivity in terms of GDP per worker from $581 in 2012/13 to $978 in 2019/20 and $6,790 in 2040.

strategies include the Food and Nutrition Policy (UFNP), 2003-2005; the Uganda Food and Nutrition Strategy and Investment Plan (UFNSIP), 2005-2015; the Uganda Nutrition Action Plan (UNAP), 2011-16[6]; the Agriculture Sector Development Strategy and Investment Plan (DSIP), 2010/11-2014/15; the Agriculture Sector Strategic Plan (ASSP), 2015/16-2019/20; and the Health Sector Development Plan (HSDP), 2015/16-2019/20. These policies and strategies aim to address hunger, food insecurity, and agricultural productivity individually and collectively—thus contributing to the achievement of SDG2.

The Uganda Food and Nutrition Policy (UFNP), 2003-2005

The Uganda Food and Nutrition Policy was formulated and approved in 2003 within the context of the overall national development policy objective of eradicating poverty as articulated in the 1997 Poverty Eradiation Action Plan.[7] The priority areas for UFNP included:

1. Ensuring an adequate supply of and access to good quality food at all times for human consumption, income generation, industry, and local and regional markets;
2. Ensuring the availability of affordable, safe, and nutritious foods through strategies that promote food reserves, prevent food losses, and encourage use of appropriate storage facilities;
3. Supporting food processing and preservation through strategies such as promoting appropriate food processing technology and encouraging fortification of selected foods with nutrients that are commonly deficient in the national diet;
4. Ensuring the good quality and safety standards of food consumed and marketed;
5. Addressing micronutrient deficiencies, notably vitamin A deficiency, through vitamin A supplementation and other dietary approaches for long-term elimination of vitamin A deficiency;
6. Ensuring a healthy population by promoting primary health care and intensifying interventions to control the top 10 diseases that cause morbidity and mortality, especially HIV/AIDS and malaria;
7. Improving knowledge of food and nutrition issues in the general population through the development of an efficient nutrition communication strategy;
8. Integrating gender into food and nutrition strategies and ensuring that both men and women achieve optimal nutrition through improved FNS;

[6] The UNAP (2011-16) was extended until the end of 2017 to allow the finalization of revisions to the 2003 UFNP
[7] UFNP was formulated by the Ministry of Health (MOH) in collaboration with the Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF) as a tool for improving the nutritional status of the population. The policy was partly formulated and approved to complement the country's then-Plan for Modernization of Agriculture whose components did not directly address food and nutrition security.

9. Developing a monitoring system, the Food and Nutrition Surveillance system, to provide timely information that can be used to stabilize the food and nutrition situation in the country;
10. Promoting external food trade to diversify food exports in order to broaden the foreign exchange base (without negatively affecting national food security needs) as well as monitoring and regulating the quality and quantity of food imports;
11. Developing sustainable mechanisms for meeting temporary emergency food needs from national resources.

The UFNP and the aforementioned intervention areas guided the design and implementation of the nutrition strategy and the nutrition plan presented below.

Uganda Food and Nutrition Strategy and Investment Plan (UFNSIP), 2005-2015

The Uganda Food and Nutrition Strategy and Investment Plan (UFNSIP), enacted in 2005, was formulated to guide the implementation of the UFNP. The principal objective of the UFNSIP was to improve and assure nutrition security for all Ugandans, particularly through nutrition-related interventions, within 10 years. Its key interventions relevant to food and nutrition security included:

1. Addressing the food and nutrition needs of the child before birth and during the first two years of life by building the capacity of mothers to provide a balanced diet, prenatal food, and micronutrient supplementation; encouraging exclusive breastfeeding for the first six months; and addressing micronutrient deficiencies through direct interventions and food-based approaches;
2. Addressing the food and nutrition needs of school-going children through the establishment of schoolchildren feeding funds, curricula review of training institutions to improve food and nutrition education components, and creation of demonstration farms and school gardens; and
3. Addressing the food and nutrition needs of the poor by developing markets, promoting appropriate agricultural technologies and crops that provide nutritional advantages, and establishing a system for collecting, collating, and disseminating information on food marketing and distribution.

Uganda Nutrition Action Plan (UNAP), 2011-2016

Within the UFNP, the government implemented the UNAP (2011-2016), which aimed to reduce levels of malnutrition in the population, especially among women of reproductive age, infants, and

young children. The plan emphasizes improving nutrition during the first 1,000 days of a child's life, from pregnancy up to two years after birth. The UNAP was extended until the end of 2017 to allow for finalization of the nutrition policy. The UNAP has four broad action areas:

1. Promoting key maternal, infant, and young child feeding and nutrition practices to improve awareness and increase targeted healthy feeding behaviors—including breastfeeding, appropriate complementary feeding, dietary diversification, and increased coverage of micronutrient supplementation programs;
2. Supporting households and communities to increase their access to and consumption of diversified foods throughout the year (through their own food production or ability to purchase food) by reducing post-harvest losses and spoilage;
3. Providing care and support to individuals with severe acute malnutrition; and
4. Mobilizing the community to promote the adoption of healthy nutrition behaviors, community-based growth monitoring and promotion,[8] and two-way referral of malnourished cases for care at either the community or the health facility level.

Table 1 tracks the performance of UNAP on some of its targets specific to nutrition. It shows that Uganda has made progress toward meeting the targets set by UNAP. For instance, its targets on child stunting and underweight children, as well as iron deficiency among women of reproductive age were fully achieved by 2013. Significant progress is also noted for exclusive breastfeeding.

[8] An approach consisting of activities—such as monthly weighing sessions, home visits, and counseling for parents and caretakers—aiming to prevent child malnutrition at the community level.

Table 1. Key indicators, annual targets, and performance of the UNAP, 2011-2016

Indicator	2011 (Baseline)	2012 (UNAP target)	2013 (UNAP target)	2013 (actual performance achieved) 2014	2014 (UNAP target)	2015 (UNAP target)	2016 (UNAP target)
Stunting: prevalence in under-5s, %	38	37	35	33.4	34	33	32
Underweight: prevalence in under-5s, %	16	15	14	13.8	12	11	10
Underweight non-pregnant women 15–49 years old with BMI less than 18.5 kg/m^2 , %	12	11	10	10.3	10	9	8
Iron-deficiency anemia: prevalence in under-5s, %	73	68	64	No data	59	54	50
Iron-deficiency anemia: prevalence in women 15–49 years old, %	49	45	41	22.1	38	34	30
Vitamin A deficiency: prevalence in under-5s, %	19	18	17	No data	15	14	13
Low birth weight: newborns weighing less than 2.5 kg, %	13	12	11	10.2	11	10	9
Exclusive breastfeeding to 6 months: % of infants	60	63	66	79.0	69	72	75
Dietary diversification index: percentage of calories consumed from foods other than cereals and starchy roots	57	61	64	No data	69	71	75
Calorie consumption: average daily energy intake per capita, kcal	2,220	2,276	2,332	No data	2,388	2,444	2,500

Source: Government of Uganda (2011), Nutrition Innovation Lab-Africa (2013), and Namugumya et al. (2014).

Agriculture Sector Development Strategy and Investment Plan (DSIP), 2010/11-2014/15

The Agriculture Sector Development Strategy and Investment Plan (DSIP) clearly outlined Uganda's strategy for agriculture development. The general objective of the DSIP was to increase rural incomes and livelihoods and improve food and nutrition security, as these factors were identified as the key determinants for the country's successful social and economic development. The short-term objectives included:

1. Sustainably enhancing factor productivity (e.g., land, labor, capital) in crops, livestock, and fisheries;
2. Developing sustained local, regional, and international markets for primary and secondary agricultural products;
3. Creating favorable legal, policy, and institutional frameworks that facilitate private sector expansion and increase profitability along the entire value chain; and
4. Providing a supportive environment for the Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF), and other partner institutions to effectively implement the plan.

A review of the DSIP period shows that the agricultural sector's average annual growth rate was 2.2 percent from 2010 to 2014—lower than the average annual GDP growth rate of 5.2 percent and the average annual population growth rate of 3 percent over the same period (MAAIF, 2016). The contribution of the agricultural sector to GDP declined from 25.4 percent in 2010 to 23 percent in 2014, which could be attributed to economic transformation. Several notable achievements were registered in farm yields in the five-year period of DSIP. The following food crops experienced a boost in yields: maize (13 percent), cowpeas (4 percent), and sesame seeds (16.6 percent). The country also registered increases in the number of animals for all of the main livestock, with head of cattle increasing by 12.5 percent (from 12.1 million to 13.6 million); goats increasing by 6.1 percent (13.2 million to 14 million); sheep increasing by 5.6 percent (from 3.6 million to 3.8 million); and pigs increasing by 2.9 percent (3.4 million to 3.5 million). Furthermore, the fish catch increased by 16.6 percent over the five years. Regarding markets and value addition, Uganda's agricultural exports increased by 49 percent over the DSIP period, relative to the 29.1 percent growth registered for the non-agricultural exports. The agricultural exports share in total exports increased from 53.6 percent in 2010 to 57.2 percent in 2014.

Despite the plan's noted successes, it experienced a number of institutional, programmatic, and technical challenges as well (Government of Uganda, 2016). Weak coordination between MAAIF, the National Agricultural Advisory Services (NAADS), district-level and local governments, and NGOs, as well as incoherence in agricultural targets and resource

allocation among these stakeholders undermined program implementation. Funding constraints and limited personnel to run the strategic DSIP activities hampered service delivery and the provision of extension services, while poor monitoring and evaluation frameworks led to vague understanding of the impact of these activities. A lack of engagement of women, youth, and vulnerable groups limited the inclusiveness of interventions. These issues, as noted in a review of the DSIP, have influenced the development of Uganda's current agriculture sector plan (MAAIF, 2016).

Uganda's Agriculture Sector Strategic Plan (ASSP), 2015/16-2019/20

The Agriculture Sector Strategic Plan (ASSP) for the period 2015/16 to 2019/20 builds on the achievements and lessons learned from implementing the Agriculture Sector Development Strategy and Investment Plan (DSIP) over the period 2010/11 to 2014/15. The ASSP supports Uganda's efforts to attain five specific sustainable development goals (SDGs). These include SDG1 (end poverty in all its forms everywhere); SDG2 (end hunger, achieve food security and improved nutrition, and promote sustainable agriculture); SDG6 (ensure availability and sustainable management of water and sanitation for all); SDG12 (ensure sustainable consumption and production patterns); and SDG13 (take urgent action to combat climate change and its impacts) (MAAIF, 2016).

Under the ASSP, the overall goal for Uganda's agriculture sector is "to achieve an average growth rate of 6 percent per year over the next 5 years," which aligns with the Malabo Declaration target. To achieve this goal, the ASSP has set four strategic objectives (listed below), which focus on 12 priority commodities—bananas, beans, maize, rice, cassava, tea, coffee, fruits, vegetables, dairy, fish, and livestock (meat)—and four strategic commodities, namely, cocoa, cotton, oil seeds, and oil palm:

1. To increase production and productivity of agricultural commodities and enterprises;
2. To increase access to critical farm inputs;
3. To improve access to markets and value addition and strengthen the quality of agricultural commodities; and
4. To strengthen the agricultural services institutions and the enabling environment.

Accordingly, the ASSP has set the following key outcome targets to be achieved over the plan period:

1. Increase the productivity of farmers to at least 50 percent of the expected yields at research stations for the 12 priority commodities;

2. Transform subsistence farmers (growing for consumption) into enterprise farmers (growing for consumption and responding to market needs), and transform small-holder farmers into commercial farmers;
3. Increase food security and food availability in all parts of the country;
4. Increase agriculture exports to at least $4 billion per year;
5. Reform and strengthen agricultural service institutions such as research, extension, and regulatory bodies to make them effective and efficient.

To monitor the implementation of the ASSP in the years ahead, regular technical working group meetings at the national level will assess the progress of implementing ministries, departments, and agencies while quarterly, semi-annual, and annual progress reports will be produced by MAAIF based on inputs from the ASSP implementing agencies and local governments. MAAIF will also coordinate annual agricultural sector performance reviews with sub-sector and technical support units to evaluate the operationalization of the plans of the previous financial year. Reviews will also take place at the district, regional, and national levels prior to the overall agriculture sector review to give stakeholders at each level the opportunity to reflect on their programs' successes, barriers to implementation, and strategies to improve performance, which then may be shared at the national level deliberations during the overall sector review

Health Sector Development Plan (HSDP), 2015/16-2019/20

Uganda's Health Sector Development Plan (HSDP) 2015/16-2019/20 builds on the achievements registered and lessons learned during the implementation of the Health Sector Strategic and Investment Plan (HSSIP) III, 2010/11-2014/15.[9] The goal of the HSDP is to attain Universal Health Coverage for essential health and related services, which are needed for the promotion of a healthy and productive life in Uganda. Thus, the plan has set the following key objectives to be reached during the 5-year period:

1. Contributing to the production of a healthy human capital for wealth creation through provision of equitable, safe, and sustainable health services;[10]

[9] Uganda's Health Sector Strategic and Investment Plan was formulated to operationalize the health component of the NDP and the national health policy as well as guide health sector investments for the period 2010/11-2014/15. The HSSIP III recognizes nutrition as part of the National Minimum Health Care Package for Uganda. The specific nutrition interventions of the HSSIP in collaboration with the UNAP include: (1) providing policy and guidelines in conjunction with the National Food and Nutrition Council; (2) supporting capacity building at the national and district level for the reduction in malnutrition; (3) promoting nutritional programs at different levels to reduce micronutrient deficiency disorders; (4) establishing an effective nationwide growth monitoring and promotion system; (5) formulating and enforcing nutrition-related legislation in coordination with the relevant sectors; and (6) intensifying gender-responsive advocacy and social mobilization for nutrition at all levels.

[10] The HSDP argues that the provision of good health is a necessary condition for realizing an economically productive population and stimulating national development or "wealth creation."

2. Addressing the key determinants of health through strengthening inter-sectoral collaboration and partnerships;
3. Increasing financial risk protection of households against impoverishment due to health expenditures; and
4. Enhancing health sector competitiveness in the region and globally.

