Towards Zero Hunger.

A Strategic Review of Sustainable Development Goal 2 in Uganda.

2017

“End hunger, achieve food security and improved nutrition and promote sustainable agriculture by 2030”.

Foreword

The Government of Uganda is committed to the realization of the goals and targets enshrined in the 2030 Agenda for Sustainable Development. Already, Uganda has been able to integrate the goals in its national development planning frameworks, including the Uganda Vision 2040, the Second National Development Plan (NDPII) 2015/16-2019/20, and a number of Sector Development Plans (SDPs). Uganda was also among the first 22 countries that volunteered to undertake a country level self-assessment on the readiness to implement the 2030 Agenda and presented its report at the United Nations High Level Political Forum in July 2016.

As a follow-up, and in line with the requirement for all Governments to take ownership and establish national frameworks for the implementation and achievement of the 17 Goals, the Government of Uganda undertook a Strategic Review of SDG2 "End hunger, achieve food security and improved nutrition; and promote sustainable agriculture by 2030". The choice to start with this goal was driven by the importance that Government places on food and nutrition security as the foundation of building the required human capital to drive the country's transformation machinery and thereby expedite efforts towards 'Zero Hunger in Uganda' by 2030.

The review was aimed at analyzing: the situation of hunger, food and nutrition security in the country in line with the targets; the policy, legal and institutional frameworks to the extent to which they enhance food and nutrition security; the existing programmes and the extent to which they address food and nutrition security; existing financing for food and nutrition programmes to establish efficiency levels; and proposing policy actions and recommendations.

I am therefore, pleased to present to you this report which provides Uganda's status on the above and demonstrates its readiness and commitment to localize the 2030 Agenda.

I also take this opportunity, to thank the National Planning Authority, for providing leadership and stewardship towards the development of the report. All the Government agencies, development partners, academia, civil society and the private sector that participated are highly appreciated. Specifically, I would like to appreciate World Food Programme for their generous financial and technical support for the production of the report.

I call upon you all, to embrace the recommendations and actions in this report and support Uganda towards the realization of Zero Hunger by 2030.

Rt. Hon. Dr. Ruhakana Rugunda
Prime Minister
The Republic of Uganda

"The Government of Uganda is committed to the realization of the goals and targets enshrined in the 2030 Agenda for Sustainable Development".

Acknowledgement

The Government of Uganda acknowledges the contribution of state and non-state stakeholders towards the strategic review and localization of Sustainable Development Goal 2 (Zero Hunger). In a special way, I would like to acknowledge the financial and technical support of the United Nations World Food Programme (WFP) and commend the Economic Policy Research Centre (EPRC) team led by Dr. Sarah Ssewanyana; Dr. Ibrahim Kasirye, Dr. Madina Guloba and Ms. Sheila Anne Depio for undertaking the comprehensive review.

The effort by the National Planning Authority Members and the management team, led by Dr. Joseph Muvawala cannot be under estimated. Special recognition also goes to the Technical Advisory Group (TAG) led by NPA which provided oversight during the entire process, and the personal contribution of the following team members: Dr. John B. Ssekamatte-Ssebuliba, (Chairperson, TAG); Sarah Nahalamba, Ronald Kaggwa, Othieno Odoi, Paul Okitoi, Ollen Wanda, Judith Mutabazi, Aaron Werikhe, and Sarah Balaba; Otto Lucy of Ministry of Gender, Labour and Social Development; Alex Bambona, Hakuza Anuciata and Dr. Charles Mukama of Ministry of Agriculture, Animal Industry and Fisheries; Charles Asiimwe, Maureen Bakunzi and Musimenta Boaz of Office of the Prime Minister; Sarah Ngalombi of Ministry of Health; Okot Okello Richard of Ministry of Trade, Industry and Cooperatives, Prof. Achileo Kaaya of Makerere University School of Food Science and Technology; Dr. Peter