Objective two of the HSDP identifies food and nutrition services as a service area necessary for achieving positive health outcomes. In particular, it lists the following strategic interventions as important to addressing the key determinants of health:

1. Creating awareness at the community level on the right foods to eat for good nutrition status and promoting their production;
2. Screening for malnutrition in all age-groups and ensuring appropriate care and rehabilitation for the identified individuals; and
3. Supporting growth promotion and monitoring in the first two years of life at community level.

2.2 Summary of the country strategy and sectoral policies

In the second phase of Uganda's current overarching development strategy, NDPII, the government identifies food and nutrition security as critically linked to the country's core economic development objectives, namely, increasing sustainable production and productivity, raising livelihoods and standards of living, and strengthening human capital. Further analysis of the NDP strategy, as well as sectoral and multi-sectoral plans related to FNS, highlight a coherence on the importance of certain interventions to achieve food security and improved nutrition in Uganda. For example, the strategy documents identify interventions to address maternal, child, and infant nutrition by promoting beneficial nutrition practices in homes, schools, and health care facilities; boost agricultural productivity by providing farmers with key inputs, technology, financing, infrastructure, and extension services; and improve access to markets by building road infrastructure as well as systems to share information on food marketing and distribution. While some evidence suggests that the country is making progress towards reducing rates of child malnutrition and boosting crop and livestock yields, huge challenges remain in coordinating, financing, and ultimately implementing the strategies to address the severity of the country's FNS needs. In the following section, we use ERH data and national sources to assess the current state of FNS needs in Uganda.

3. State of food and nutrition security needs in Uganda

We compare Uganda's performance in selected indicators of FNS with that of sub-Saharan Africa, East Africa, and South Asia in Table 2.[11] As seen in the table, food and nutrition insecurity remain a major challenge in Uganda, as its overall FNS needs rank 92nd out of 116 developing countries. Globally, Uganda ranks 94th in calorie intake, 74th in dietary diversity, and 77th in child malnutrition (out of 116 countries). With regard to undernourishment, Uganda is ranked 77th (out of 95 countries), making it one of the least nourished populations in the world. The summary statistics further show that nearly a quarter of the population in Uganda is likely to consume an inadequate amount of calories, a higher rate than the average in sub-Saharan Africa (21.5 percent) and South Asia (16.5 percent). A similar pattern is noted for food dietary diversity and per capita average protein consumption per day. In 2013, 20.3 percent of Ugandans had an “unacceptable” food consumption score,[12] although this is an improvement from 2009 when 27.6 percent had unacceptable food consumption score (UBOS and WFP, 2013). Evidence also shows that more than half of the households in the country (52 percent) consume fewer than five food groups in a week, on average (UBOS and WFP, 2013). Furthermore, mean daily per capita protein supply for Uganda is only 51 grams—9.8 grams less than the average for sub-Saharan Africa and 14.1 grams below the average for South Asia.

However, staple dependence in Uganda is lower compared to sub-Saharan Africa and South Asia: The average proportion of the national dietary energy supply from staple food crops (cereals, roots, and tubers) in Uganda is only 45 percent, relative to 62.5 percent for sub-Saharan Africa and 63.4 percent for South Asia (Table 2). Uganda also performs better than the selected regions with respect to most of the indicators for child malnutrition. The average prevalence of under-5 stunting and wasting in Uganda is 33.7 percent and 4.8 percent, respectively, relative to 36.4 percent and 8.2 percent for the sub-Saharan African region and 35.1 percent and 11.4 percent in South Asia.

[11] We choose to include the South Asia region for comparison because the region has one of the highest rates of malnutrition, where the number of undernourished children almost doubles that in sub-Saharan African countries (Marwaha et al., 2011).
[12] FCS computation combines food diversity and food frequency (the number of days each food group is consumed) weighted by the relative nutritional importance of different food groups.

Table 2: Food and nutrition security in Uganda and comparative regions, 2009-2013

Indicator	Uganda	Sub-Saharan Africa	East Africa	South Asia	Uganda's global ranking
FNS needs					**92**
Calorie gap					**94**
Lack of enough money to buy food (percent of survey respondents)	56.5	57.4	53.8	31.0	85
Undernourishment (percent of population)	25.0	21.5	31.7	16.5	77
Average dietary energy supply adequacy (calories/capita/day as a percentage of the average dietary energy requirement)	108.8	111.5	101.8	112.9	76
Dietary diversity					**74**
Percent of calories from staples	45.0	62.5	63.9	63.4	26
Average protein supply (grams/capita/day)	51.0	60.8	54.1	65.0	101
Food consumption score (proportion)	25.0[13]	32.9	32.9	14.2	n/a
Child malnutrition					**77**
Under-5 wasting (percent)	4.8	8.2	8.0	11.4	50
Under-5 stunting (percent)	33.7	36.4	43.2	35.1	76
Anemia in children (percent)	59.0	62.9	55.9	46.5	84
Rural poverty					**68**
Rural multidimensional poverty headcount (percent)	77.1	73.0	75.1	51.1	68
Rural poverty rate (percent)	41.6	54.1	67.9	30.7	51

Source: ERH database (2016).

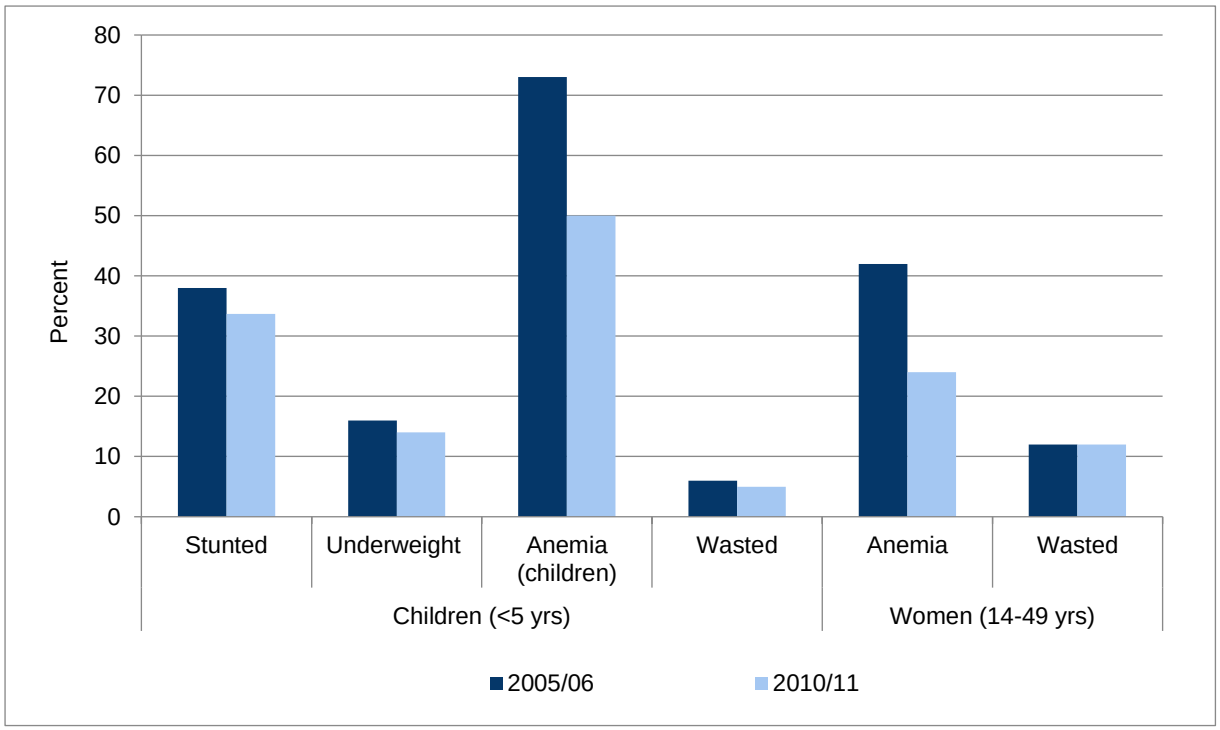
Uganda's performance in reducing malnutrition is further illustrated by the changes in the prevalence rates over time (Figure 1) shows substantial improvements in the nutritional status of children under the age of five and women in the country. Between 2006 and 2011, the proportion of stunted children declined from 38 percent to 33 percent. The proportion of child wasting and underweight children fell from 6 percent to 5 percent and from 16 percent to 14 percent, respectively. In addition, prevalence of anemia among women of reproductive age declined by half (from 49 percent to 24 percent) over the same period.

The country's nutritional gains might reflect the government's efforts toward promoting better nutritional outcomes. For instance, the government, through the Uganda Nutrition Action Plan (UNAP) for 2011 to 2016, has implemented several interventions to improve maternal nutrition and care, including promoting exclusive breastfeeding for the first six months of life; timely, adequate, safe, and appropriate complementary feeding and micronutrient intake between six

[13] The value of the FCS for Uganda was missing in the ERH database but was sourced from the CFSVA report (UBOS and WFP, 2013). The FCS value presented in the CFSVA report uses a slightly different methodology than the ERH project's methodology for the FCS. The ERH methodology gives a weight of 2 to the FCS poor percentage and adds it to the percentage of borderline food consumption. For example, in the CFSVA report, the 20.3 percent for Uganda is composed of 4.7 percent poor and 15.6 percent borderline. Using the ERH methodology, the value for Uganda in 2013 would actually be 2*4.7 + 15.6 = 25.0 percent as shown in Table 3.

6 and 24 months; and the fortification of common staple foods. According to the 2011 Uganda Demographic and Health Survey, at least 63 percent of children younger than 6 months in Uganda were exclusively breastfed and about 68 percent received complementary foods. The improvements might also be attributed to the gains in poverty reduction. The percentage of Uganda's population below the poverty line declined from 56 percent in 1992 to 19.7 percent in 2012/13, meeting the 2015 global target of reducing poverty by half and the National Development Plan (NDP) target of reducing poverty to 25 percent (UBOS, 2014).

Figure 1: Trends in nutrition outcomes in Uganda, 2005/06-2010/11



Source: UBOS (2011); UBOS (2006).

Despite the progress made in reducing food and nutrition insecurity and poverty at the national level, inequalities still exist in the indicators of malnutrition and poverty across type of residence (rural-urban), geographic location, and other socio-economic and demographic attributes such as gender. These inequalities remain a major issue of concern for development policy interventions that aim to achieve SDG2. A better understanding of such inequalities can guide the design and implementation of targeted comprehensive policy interventions for eradicating hunger and food and nutrition insecurity in the country. The next sub-section presents rural-urban, regional, and gender differences in status of food and nutrition security in Uganda.

3.1 Location and gender differences in the status of food and nutrition security in Uganda

3.1.1 Rural-urban differences in food and nutrition security

Table 3 presents the status of FNS in the urban and rural areas of the country. Food insecurity in Uganda generally appears to be more widespread in rural areas than in urban ones.[14] With respect to food quality, rural households exhibit lower dietary diversity and higher dependence on staples relative to their urban counterparts. The mean share of calories from staples in rural areas is 71 percent compared to 59 percent reported in urban areas. About 48 percent of the rural population derives three-quarters of their food energy requirements from staples; compared to only 20 percent of people in urban areas. Furthermore, rural households have less diverse meals relative to urban ones, demonstrated by their lower mean dietary diversity score (4.7 in rural areas and 5.4 in urban areas).[15] In addition, a higher proportion of rural households (43 percent) consume fewer than five food groups than those in the urban areas (22 percent) (Table 3). The higher poverty rates and larger proportion of rural households that spend more than 65 percent of their income on food suggests that these households have more limited access to food.

Malnutrition is also more prevalent among women and children residing in rural areas than those in urban areas. Roughly, 37 percent of rural children (under five years) are likely to be stunted and 51 percent are likely to anemic, relative to 34 percent and 38 percent of urban children, respectively. A similar pattern is noted in maternal malnutrition. Approximately 24 percent and 13 percent of the rural women of reproductive age are likely to be anemic and wasted compared to 20 percent and 8 percent of urban women (Table 3).

Table 3: Rural-urban distribution of food and nutrition security in Uganda

Indicator	National	Rural	Urban
Dietary quantity			
Calories per capita per day	2167.0	2147.0	2271.0
Calories per adult equiv. per day	2958.0	2954.0	2978.0
Percent of population that is energy deficient	47.6	47.4	48.6
Food quality			
Mean share of calories from staples	68.8	71.0	58.5
Percent of HHs with > 75% energy from staples	42.6	47.7	19.5
Mean food consumption score (FCS)	52.0	50.0	60.0
Percent of HHs with poor food consumption	9.4	9.2	9.8

[14] We, however, note comparable values of selected indicators of FNS between rural and urban households, including mean caloric intake per adult equivalent and proportion of energy deficient households. The relatively comparable results in dietary quality might be attributed to under-reporting especially among urban residents. Most urban dwellers tend to eat outside the home and data on out-of-home consumption is likely to either be missed in the survey or under-reported.

[15] The CFSVA report measured dietary diversity score as the average number of food groups (out of seven) that a household consumed over a reference period of seven days (UBOS and WFP, 2013).

Percent of HHs with borderline food consumption (Food consumption adequacy)	15.6	16.9	9.9
Mean dietary diversity score	4.8	4.7	5.4
Percent of HHs consuming <=4 food groups	38.7	42.5	22.1
Economic vulnerability			
Poverty headcount (%)[16]	25.7	29.1	7.9
Mean share of exp. on food	50.7	53.0	40.3
Percent of HHs with > 65% of exp. on food	29.6	36.1	8.0
Percent of HHs with >75% of exp. on food	4.0	4.5	1.8
Percent consuming energy deficient foods	48.0	47.0	49.0
Percent of households with low dietary diversity	39.0	43.0	22.0
Child malnutrition			
Height-for-age (stunting, % below 2 SD)	34.0	37.0	34.0
Weight-for-age (underweight, % below 2 SD)	15.0	18.0	17.0
Weight-for-height (wasting, % below 2 SD)	5.0	6.0	5.0
Percent of anemic children (<11.0 g/dl)	49	50.9	38.0
Malnutrition in women			
Percent of anemic women (<11.0 g/dl)	23.0	23.8	19.9
Percent of wasting in women (15-49 years) (BMI <18.5 kg/m^2)	12.0	12.9	7.6

Source: UBOS (2010); UBOS and WFP (2013).

Poor FNS in rural areas may be attributed to the high poverty rates and high prevalence of subsistence farmers, among other factors. In Table 4, we illustrate the distribution of food and nutrition security indicators across the quintiles of expenditure per capita to demonstrate the role of poverty in food and nutrition security (via food access). Food and nutritional security of a household appears to improve with increases in expenditures per capita. Households in the upper quintiles are more food and nutrition secure than those in the lower quintiles. In particular, households in the lowest quintile are more likely to be food energy deficient, have low dietary diversity, derive more energy from staples, and have poor or borderline food consumption (Table 4). About 15 percent of the bottom quintile of the population (in terms of expenditures per capita) has a poor food consumption score compared to 5 percent of those in the top quintile. Nearly three-quarters of the poorest quintile have low dietary diversity (i.e., they consume food from fewer than five food groups) relative to only 17 percent of their wealthier counterparts. Some of the poorest households (i.e., urban poor, landless poor, and net food buyers in rural areas) mostly depend on food purchases, making them highly vulnerable to economic shocks, such as increases in food prices.

[16] The poverty headcount rates indicated are for the year 2009/2010 (UBOS, 2010).

Table 4: Food and nutrition security in Uganda by wealth quintile

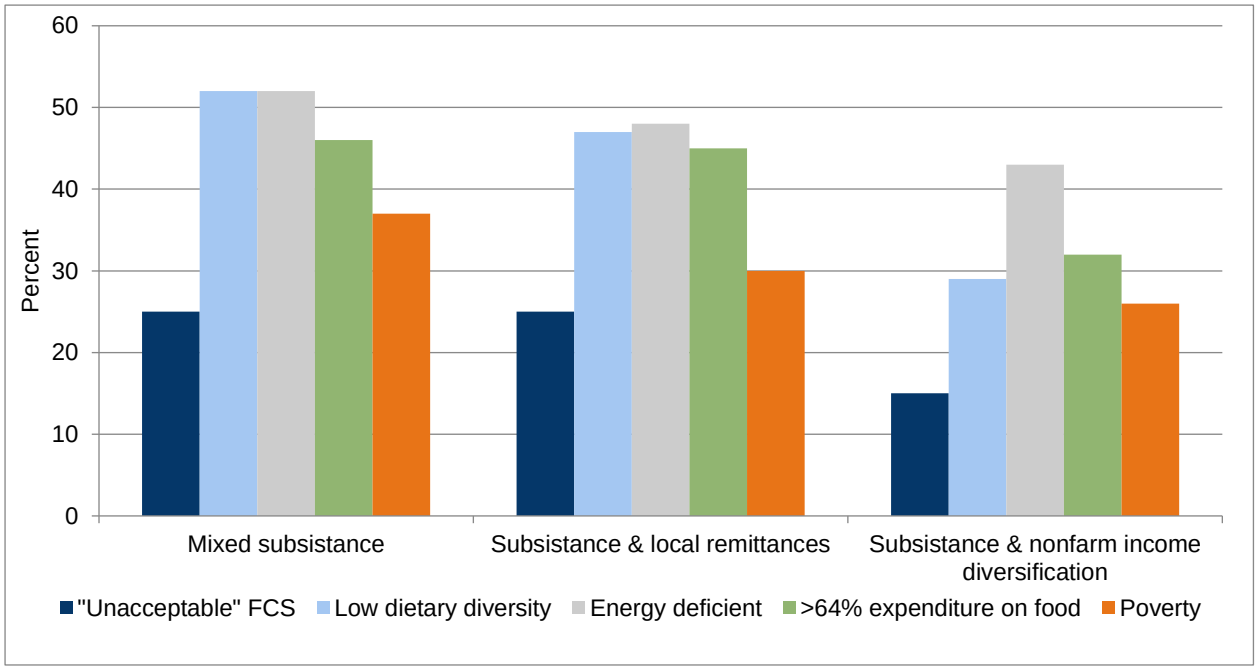
Indicator	Quintile				
	Q1	Q2	Q3	Q4	Q5
Food quantity					
Calories per capita per day	1227.0	1817.0	2219.0	2582.0	3058.0
Calories per adult equiv. per day	1698.0	2514.0	3066.0	3581.0	4016.0
Percent of pop. energy deficient	83.0	60.9	40.8	26.9	24.3
Food quality					
Mean share of calories from staples	75.0	72.8	71.6	68.3	59.1
Percent of HHs with > 75% energy from staples	59.8	53.3	47.9	38.5	21.3
Mean food consumption score (FCS)	36.0	46.0	51.0	58.0	64.0
Percent of HHs with poor food consumption[17]	14.6	2.3	2.8	0.3	4.6
Percent of HHs with borderline food consumption	35.8	20.8	13.1	9.2	4.8
Mean dietary diversity score	3.8	4.4	4.8	5.3	5.6
Percent of HHs consuming <5 food groups	73.8	48.8	39.0	25.0	17.4
Economic vulnerability					
Mean share of exp. on food	56.8	55.9	53.9	50.9	39.3
Percent of HHs with > 65% of exp. on food	48.4	43.5	40.2	27.3	9.6
Percent of HHs with >75% of exp. on food	7.2	4.4	2.7	3.5	2.9

Source: UBOS and WFP (2013).

Subsistence farmers often experience higher levels of food insecurity. Figure 2 presents the relationship between source of livelihood and status of food security in Uganda. As demonstrated by the figure, a quarter of subsistence farmers have an “unacceptable” food consumption score. In addition, 37 percent are poor; 46 percent spend more than 64 percent of their household budgets on food; and more than half (52 percent) have low dietary diversity and derive more than 75 percent of their energy from staples. Notably, subsistence farm households that diversify into the nonfarm sector are likely to be more food secure, with only 15 percent of rural households that diversify experiencing “unacceptable” food consumption scores (Figure 2). A recent analysis by Kirk et al. (2015) on the composition of household income and child nutrition outcomes, however, argues that only the share of income originating from nonfarm self-employment exerts positive and statistically significant effects on both height and weight of under-5 children in Uganda.

[17] Measures percentage share of households with an extremely unbalanced diet that is devoid of protein and chiefly comprised of starchy maize or matooke (plantain) flavored with some vegetables.

Figure 2: Food security status by livelihood



Source: UBOS and WFP (2013).

3.1.2 Regional differences in food security needs in Uganda

Table 5 presents the regional distribution of the food and nutritional status of households in Uganda across the Eastern, Northern, Kampala, Central (without Kampala), and Western regions. The Northern and Western regions appear to be the most food and nutrition insecure regions in the country. For instance, daily per capita adult energy consumption is lowest in the north at 2,637 calories per adult equivalent relative to 2,958 calories per adult equivalent at the national level. Similarly, the Northern region has the highest proportion of residents with energy deficient diets (i.e., those whose regular diets fail to meet the minimum energy requirements for an active and healthy life) at 59 percent, relative to 48 percent nationally. In addition, households residing in the Northern region are more likely to have poor food consumption (i.e., have an extremely limited and one-sided diet). Relatedly, the region also exhibits the highest proportion of people below the poverty line at 44 percent, relative to 26 percent nationally. Furthermore, households residing in the Northern region spend more money on food: The mean share expenditure on food is 56 percent, compared to the national average of 51 percent.

Table 5: Rural food and nutritional security in Uganda by geographical region of residence

Attribute	National	Kampala	Central (without Kampala)	Eastern	Northern	Western
Dietary quantity						
Calories per capita per day	2167.0	2412.0	2160.0	2223.0	1910.0	2238.0
Calories per adult equiv. per day	2958.0	3129.0	2936.0	3075.0	2637.0	3050.0
Food quality						
Mean share of calories from staples	68.8	54.2	67.7	73.6	64.8	73.1
Percent of HHs with >75% energy from staples	42.6	10.4	40.6	53.9	33.6	51.3
Mean food consumption score (FCS)	52.0	62.0	53.0	52.0	48.0	52.0
Percent of HHs with poor food consumption	9.4	12.4	12.0	7.6	12.4	3.2
Percent of HHs with borderline food consumption	15.6	8.6	14.6	20.4	15.8	14.6
Mean dietary diversity score	4.8	5.5	5.0	4.9	4.8	4.3
Percent HHs consuming ≤4 food groups	38.7	21.7	32.6	36.6	35.3	54.8
Economic vulnerability						
Poverty head-count	25.7	1.9	15.1	26.1	43.5	29.2
Mean share of exp. on food	50.7	38.4	46.8	53.0	55.6	52.8
Percent of HHs with > 65% of exp. on food	29.6	3.5	20.1	35.5	45.3	36.8
Percent of HHs with >75% of exp. on food	4.0	1.5	4.0	4.0	6.3	3.1
Percent consuming energy deficient foods	48.0	46.0	46.0	43.0	59.0	46.0
Child and adult malnutrition						
Height-for-age (stunting, % below 2 SD)	34.0	13.0	29.0	36.0	30.0	42.0
Weight-for-age (underweight, % below 2 SD)	15.0	11.0	16.0	17.0	18.0	17.0
Weight-for-height (wasting, % below 2 SD)	5.0	2.0	6.0	5.0	7.0	4.0
Percent of anemic children (<11.0 g/dl)	49	39.8	55.5	63.9	49.2	38.6
Percent of anemic women (<11.0 g/dl)	23.0	19.6	27.2	23.3	22.5	17.3
Percent of wasting in women (15-49 years) (BMI <18.5 kg/m^2)	12.0	7.7	7.8	11.9	18.6	11.9

Source: UBOS and WFP (2013); and UBOS (2011).

With regard to nutrition outcomes, acute malnutrition (in women and children) is highest in the Northern region, followed by the Western region. About 18.6 percent of women residing in the Northern region are considered to be wasting, 6.6 percentage points above the national average. The region also has the highest proportion of underweight children under five, estimated at 18 percent, 3 percentage points higher than the national rate. The area also has the highest proportion of wasting children (7 percent), 2 percentage points higher than the national average. Child stunting is, however, highest in the Western region at 42 percent, compared to the national average of 34 percent (Table).

The Western region exhibits the highest proportion of households with low dietary diversity: At least half of the population in Western Uganda (55 percent) consumes food from fewer than five out of seven food groups (cereals/tubers, pulses/nuts, vegetables, fruits, milk, meat/fish/eggs, and oil), on average, compared to 39 percent at the national level. Citizens of the Western region also have a higher dependence on staple foods: At least 50 percent of households in the region derive three-quarters of their calories from staples, with the average Western household deriving 73 percent of its calories from staples (Table 5).

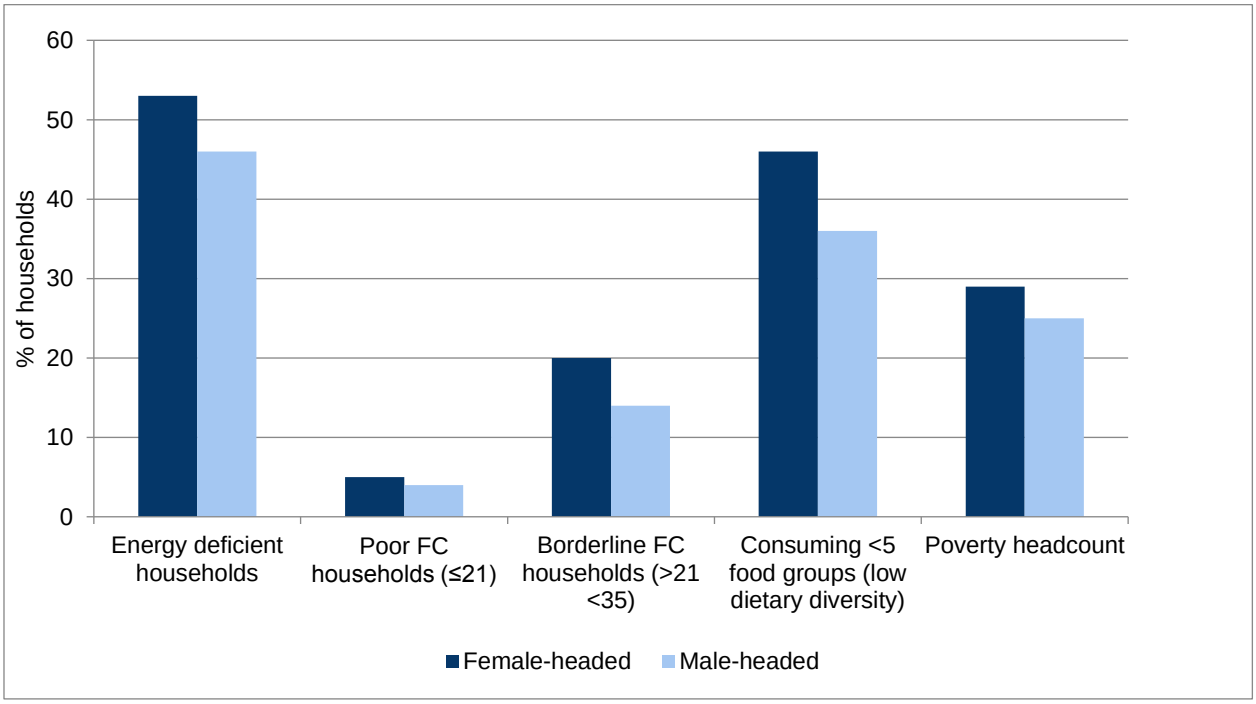
Higher prevalence rates of malnutrition in the Northern and Western regions may be explained by the severity of many underlying causes of food insecurity and malnutrition in these parts of the country. For instance, 44 percent and 29 percent of the population is poor in the Northern and Western regions, respectively; these figures are higher than the national poverty rate of 26 percent (Table 5). Other potential factors include drought and high prevalence of poor quality of housing and sanitation, which can lead to disease, a major cause of malnutrition (UBOS, 2011, UBOS and WFP, 2013). Furthermore, the civil strife in the Northern region for about two decades between the Ugandan People's Defense Forces and the rebel Lord's Resistance Army (LRA) may have substantially contributed to the current status of FNS in the region (Shively and Hao, 2012). Civil conflicts disrupt productive activities such as food production and marketing, making communities vulnerable to food insecurity and hunger (Messer and Cohen, 2004). The civil war in northern Uganda forced most households to relocate from their farms to live in relatively safe internally displaced people's (IDP) camps, hampering agricultural production, and thus leaving the people in the region food insecure and malnourished (Shively and Hao, 2012).

3.1.3 Gender and status of food and nutrition security in Uganda

In this subsection, we present inter-household analyses of the gender gap with respect to food and nutrition security in Uganda. Recent empirical literature on gender and food security shows significant association between the sex of the head of a household and vulnerability to food

insecurity (e.g., Babatunde and Qaim, 2010; Kassie et al., 2014; Mallick and Rafi, 2010), making gender an important issue for FNS-related policies. According to the Uganda National Panel Survey dataset (2011/12), 33 percent of households in Uganda are headed by females, with 30 percent in rural areas and 36 percent in urban ones (UBOS, 2012). As illustrated in Figure 3, relative to male-headed households, female-headed households are more food insecure. Forty-six percent of female-headed households have low dietary diversity, compared to 36 percent of their male-headed ones. In addition, more than half of female-headed households are energy deficient, compared to 46 percent of those headed by a male.

Figure 3: Status of food and nutrition security in Uganda, by sex of household head



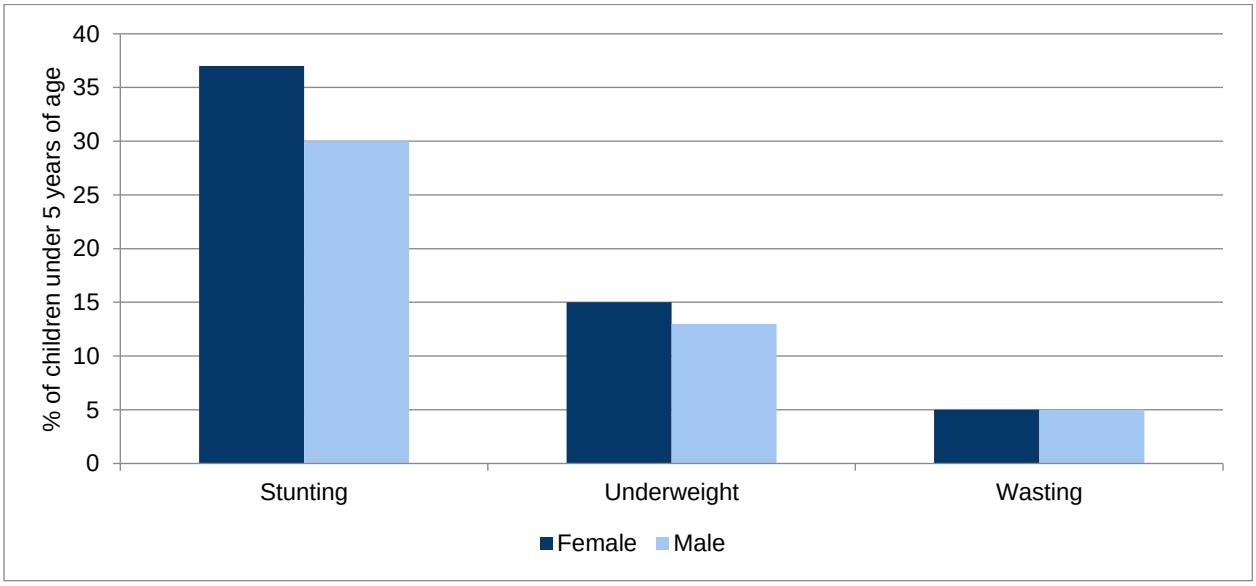
Source: UBOS and WFP (2013).

The gender gap in FNS noted above may reflect dominance of males in access to, control over, and ownership of production resources in Uganda. A study by Ali et al. (2015) reports substantial gender gap in mean yield (or value of yield) in Uganda—of around 20 to 30 percent in favor of male farmers. In addition, women are likely to work longer hours than men and bear the double burden of providing food for their households and taking care of children, the sick, the elderly, and orphaned children (Jacoby, 1992). According to the FAO, closing the global agricultural gender productivity gap could increase agricultural output in lower-income countries by 2.5 to 4 percent and reduce undernourishment by 12 to 17 percent or 100 million to 150 million individuals (FAO, 2011). The gender gap in productivity can be reduced by promoting policies and interventions that increase women's empowerment. For example, empowering women in decision-making over agricultural production inputs, ownership of

assets, access to and decisions about credit, household income use, community leadership, and time use can increase their bargaining power, leading to optimal resource allocation.

Gender differences in child nutritional outcomes also exist in Uganda. Male children exhibit higher rates of malnutrition than girls: Thirty-seven percent of under-5 boys are stunted, a 7 percentage point difference from the 30 percent of under-5 girls (Figure 4).[18]

Figure 4: Gender differences in nutritional outcomes



Source: UBOS (2011).

3.2 Agricultural productivity gaps in Uganda

Raising agricultural productivity is a major pathway for reducing food insecurity and poverty in much of sub-Saharan Africa, including in Uganda, where at least 70 percent of people live in rural areas and rely on farming for their livelihoods (Kijima et al., 2008; Kassie et al., 2011). In Uganda, the agriculture sector accounts for about one-quarter of national GDP and employs more than 70 percent of the total labor force—including over three-quarters of the female labor force (World Bank, 2016). Despite its significance in Uganda's economy, agricultural productivity is low, which undermines FNS in many households. In particular, the sector is characterized by low value added per worker. Between 2010 and 2014, Uganda's agriculture sector grew by 2.2 percent per year, relative to the government target of 6.07 percent (MAAIF, 2016). In terms of productivity of staple crops, the current average yield for cereal crops in Uganda is 2.1 metric tons (2,053 kg) per hectare, which is lower than the average 3.2 metric tons in South Asia, but higher than the sub-Saharan African and East African averages (Table 6).

[18] While the exact reasons for the higher rates of stunting and underweight among boys (compared to girls) are not evident, these differences may be accounted for by biases in the data, child behavior, or parental attitudes toward daughters.

Table 6: Agricultural productivity in Uganda

Productivity indicator	Uganda	Sub-Saharan Africa	East Africa	South Asia
Cereal yield (kg per hectare)	2053.24	1367.77	1561.37	3210.31
Agricultural value added per worker(constant 2005 USD, logged)	5.39	6.27	5.45	6.52

Source: ERH database (2016).

Table 7 presents the actual yields and the CAADP targeted yields for the major staple food crops in Uganda. As can be seen in the table, yields from most staple crops—except maize, rice, cowpeas, and beans—in Uganda still fall below the CAADP targets.

Table 7: Yield and production gaps based on CAADP targets for Uganda

	Yield (mt/ha)			Production ('000 metric tons)		
Staple crop	Current	CAADP target	Gap (CAADP *less* current)	Current	CAADP target	Gap (CAADP *less* current)
Millet	1.47	1.47	0.002	253.8	615	361.2
Maize	2.44	2.4	-0.041	2,633.90	2,255	-378.9
Sorghum	0.96	1.58	0.621	352.4	504	151.6
Rice	2.44	2.34	-0.098	222.8	278	55.2
Wheat	1.57	2.28	0.713	21	24	3.0
Potatoes	6.14	7.77	1.630	404.9	726	321.1
Cassava	5.49	17.26	11.771	3,727.40	6,768	3040.6
Beans	0.91	0.67	-0.241	719.6	585	-134.6
Peas	0.52	0.68	0.157	15	18	3.0
Cowpeas	1.01	0.78	-0.227	42.3	38	-4.3
Pigeon peas	0.76	0.79	0.033	45.3	9	-36.3
Groundnuts	0.72	1.4	0.680	297.7	409	111.3
Soybeans	1.04	1.27	0.229	928	186	-742.0
Sesame seeds	0.65	0.79	0.138	154.5	194	39.5

Source: FAOSTAT (2016);
Note: The yield and production estimates are based on averages over several years (2010-2015). The CAADP targets were adopted from Ariga et al (2014).

Several constraints hamper agriculture in the sub-Saharan African region, including pests, diseases, postharvest losses, poor transport and market infrastructure, limited access to agricultural finance, rain dependence, low adoption rates of modern varieties, and limited policy commitments for strengthening agricultural productivity (Deininger and Okidi, 1999; Langyintuo et al., 2010; and Tripp and Rohrbach, 2001). Table 8 shows Uganda's and other region's performances in selected yield-enhancing factors. Uganda lags behind sub-Saharan Africa and East Africa with respect to agricultural technology adoption (in terms of area devoted to modern varieties and irrigation), distance to fertilizer, water resources, and qualified agricultural researchers. Uganda's proportion of arable land devoted to modern varieties is

also lower (19 percent) than the average proportion for sub-Saharan Africa (22 percent) and East Africa (21 percent).

Table 8: Access to productivity-enhancing inputs in Uganda

Indicator	Uganda	Sub-Saharan Africa	East Africa	South Asia
Percent of area devoted to modern varieties	18.88	21.88	21.31	n/a
Distance to fertilizer index	12,348.00	10,029.62	9,596.30	4,198.19
Road density (km of road per 100 km^2 of land area, logged)	3.38	2.20	2.40	3.55
Access to agricultural input markets (a score from 1-6, 6 being best)	4.00	3.63	3.68	3.65
Access to water for agriculture (a score from 1-6, 6 being best)	3.50	3.58	3.86	3.59
Percent of arable land equipped for irrigation	0.20	4.17	5.66	60.02
Access to financing for farmers (a score from 0-4, 4 being best)	2.00	1.06	1.30	2.33
Access to land (a score from 1-6, 6 being best)	4.50	3.48	3.89	3.46
Access to agricultural extension services (a score from 1-6, 6 being best)	4.33	3.79	4.12	3.55
Share of researchers with PhD $x10^{-6}$	3.72	8.24	3.74	4.65
Share of female researchers $x10^{-6}$	0. 85	8.44	3.75	2.22
Total renewable water resources per capita population (cubic meters/year/rural capita).	1654.00	14630.06	3422.92	4341.13
Length of time to export a given good (days)	32.40	33.16	35.83	31.34
Logistic performance, and transport index (a score from 1-5, 5 being best)	2.35	2.17	2.05	2.34

Source: ERH database (2015).

Uganda's performance in other factors (such as infrastructure development, research and extension, access to finance, and access to trade-related infrastructure) is slightly better than the average for the region. For instance, the road density in Uganda is just 29.3 km per 100 km^2, hampering access to input and output markets and flow of market information. Farmers in Uganda rely on rainfall, and yet renewable water resources are still limited, at less than half of the average renewable water resources in East Africa and nearly one-tenth of the average renewable water resources in sub-Saharan Africa. Furthermore, there is limited access to agricultural financing, as Uganda only scores 2 out of the maximum score of 4, indicating that there is some multilateral or government financing options, but not broad or deep access to credit or insurance schemes. The formal savings rate is also low in Uganda: Only 20 percent of the rural population above 15 years of age has an account (self or together with someone else) at a financial institution (ERH, 2016). These numbers corroborate earlier results by Asiimwe and Mpuga (2007), who reported that 90 percent of Ugandan households have never participated in any form of formal savings. Household savings are important to FNS as they

can be used for farm investment to raise agricultural productivity as well as food purchases during lean periods. Notably, the commitment of the government to increase availability of affordable credit is not well-articulated in the national budgets. For instance, the growth in agricultural finance lending in Uganda declined from 35.8 percent in 2015/16 to 17.9 percent in 2016/17 (MFPED, 2016).

3.3 Vulnerability to weather and consumption shocks and mitigation strategies in Uganda

Rural populations in agrarian economies such as Uganda depend heavily on rain-fed agriculture and are thus vulnerable to weather risks and income variability. Indeed, Uganda is vulnerable to shocks, including production shocks, weather shocks, high price volatility, and high shares of food expenditures in household budgets.[19] The most common shocks in Uganda include drought, irregular rains, crop diseases, and livestock diseases. Widespread weather shocks undermine household food production and reduce household income as well as food purchasing power. In addition, only about 0.2 percent of arable land is irrigated—one of the lowest rates in the world—compared to 4.2 in the sub-Saharan African region (Table 9). According to data from the Uganda National Panel Survey (UNPS) (2005/06-2011/12), at least 60 percent, 42 percent, and 34 percent of the rural households in Uganda experienced some form of weather-related distress in 2009, 2010, and 2011, respectively. Nonetheless, we note lower variability in production and yields of cereals and food in Uganda relative to regional averages for sub-Saharan Africa and East Africa (Table 9).

Given low savings and high poverty rates in Uganda, policy interventions that mitigate shocks are important for addressing food and nutrition needs in Uganda through increased agricultural productivity. In the absence of effective mitigation mechanisms, such shocks can lead to widespread hunger, food insecurity, and malnutrition—underscoring the need to invest in insurance mechanisms. Possible mitigation mechanisms include rural safety nets as well as consumption and income-smoothing mechanisms (e.g., income diversification, development of agricultural insurance markets, and savings). Food and social safety net programs are widespread in Uganda with relatively adequate coverage of the needs of the poor: About 78 percent of the poorest 20 percent of the rural population participate in social assistance programs—compared with 24 percent in sub-Saharan Africa and 27 percent in East Africa (Table 9). There is also need to promote improved on-farm storage facilities among households to mitigate seasonal and inter-year production shocks and reduce post-harvest losses. A lack of adequate storage facilities often forces farmers to sell food at low prices immediately

[19]As indicated earlier in this report in Section 3, 36 percent of rural households in Uganda spend more than 65 percent of their household income on food.

following their harvests and then purchase grain later at higher prices, undermining their savings.

Table 9: Consumption and income shocks, and rural safety nets in Uganda

Indicator	Uganda	Sub-Saharan Africa	East Africa
Production, consumption, and income shocks			
Household exposure to food price shocks (index)[20]	915.75	532.28	642.39
Variation in agricultural production (metric tons)	0.03	0.11	0.15
Variation in cereal crop yields (metric tons per hectare)	0.14	0.21	0.25
Volatility of food production (USD per person)	0.01	0.03	0.04
Country in receipt of emergency food aid for 8-10 years (binary: 0 = no; 1= yes)	1.00	0.89	1.00
Rural safety nets mitigation mechanisms			
Food safety net programs (score from 0-4, 4 being best)	2.00	0.90	1.10
Social safety net benefit incidence (%)[21]	21.16	22.78	26.71
Social safety net adequacy (%)[22]	No data	39.09	8.98
Social safety net coverage (%)[23]	77.62	23.87	26.90
Percentage of rural population (age 15+) with an account at a formal financial institution	19.50	16.26	21.47

Source: ERH database (2016).

Moreover, the nonfarm sector is a major source of livelihood for rural households in many developing countries (Hertz, 2009; Barrett et al., 2001; Reardon, 1997). Diversification into rural nonfarm income activities can provide households with more reliable sources of income for farm investment (De Janvry and Sadoulet, 2001; Barrett et al., 2001) and often generates higher returns to labor and capital than agriculture alone (Reardon et al., 2001). In Uganda, the share of total income from nonfarm activities for rural households increased from 46 percent in 2000 to 63 percent in 2011 (UBOS, 2009; UBOS 2012), which is above the regional average of 35 percent in sub-Saharan Africa (Haggblade et al., 2010). Household participation in the rural nonfarm sector in Uganda has also increased from 49 percent in 2003 (Kijima et al., 2006) to 59 percent in 2009 (UBOS, 2010).

[20] Computed as a product of the percentage of household expenditure that is spent on food at a national level and the domestic food price volatility index.
[21] The percentage of benefits going to the poorest quintile (rural) of the post-transfer (or pre-transfer) welfare distribution relative to the total benefits going to the population, for social assistance programs.
[22] The percentage of the total transfer amount received by all beneficiaries in poorest quintile (rural) as a share of the total welfare of beneficiaries in that quintile, for social assistance programs.
[23] The percentage of the poorest quintile of the rural population participating in social assistance programs.

4. Policy environment to address the food and nutrition security needs in Uganda

The ERH database explores the extent to which Uganda's policy environment reflects the goal of improving food and nutrition security in the country. As can be seen in Table 10, Uganda performs better than the sub-Saharan African and East African averages on several indicators related to its FNS policy environment, e.g., promoting complementary feeding, publishing national dietary guidelines, setting time-bound nutrition targets, and managing its resources for rural development. Uganda also scores higher than the sub-Saharan Africa and East Africa on the many trade and rural investment climate indicators, including: policy framework for rural organizations, investment climate for rural businesses, dialogue with rural organizations, Doing Business index score, the length of time it takes to export goods, and logistic performance and transport index score. Uganda's performance, based on these metrics, suggests that the government is making considerable efforts to provide a suitable policy environment for the formation and operation of rural organizations, encourage private sector participation in rural businesses, support increased dialogue with rural organizations, provide enabling conditions for rural financial services, simplify regulations for businesses, protect property rights, and enhance the quality of trade and transport-related infrastructure.

Table 10: The enabling policy environment to achieve SDG2 in Uganda

Indicator	Uganda	Sub-Saharan Africa	East Africa	South Asia
Women's enabling environment				
Secure access to land by women (an index from 0-1, measuring whether women and men have equal and secure access to land use, control and ownership)	0.50	0.54	0.54	0.56
Woman access to financial services (an index from 0 to 1 that measures whether women and men have equal access to financial services).	0.50	0.40	0.35	0.31
Other enabling policies for FNS				
Degree to which FNS features in citizen priorities (proportion)	0.40	0.43	0.41	0.36
National dietary guidelines (a binary score: 1 if the government has published guidelines for a balanced and nutritious diet and 0 otherwise; anything in between reflects averages across years).	1	0.35	0.40	1.00
Time-bound nutrition targets (a binary score: 1 if the governments identify time bound nutrition targets in public policy documents, and 0 otherwise; anything in between reflects averages across years).	0.50	0.32	0.40	0.67

Indicator	Uganda	Sub-Saharan Africa	East Africa	South Asia
Governments promote complementary feeding (binary score)[24]	1.00	0.80	0.90	0.83
Allocation and management of resources for rural development (a score from 1-6, 6 being best)	4.44	3.60	3.84	3.67
Investment climate				
Policy framework for rural organizations (a score from 1-6, 6 being best)	4.25	4.06	4.09	4.19
Investment climate for rural businesses (a score from 1-6, 6 being best)	4.17	3.60	3.72	3.80
Dialogue with rural organizations (a score from 1-6, 6 being best)	4.06	3.76	3.77	3.53
Enabling conditions for rural financial services (a score from 1-6, 6 being best)	3.75	3.57	3.75	3.86
Doing Business Index[25]	50.06	47.25	49.54	53.51
Political stability (an index perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism)	-0.94	-0.63	-0.79	-1.43
Rule of law (index)[26]	-0.37	-0.79	-0.88	-0.75
Trade bias index (%)[27]	0.24	0.25	0.29	0.21
Length of time to export a given good (days)	32.40	33.16	35.83	31.34
Logistic performance and transport index (score)	2.35	2.17	2.05	2.34

Source: ERH database (2016).

Despite the aforementioned policy achievements, food insecurity and malnutrition remain major challenges in the country. As seen in Section 3, there is heterogeneity in food insecurity, hunger, and malnutrition across gender, the rural-urban divide, and geography. In particular, malnutrition remains highest among female-headed households, in rural areas, and in the Western and Northern regions, especially in areas affected by conflict over the past two decades. The country's development policy interventions that aim to end hunger, food insecurity, and malnutrition need to embrace these heterogeneities.

One sign of the government's commitment to address the inequalities in FNS is the substantial progress it has made in incorporating gender-sensitive approaches within its development policies over the past three decades. Notable steps include the formulation of gender-responsive policies and strategies as outlined in the National Development Plan (NDP), an institutionalization of gender planning in all sectors, and increased collection of gender-

[24] A binary score that measures whether governments promote complementary feeding practices of children aged 6–9 months and continued breastfeeding of children at ages 12-15 and 20-23 months, where 0 = No and 1 = Yes (and anything in between reflects averages across years).
[25] Index ranks the ease of doing business in a country with higher rankings (a low numerical value) reflecting better, usually simpler, regulations for businesses and stronger protections of property rights.
[26] Index captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and, in particular, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
[27] Index measures the support to the importing-competing agricultural sector compared to the exporting agricultural sector.

disaggregated data to enable gender-inclusive planning (NDPII). Nevertheless, female-headed households in Uganda are still more food insecure than their male-headed counterparts. This divide underscores certain inadequacies in the design and implementation of gender-inclusive policies and interventions to empower women and increase their access to productive resources including land, finance, and other inputs. Uganda's performance in the ERH women's enabling environment indicators suggests that, although the law guarantees the same rights to own, use, and control land or have access to formal financial services to both women and men, some existing customary, traditional, or religious practices may discriminate against women (Table 10). Women in Uganda still face constraints related to access, control, and ownership of productive resources and are marginalized in inheritance rights. Since land is the major form of collateral, lacking access to it also hinders women's access to formal credit. Importantly, only 27 percent of registered land in the country is owned by women (UBOS, 2010). Furthermore, at least 70 percent of women are engaged in farming, but less than 20 percent have control over agricultural outputs, further limiting their access to agricultural finance (UBOS, 2010).

Limited access to agricultural finance constrains farm investment, hampering agricultural productivity and food security in rural areas. Financial inclusion mechanisms such as promoting digital savings, affordable mobile money-based credit schemes, and use of mobile money platforms to directly transfer cash assistance to women in households can increase household access and control over financial resources. Coupled with access to other agricultural productivity-enhancing inputs and rural social assistance mechanisms as discussed in Section 3, women can build their savings, mitigate production and consumption shocks, invest in their farms, and raise farm yields and productivity.

The government of Uganda and its development partners are currently implementing several FNS programs that target women and youth farmers to provide them with the necessary agro-inputs, extension services, skills, and financing for improving their farm yields, livelihoods, and food security. The programs include: 1) The National Agricultural Advisory Services (NAADS) and Operation Wealth Creation (OWEC); 2) The Youth Venture Capital Fund; 3) The Youth Livelihood Program, 2013/14-2017/18; and 4) Youth Leadership for Agriculture, 2015-2020. The following summaries explore how these programs aim to address FNS needs as identified in Uganda's country strategy.

The National Agricultural Advisory Services (NAADS) and Operation Wealth Creation (OWEC),[28] 2011-2021

The National Agricultural Advisory Services (NAADS) and Operation Wealth Creation (OWEC)[29] are agricultural extension programs (running from 2011-2021), which focus on the distribution of agricultural inputs to farmers in the whole country and target all groups of people, including the youth. NAADS, which is a semi-autonomous agency within the Ministry of Agriculture, Animal Industry, and Fisheries (MAAIF), provides general management and control of resources, but the distribution of inputs is implemented by OWEC, which is in the president's office. NAADS/OWEC managed to achieve several of their targets (shown in Table 11) during the second production season (July-November of 2015) in terms of the procurement and distribution of agro-inputs to District Local Governments across the country. In particular, the programs nearly met or exceeded distribution targets for maize and bean seeds as well as citrus seedlings, pineapple suckers, and fertilizers. However, other seeds (e.g., rice, sorghum), seedlings (e.g., apples, bananas, mangos), and stocking material (e.g., tilapia and catfish fingerlings, fish feed) targets went largely unfulfilled. Moreover, there are some general concerns over the limited technical expertise of the program's leadership and core implementing team, which are comprised predominantly of Uganda Peoples' Defense Forces Officers who have undergone agricultural training in order to implement the program.[30]

Table 11: Performance of the NAADS/OWEC in terms of distribution of agro-inputs, July-November 2015

Item	Target	Achieved	Percent achieved
Seed (metric tons)			
Maize	2,744.833	2,744.833	100
Bean	2,244.848	2,210.848	98.49
Soya bean	179.148	134.22422	74.92
Rice	281.195	23.5	8.36
Sorghum	138	26	18.84
Groundnut	70.760	44.730	63.21
Seedlings/vegetative planting materials			
Citrus seedlings	3,393,188	3,419,823	100.78
Tea seedlings	62,000,000	24,775,000	39.96
Mango seedlings	3,632,673	969,498	26.69

[28] For more background on the creation of NAADS and OWEC, see the following sites: http://www.naads.or.ug/, http://www.the-report.com/reports/uganda/pearl-of-africa-shines/interview-with-salim-saleh-chairman-of-operation-wealth-creation/, and http://ea-agribusiness.co.ug/naads-renewed-service-delivery-under-operation-wealth-creation/.

[29] OWEC is a presidential initiative aimed at addressing the inefficiencies that had arisen in the NAADS program. The overall goal of OWEC is enhancing household participation in commercial agricultural production through community mobilization, equitable and timely distribution of inputs, and facilitation of agricultural production chains. Following the launch of OWEC in 2013, the agricultural extension and advisory roles were given back to MAAIF under a single spine extension system.

[30] A May 2017 Report of the Sectoral Committee on Agriculture, Animal Industry, and Fisheries on the implementation of the Operation Wealth Creation Program in Uganda highlights poor quality inputs and delayed delivery and distribution of inputs (out of cycle with planting seasons) as major challenges for the program, which may relate to the lack of technical expertise of the program implementers. See the report here: http://parliamentwatch.ug/wp-content/uploads/2017/05/AAIF-17-Report-on-the-implementation-of-the-operation-wealth-creation-programme-in-Uganda.pdf.

Apple seedlings	136,655	34,000	24.88
Cassava cuttings	80,000	47,113	58.89
Tissue cultured banana plantlets	715,862	226,793	31.68
Potato seeds	9,078	6,976	76.85
Cocoa seedlings	3,042,860	2,605,288	85.62
Pineapple suckers	2,647,059	2,794,398	105.57
Stocking materials			
Dairy cattle	9,220	158	1.71
Acres of pasture seed (*Lablab, Centrocema, Chlorisgayana*)		330	
Chicken (layers and kuroilers)		131,629	
Poultry feeds (kg)	1,421,200	768,070	54.04
Improved pigs (Gilts)		1,616	
Improved goats (boer/savannah crosses)	2,522	2,192	86.92
Kuroilers		6,000	
Tilapia fingerlings	880,828	181,704	20.63
Catfish fingerlings	853,892	271,280	31.77
Fish feeds	73,290	28,402	38.75
Fertilizers and chemicals			
MT of NPK 17:17:17	52	54. 64	105.08

Source: Ministry of Agriculture, Animal Industry, and Fisheries.

The Youth Venture Capital Fund, 2010-2015

The Youth Venture Capital Fund was implemented by the Ministry of Finance, Planning, and Economic Development (MFPED) from 2010-2015 to lend venture capital to young entrepreneurs aged 18-35 years and link them to the financial sector. The fund aimed to support the growth of viable and sustainable small and medium enterprises owned by young entrepreneurs in sectors such as manufacturing, agro-processing, agriculture, fisheries, health, transport, education, ICT, tourism, construction, printing, and service contractors, among others. The UGX 25 billion (about $10 million) intervention was implemented in 110 districts across the country. The project funded 5,000 projects and trained 6,780 youths in financial skills and mentored them on proper business management practices. The amount of the loans given to beneficiaries ranged between UGX 0.1 million and UGX 5 million (up to $2,000) for individuals or between UGX 0.5 million and 25 million (approximately up to $10,000) for companies/partnerships. However, a review of the program noted that the fund's users were predominantly based in the central region, specifically in Kampala, and that urban-based businesses were more likely than rural businesses to access the fund. Youth involved in agriculture-based enterprises were also less likely to access the fund than service-based entrepreneurs (Ahaibwe and Kasirye, 2015). Furthermore, many young entrepreneurs who invested in agricultural production fell victim to the vagaries of weather (especially drought) and found it very difficult to pay back the loans. High interest rates of the loans (at 15 percent) together with their non-flexibility exacerbated this problem.

The Youth Livelihood Program, 2013/14-2017/18

The Youth Livelihood Program (YLP) is the most comprehensive and inclusive youth program in Uganda, and is being implemented by the Ministry of Gender, Labor, and Social Development (MGLSD). The 5-year program, launched in early 2014, runs from 2013/14-2017/18 with an approved budget of UGX 265 billion (approximately $100 million). The goal of the program is to contribute to poverty eradication and a reduction in youth unemployment. The program targets organized groups of youths aged between 18 and 30 years in all 112 districts in Uganda, and supports business enterprises in sectors such as agriculture, trade and general merchandise, small-scale manufacturing, value addition, cottage industries, carpentry and brick laying, etc. Two major components of the YLP include skills development and livelihood support, in which youth are empowered with vocational skills and later supported with a group revolving loan fund to procure startup kits.

Selected youth groups benefit from the revolving youth livelihood fund of up to UGX 12.5 million ($3,500) without stringent requirements like collateral security and registration as required by other projects. However, potential beneficiaries of the fund receive mandatory orientation and training in financial management, accountability, and vocational training before they can access the funds. The program has so far financed 8,213 youth projects/groups, supporting about 105,419 members (55 percent of whom are male and 45 percent of whom are female). About UGX 58.4 billion (nearly $16.2 million) in revolving funds has been disbursed (over the period 2013/14-2016/17) with about 44 percent allocated to agriculture, 4 percent to agro-industry, and 1 percent to agro-forestry. Some of the challenges faced by YLP thus far include insufficient and delayed funding, adverse publicity by anti-government politicians that YLP is “free government money,” and natural calamities.

Youth Leadership for Agriculture, 2015-2020

The Youth Leadership for Agriculture (YLA) is a 5-year (July 2015-July 2020) program implemented under the United States Agency for International Development’s (USAID) Feed the Future Commodity Production and Marketing Activity by Chemonics International (USAID, 2014). It aims to increase incomes of youth working in agricultural value chains and improve skills development (entrepreneurship, employability, leadership, and life skills) obtained through formal and non-formal education and training organizations.

Targeted grant recipients include Ugandan private sector organizations, civil society organizations, regional- and district-level organizations, local NGOs, and community-based organizations that are primarily youth-led and engaged in the target Feed the Future value chains of maize, beans, and coffee, in addition to other value chains with employment

opportunities for youth. Providers of local agricultural inputs, financial services, and business development and extension services as well as business, technical, vocational education and training institutions are also targeted for grants.

In partnership with USAID/Feed the Future, YLA connects youths to opportunities in the country's agriculture sector. The project aims to increase economic opportunities for 350,000 Ugandan female and male youths aged 10-35 years in agriculture-related fields to increase their incomes and build entrepreneurship, leadership, and workforce-readiness. Using a community approach that targets youth in multiple ways, YLA aims to leverage private sector and workforce institutions and ensure their involvement. Project activities also tap national organizations and leaders with the geographic reach and networks to share knowledge countrywide. Under YLA, the following achievements have been made:

- About 450 young village agents (VAs) have been trained and equipped with smartphones provide E-extension, inputs, farmer profiling, and crop insurance services;
- About 286 youth VAs provide services to farmers and acquired electronic spray pumps on cost-share basis;
- At least 120 youth VAs trained in soil testing; and
- At least 45 NOKIA youth farmers trained in safe use & handling of chemicals; provided e-sprayers & starter kits (protective gear).

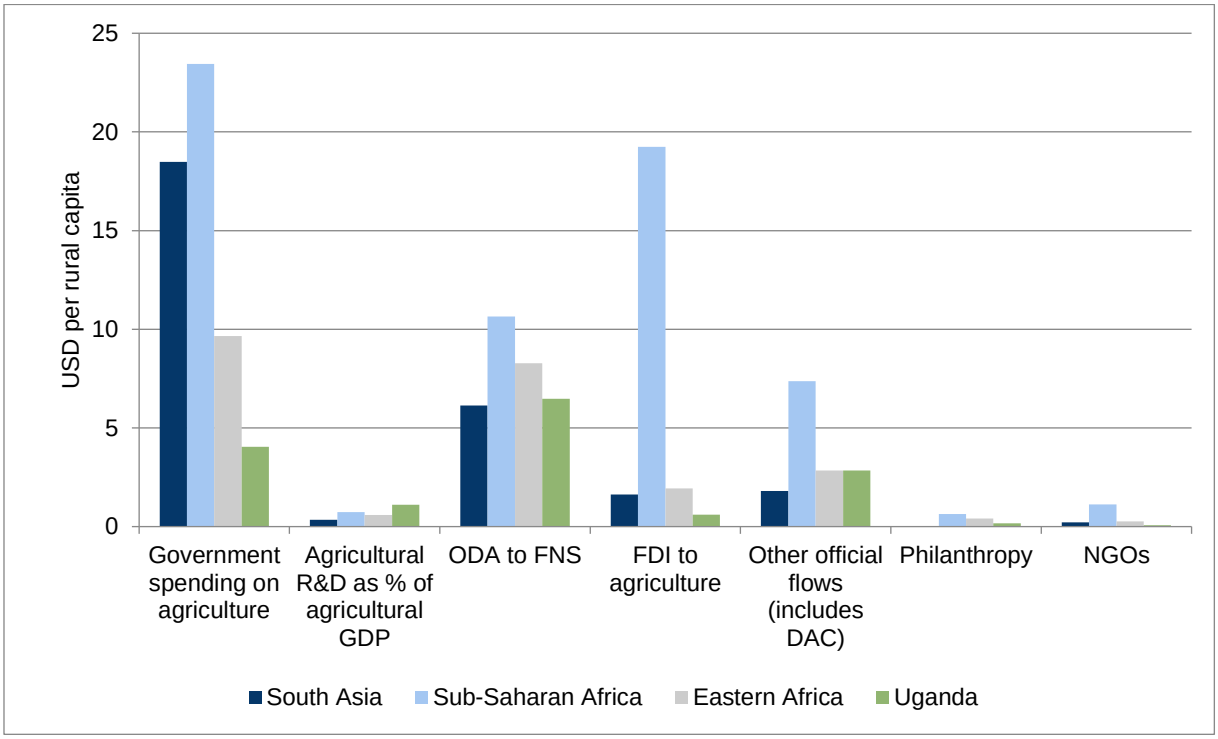
As identified by the program summaries in this section, much of the current FNS programming by the government of Uganda and its development partners focuses on providing farmers with productivity-enhancing agricultural inputs and extension services, developing the skills of youth and women farmers, and increasing financing for farmers and agro-entrepreneurs. However, preliminary program assessments indicate that several issues—such as a lack of expertise from implementing stakeholders, inadequate targeting of beneficiaries, and insufficient or delayed funding—have detracted from the intended impact of the programs. The full operationalization of these programs depends in large part on the ability of the government to raise, sustain, and manage sufficient funding for them. The following section discusses the challenges and trends in allocating and mobilizing resources for FNS programming.

5. Resource mobilization and allocation to achieve FNS

5.1 Resource allocation

Overall, there is need for a stronger financial commitment by the government to increase public funding to agriculture and other essential sectors to eradicate malnutrition and food insecurity. Below, we examine the budgetary allocation of government expenditures on agriculture and rural development in general, and food and nutrition security in particular, to assess the commitment of the Ugandan government and its development partners to achieving SDG2. Figure 5 presents the allocations to FNS based on the ERH database from which we note that Uganda lags behind the sub-Saharan African and South Asian averages with respect to public and private investments in interventions related to FNS, and, in fact, ranks 108 out of 118 countries on FNS resources per rural capita. National spending on agriculture is low, at $4 per rural capita, compared to $23 for sub-Saharan Africa. A similar pattern is noted for official development assistance (ODA) to FNS and foreign direct investment (FDI) to the agriculture sector (Figure 5). These numbers indicate that Uganda faces resource constraints and challenges in mobilizing resources to achieve SDG2.

Figure 5. Public and private investment in FNS

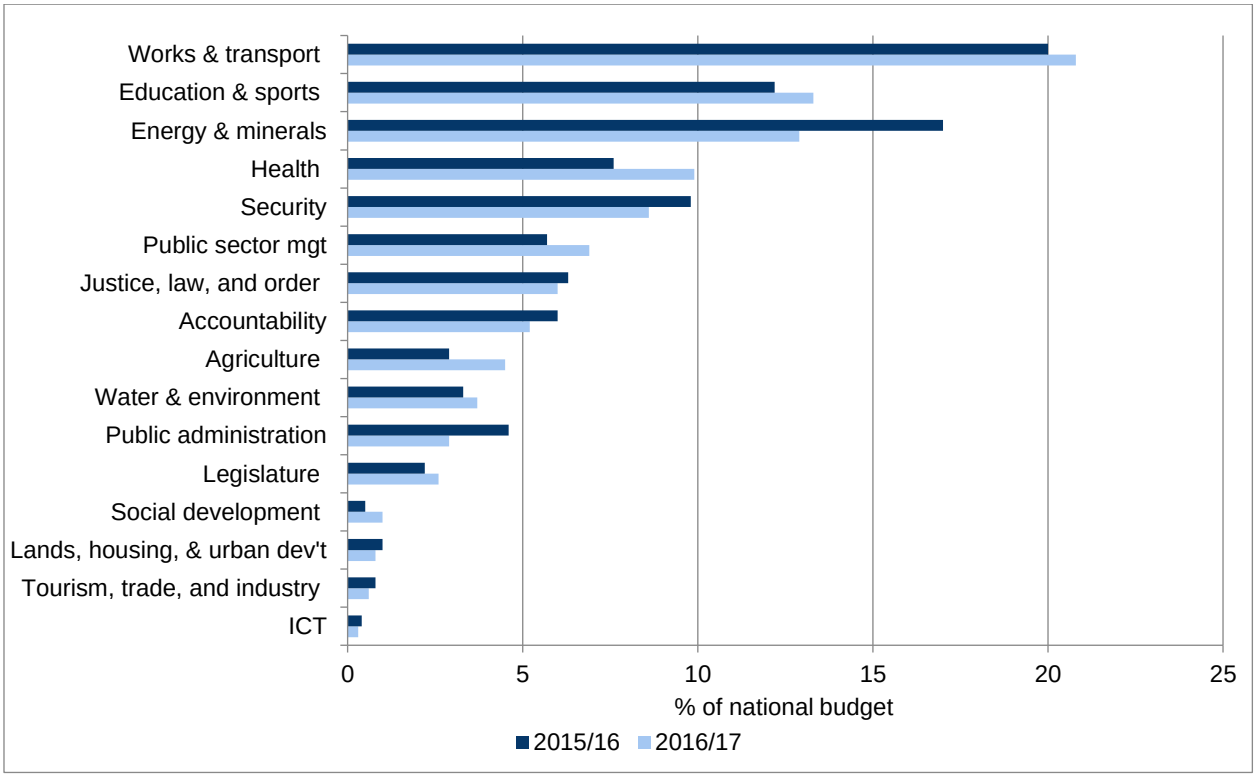


Source: ERH database (2016).

The National Development Plan outlines the government's financing strategy for agriculture and food security interventions. The financing strategy of the NDP and NDPII shows an increase in the total national budget from UGX 54.3 trillion (about $22.7 billion) to UGX 196.7

trillion (about $56.9 billion) between 2009-2014, revealing the government's plan to increase spending to poverty-reduction-oriented sectors and improving FNS. Despite that, the share of Uganda's budget for the agriculture sector ranks on the lower side, as seen in Figure 6, compared to the works and transport, energy and mineral, and education and sports sectors.

Figure 6: Sectoral distribution of government expenditure (2015/16-2016/17)



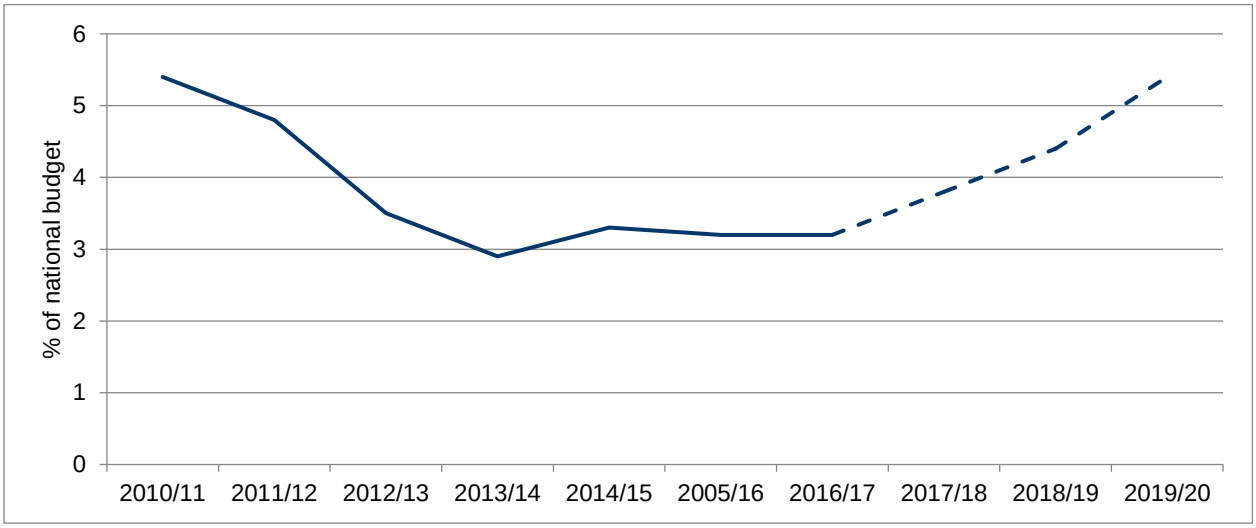
Source: MFPED (2016).

Budget allocation to the sector has also generally trended downwards over the past five years—from 5.4 percent in 2010/11 to 3.2 percent in 2016/17, with a seven-year average of 3.7 percent (Figure 7). This is far below the 10 percent allocation prescribed by the Maputo Declaration. It is, however, important to note the projected increase from 3.2 percent in 2016/17 to 5.4 percent in 2019/2020, which may indicate the government's renewed commitment towards transforming the agriculture sector.

The cause of the declines in allocation to agriculture is not clear, but discussions with officials from the line ministries (Ministry of Agriculture, Animal Industry, and Fisheries and Ministry of Finance, Planning, and Economic Development) reveal a lack of coordination in setting priorities and implementing. For instance, an official from MFPED believes that MAAIF has a low budget absorption capacity for funds: MFPED does not find it necessary to increase the annual budgets for MAAIF since MAAIF returns money to the treasury at the end of the financial year. However, officials from MAAIF attribute the low absorption rates to the late disbursement of funds by MFPED, which makes it difficult to fully utilize the allocated budgets

on planned activities. Thus, the two line ministries need to harmonize their work plans with clear priorities, activities, and targets to ensure timely and effective implementation of agriculture programs in the country.

Figure 7: Trends in budget shares allocated to agriculture in Uganda

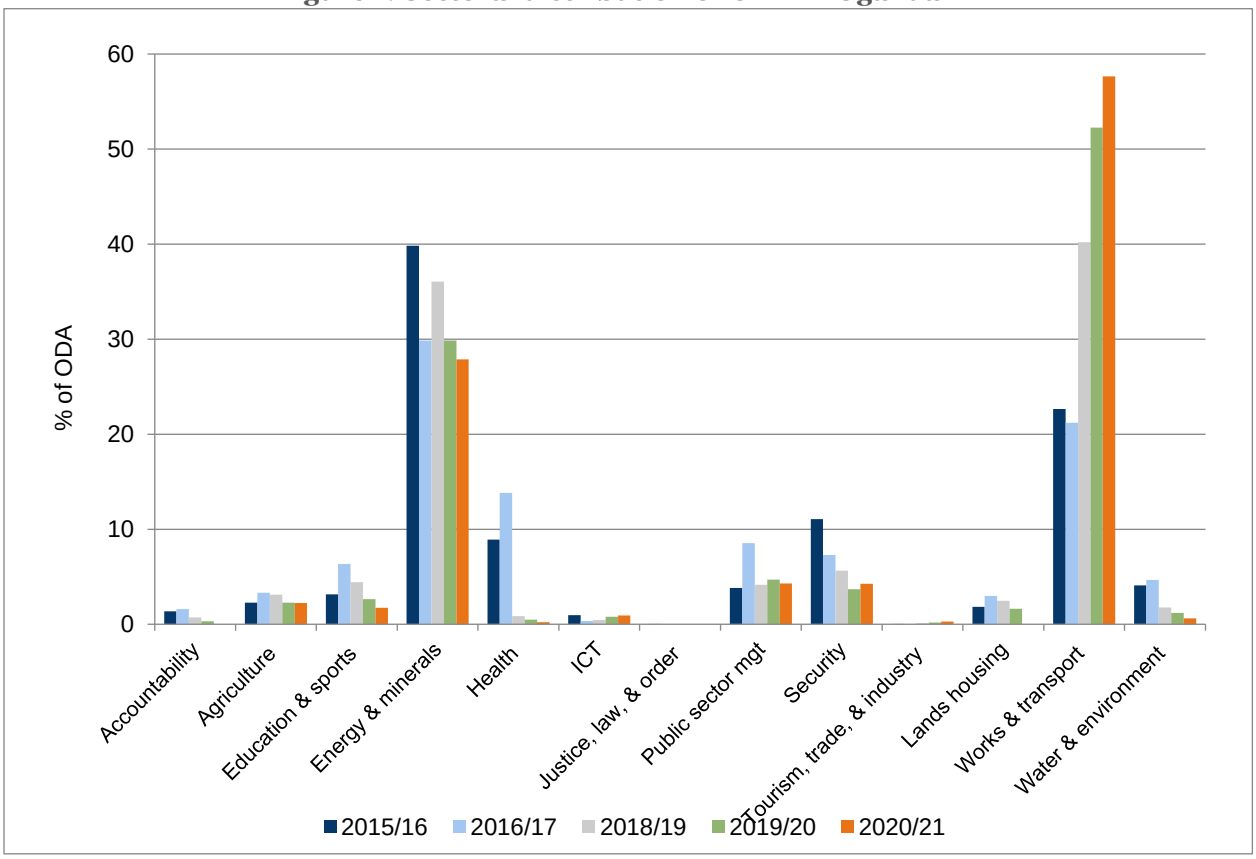


Source: MFPED (2016) and NDPII.

Similar trends in resource gaps to Uganda's agriculture sector are found for ODA, domestic direct investments (DDI), and FDI. Figure 8 and Appendix 2 present the sectoral distribution of ODA allocation (actual and projected) in Uganda between 2015/16 and 2020/21. Although the agricultural share of ODA increased from 2.2 percent in 2015/16 to 3.3 percent in 2016/17, the shares fall below those allocated to other sectors, including energy and minerals, works and transport, water and environment, public sector management, and security. Projections further show that the agriculture sector's share of ODA will fall to 2.2 percent by the end of the NDP in 2020. These results suggest that the agriculture sector may rank low among the priorities of donors.[31]

[31] It is worth noting the impact of the general decline in donor funding to the Ugandan government over the past 5-6 years. Major bilateral donors including the U.K., the U.S., and the Netherlands have suspended aid to Uganda for two main reasons: alleged misappropriation of aid funds by Ugandan government officials and the signing of the Uganda Anti-Homosexuality Act in the year 2014 (UIA, 2016).

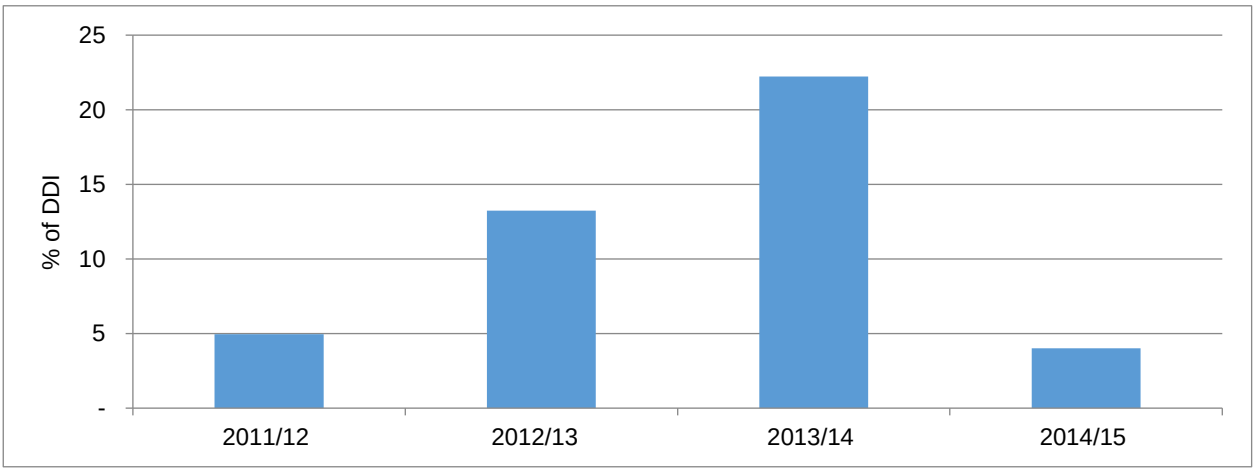
Figure 1: Sectoral distribution of ODA in Uganda



Source: MFPED, 2016.

Regarding private investment, Uganda's agriculture sector appears to be less attractive to both foreign and domestic investors relative to other sectors, such as manufacturing and services. For example, between 2011/12 and 2014/15, the agriculture sector attracted an annual average DDI of $56 million (about 8.3 percent of the annual DDI to all sectors), putting the sector in the fourth position out of the nine sectors (Table 12). The agriculture share of DDI increased from 4.9 percent in 2011/12 to 22.0 percent in 2013/14, but registered a drastic decline to 4.2 percent in 2014/15 (Figure 9).

Figure 9: Agriculture share of the DDI in Uganda, (2011/12 – 2014/15)



Source: UIA (2016).

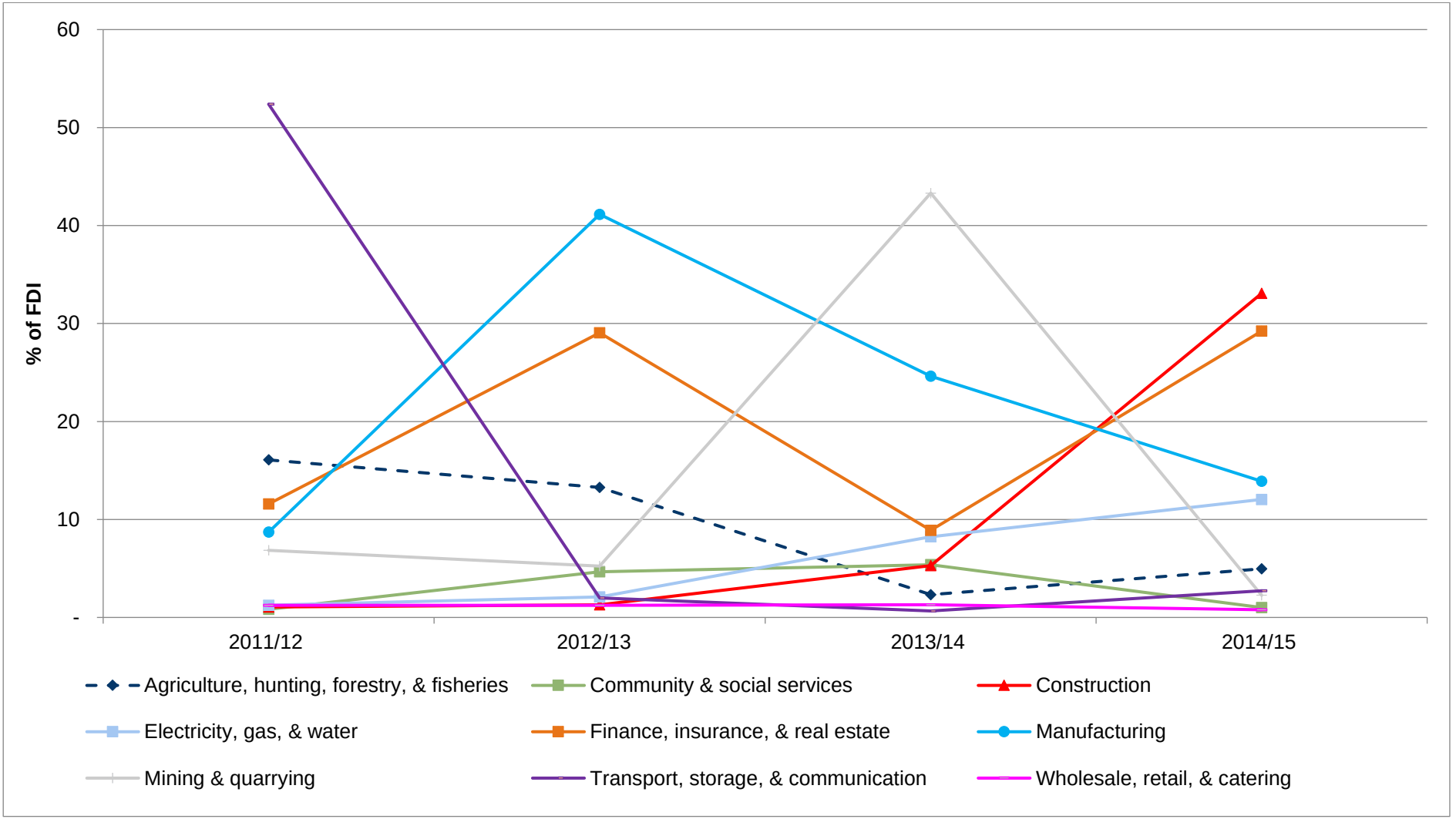
The trends in sectoral distribution of FDI also suggest low attractiveness of agriculture to foreign investors. For instance, annual FDI to the agriculture sector is only about $68 million, which represents about 7 percent of the annual total FDI to the country.[32] Thus, for FDI, agriculture ranks seventh out of the nine sectors. Furthermore, although *total* FDI to Uganda increased over the four financial years (2011/12-2014/15) the percentage planned for investment in agriculture decreased over the period—from 16 percent in 2011/12 to 2.3 percent in 2012/13 before slightly trending upwards to 4 percent (Figure 10).

5.2 Resource mobilization strategy

Financing the projected increases in the budget for poverty eradication and FNS interventions requires a greater mobilization of resources. The current resource mobilization strategy of the government of Uganda emphasizes improved domestic revenue collection, focusing on the three factors that usually lead to increases in tax revenues: expansion of the tax base, reform of taxation structures to include both formal and the informal sectors, and extensive reorganization of the institutions that administer taxes in the country for improved tax collection, efficiency, and compliance. In the NDPII, the government focuses on increasing domestic revenue as a percent of GDP (from 10.9 percent in 2010/11) by 0.5 percent *per year* over the NDP period. The government also aims to increase revenues from exports as well as the energy sector. Export revenues as a percent of GDP already increased from 17.1 percent in 2011/12 to 17.5 percent in 2015/16 and are projected to increase to 25 percent by the end of the second phase of NDP in 2019/20 (Table 13).

[32]These figures represent planned (not actual) FDI. The actual FDI figures by sector were not available from the Uganda Investment Authority, however, the overall realization rates of the planned FDI were 41 percent, 9 percent, and 32 percent in the years 2012/13, 2013/14, and 2014/15, respectively.

Figure 10: Sectoral distribution of planned FDI in Uganda, (2011/12 – 2014/15)



Source: UIA (2016).

Table 12: Sectoral distribution of DDI in Uganda, $ (2011/12 – 2014/15)

Sector	2011/12	2012/13	2013/14	2014/15	Mean for 4 financial years (2011/12- 2014/15)	% distribution
Agriculture, hunting, forestry, & fisheries	72,456,735.0	53,750,369.0	79,673,740.0	18,771,529.0	56,163,093.3	8.3
Community & social services	8,599,753.0	37,906,603.0	1,861,345.0	32,421,833.0	25,197,383.5	3.7
Construction	34,322,799.0	955,558.0	29,008,768.0	55,872,844.0	55,039,992.3	8.2
Electricity, gas,& water	561,267,000.0	3,820,500.0	4,879,765.0	285,935.0	142,563,300.0	21.2
Finance, insurance, and real estate	105,425,520.0	162,513,295.0	18,426,342.0	43,125,144.0	82,372,575.3	12.2
Manufacturing	584,773,144.0	130,917,547.0	159,760,674.0	143,913,794.0	254,841,289.8	37.9
Mining & quarrying	77,943,740.0	8,855,923.0	11,500,000.0	3,460,000.0	25,439,915.8	3.8
Transport, storage,& communication	3,630,000.0	3,338,844.0	31,349,971.0	279,000.0	9,649,453.8	1.4
Wholesale, retail, and catering	11,781,682.0	3,964,980.0	2,172,046.0	68,900,115.0	21,704,705.8	3.2
Total	**1,460,200,373.0**	**406,023,619.0**	**358,632,651.0**	**467,030,194.0**	**672,971,709.3**	**100.0**

Source: UIA (2016).

Table 13: Resource mobilization

							Target projections			
Sector indicator	**2010/11**	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**
Macro economy										
Real GDP growth rate (%)	7.7	6.8	2.7	4.0	4.9	5.8	5.9	6.4	6.6	6.8
Gross domestic saving as % of GDP	14.1	12.4	14.2	17.9	17.4	15.3	19.4	20.5	21.6	22.2
Government finance										
Government revenue as % of GDP	13.2	14.5	13.5	12.8	13.7	15.1	16.0	15.6	15.7	16.1
Tax revenue as % of GDP	10.9	10.3	11.2	11.8	13.2	13.8	14.2	15.0	16.8	
Non-tax revenue	0.7	0.1	0.1	0.2						
Total expenditure as % of GDP	17.2	16.5	16.8	17.1	18.1	20.4	20.0	18.9	19.9	20.3
External sector										
Total exports as % of GDP	17.1	18.9	20.1	20.3	18.4	17.5	20.1	21.5	20.4	25.9

Source: NDPII.

6. Conclusion and policy recommendations

Reducing hunger and malnutrition remains one of the major objectives of the government of Uganda. The government's overarching development strategy, NDPII, identifies FNS as critical to improving the livelihoods, productivity, and human capital of Ugandans. Within the NDPII, sectoral plans outline a series of interventions to promote maternal, child, and infant nutrition, raise agricultural productivity, and improve market access for farmers. In this paper, we use ERH data and national sources to document the FNS priority areas for Uganda and provide policy recommendations for further improving the country's FNS status to achieve the SDG2 targets.

Uganda has made progress toward improving food and nutrition security. However, inequalities in food and nutrition security still exist, especially with respect to type of residence (rural-urban), geography, and gender. For instance, the Northern region registers the lowest daily per capita adult energy consumption, the highest population with energy deficient diets, the highest prevalence of wasting (in women and children) and underweight children, the highest proportion of household income spent on food, and the highest proportion of people below the poverty line (based on data from 2013). Households residing in rural areas are more food insecure—with lower dietary diversity—and depend more on staples relative to their urban counterparts. Rural households also have more limited access to food, as indicated by their higher poverty rates and greater proportion of households that spend more than 65 percent of their income on food. Malnutrition is also more prevalent among women and children residing in rural areas than their counterparts residing in urban ones. Gender differences also exist in food and nutritional needs: Female-headed households are more food insecure relative to male-headed households. Nearly half of Ugandan female-headed households have low dietary diversity and more than half are energy deficient—compared to 36 percent and 46 percent of their male ones, respectively.

Food access overall remains a major challenge in the country. The low productivity of the agriculture sector hampers efforts to achieve FNS in the country. According to the ERH database, Uganda falls behind sub-Saharan Africa and East Africa with respect to certain productivity-related indicators such as agricultural technology adoption, distance to fertilizer, renewable water resources, qualified agricultural researchers, and proportion of arable land devoted to modern varieties. Moreover, a recent study highlights that a considerable gender gap exists in mean yield of around 20-30 percent in favor of male farmers in Uganda (Ali et al., 2015). To stimulate improved agricultural productivity, the government needs to increase access for farmers to productivity-enhancing inputs (such as credit,

fertilizers, and improved seeds). Another approach is also to reduce the gender gap in access to, control over, and ownership of productive resources for agriculture.

Uganda is also vulnerable to shocks (production shocks, weather shocks, consumption shocks, and price shocks), underscoring the need to design and implement interventions that foster resilience in households and communities to mitigate the effects of these shocks on FNS. Potential mitigation mechanisms include promoting income diversification strategies in rural areas, developing strong credit and insurance markets for agriculture, upholding and strengthening the food safety net programs (to mainly target women), promoting savings behavior in rural households, and promoting better on-farm storage facilities to stimulate a saving culture and prevent post-harvest losses.

The government of Uganda's current FNS programming focuses on these priorities by providing farmers and agro-entrepreneurs—particularly youth and women—with productivity-enhancing agricultural inputs, extension services, skills and leadership training, and financing. However, preliminary program assessments suggest that realizing the programs' objectives will require greater, more timely funding, more expertise on the part of implementing stakeholders, and better targeting of youth, women, and vulnerable groups.

In terms of program funding, Uganda faces resource gaps in domestic resources, ODA, and FDI when it comes to financing FNS interventions and agriculture. The current resource mobilization strategy of increasing tax revenue points in the right direction for Uganda. However, there is a need to broaden the resource base. Attracting foreign direct investment into the agriculture sector and in the key sectors such as health and infrastructure contributing to FNS in the country may be effective. In addition, a stronger financial commitment by the government is needed to increase public funding to the agriculture and other essential sectors in order to eradicate malnutrition and food insecurity.

The government of Uganda and partners continue to commit resources to solve the challenges above. The current Agricultural Sector Strategic Plan (ASSP), 2015/16-2019/20 clearly outlines the government's commitment to implement strategic interventions to solve the challenges listed above at the farm level. However, there is need for the proper planning to avoid a mismatch of resource allocations and allow for timely and effective implementation of the activities. In particular, clarification and harmonization of work plans in terms of priorities, activities, and targets between the two line ministries—Ministry of Agriculture, Animal Industry, and Fisheries and Ministry of Finance, Planning, and Economic Development—would facilitate effective implementation of agriculture-related FNS programs in the country.

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Appendix 1: Selected targets of National Development Plan for Uganda 2015-2020

Indicator	Baseline	Targets				
	2012/13	2015/16	2016/17	2017/18	2018/19	2019/20
Macro economy						
Real GDP growth rate (%)	5.2	5.5	5.7	6.0	6.1	6.3
Per capita GDP	743	833	888	931	982	1,033
Export growth (% of GDP)	16.2	9.49	9.91	9.88	9.82	9.95
Poverty and welfare						
Reduction in proportion of persons living on less than a dollar per day	19.7	19.50	17.59	16.20	15.14	14.18
Improve in income distribution (Gini Coefficient)	44.3	44.6	44.8	44.9	45.0	45.2
Reduction in child poverty	55.0	51.4	47.8	44.2	40.6	37.0
Improved global gender gap index	0.7086 (46/136)	0.7130 (40/136)	0.7200 (35/136)	0.7300 (30/136)	0.7400 (22/136)	0.7500 (20/136)
Infrastructure development						
Roads						
Total paved national road network (km)	3,795	4,095	4,536	4,977	5,559	6,000
Proportion of paved to the national road network (%)	16.6	19.5	20.93	22.36	23.79	25
Increase in proportion of paved urban roads to national roads	3.57	3.71	3.86	4.00	4.14	4.29
Increased in paved KCCA roads to total KCCA roads.	38.36	40.02	41.67	43.33	44.99	46.64
Freight cargo by rail	12	17.8	20.2	22.1	24.7	25.5
Energy						
% population with access to electricity	14	16	17	18	25	30
Power consumption per capita (KWh per capita)	80	90	212	341	463	578
Unit cost of power (USD cents)	16	15	13	10	7	5
Telecommunication						
Fiber optic backbone coverage in districts (No.)	17	22	67	87	100	112
Increased ratio of national budget allocated STI (R&D) and ICT	0.15	0.18	0.22	0.27	0.33	0.4
Internet penetration	20.7	21.8	33.7	39	44	50

Indicator	Baseline	Targets				
	2012/13	2015/16	2016/17	2017/18	2018/19	2019/20
Proportion of businesses using the internet (%)	4	5	6	7	9	10
Proportion of households with a TV (%)	11.6	11.9	13	15.4	16.6	18
Increase in % of mobile line subscriptions	6.6	10.1	11.85	13.6	15.35	17.1
Proportion of districts with backbone (%)	45	62	72	77	86	80
Teledensity (lines per 100 population)	51.9	60	70	80	83	85
Water						
Rural safe water coverage (%)	65	72	74	76	77	79
Urban safe water coverage (%)	77	86	90	94	97	100
Storage capacity for water for production (million m^3)	27					39
Social development						
Health						
Decrease in under-5 deaths among under-5 admissions in health facilities (per 1,000)	18	17.6	17.3	16.9	16.5	16.1
Decrease in maternal deaths among deliveries in health facilities (institutional maternal deaths) (per 100,000)	148	135	131	127	123	
Decrease in maternal mortality ratio (per 100,000 live births)	6.2	5.8	5.6	5.2	4.8	4.5
Increase in ratio HC IV to the population	1:191,758	1:191,758	1:188,649	1:185,638	1:179,897	1:177,157
Decrease in number of confirmed OPD malaria cases	15,997,210	9,959,074	7,303,964	6,451,978	6,040,060	5,593,928
Increase in per capita OPD utilization ratio	1.1	1.5	1.8	2.0	2.1	2.3
Increase in DPT 3/ Pentavalent Vaccine (%)	87	95	95	95	97	97
Increase in deliveries in health facilities (%)	41	48	52	56	60	64
Increase in proportion of qualified workers	63	85	88	91	93	95
Increase in eligible persons receiving ARVs (%)	42	57	65	72	80	80
Increase in HCs without medicine stock out (%)	80	85	87	89	91	93
Increase in proportion of the population satisfied with healthcare services	53	71	73	75	77	79
Increase in household latrine coverage (%)	69	72	75	77	78	80

Appendix 2: Sectoral distribution of ODA in Uganda

Sector	2015/16		2016/17		2017/18		2018/19		2019/2020	
	$ millions	% share	$ millions	% share	$ millions	% share	$ millions	% share	$ millions	% share
Accountability	22.5	1.38	28.34	1.59	14.04	0.72	5.8	0.31		0.00
Agriculture	37.16	2.27	59.36	3.32	60.57	3.10	42.86	2.26	36.87	2.24
Education & sports	51.63	3.16	113.58	6.36	86.54	4.43	49.8	2.63	28.34	1.72
Energy & mineral	651.39	39.82	533.3	29.85	704.75	36.07	566.08	29.85	459.09	27.87
Health	145.53	8.90	247.05	13.83	16.6	0.85	9.35	0.49	3.3	0.20
ICT	15.39	0.94	5.99	0.34	9.05	0.46	14.99	0.79	14.99	0.91
Justice, law, & order	0.47	0.03		0.00		0.00		0.00		0.00
Public sector management	62.72	3.83	152.77	8.55	81.37	4.16	89.06	4.70	70.5	4.28
Security	181.01	11.07	130	7.28	110	5.63	70	3.69	70	4.25
Tourism, trade, & industry	0.25	0.02	0.39	0.02	2.33	0.12	3.19	0.17	4.43	0.27
Lands, housing, & urban dev't	30.09	1.84	53.41	2.99	48.59	2.49	31.03	1.64		0.00
Works & transport	370.68	22.66	379	21.21	785.76	40.21	991.13	52.27	949.52	57.65
Water & environment	67.02	4.10	83.34	4.66	34.42	1.76	22.88	1.21	10.13	0.61
Totals	1635.84	100.00	1786.53	100.00	1954.02	100.00	1896.17	100.00	1647.17	100.00

Source: MFPED (2016).

Appendix 3: Sectoral distribution of expected FDI value in Uganda, $ (2011/12 – 2014/15)

Sector	2011/12	2012/13	2013/14	2014/15	Mean for four years (2011/12-2014/15)	% distribution
Agriculture, hunting, forestry, & fisheries	91,804,833.0	95,590,600.0	39,593,846.0	46,676,566.0	68,416,461.3	7.0
Community & social services	4,761,000.0	33,516,460.0	91,471,242.0	9,479,770.0	34,807,118.0	3.5
Construction	6,101,410.0	9,354,500.0	89,769,136.0	310,926,763.0	104,037,952.3	10.6
Electricity, gas & water	7,129,700.0	15,124,000.0	139,971,645.0	113,225,255.0	68,862,650.0	7.0
Finance, insurance, & real estate	66,173,187.0	209,366,776.0	151,281,343.0	274,698,649.0	175,379,988.8	17.8
Manufacturing	49,747,170.0	296,537,979.0	418,682,693.0	130,706,561.0	23,918,600.8	22.8
Mining & quarrying	39,102,682.0	37,853,300.0	736,560,203.0	21,241,664.0	208,689,462.3	21.23
Transport, storage, & communication	299,116,655.0	14,375,000.0	11,264,990.0	25,592,387.0	87,587,258.0	8.9
Wholesale, retail, & catering	7,043,836.0	9,003,900.0	22,043,108.0	7,400,118.0	11,372,740.5	1.2
Totals	**570,980,473.0**	**720,722,515.0**	**1,700,638,206.0**	**939,947,733.0**	**983,072,231.8**	**100.0**

Source: UIA (2016).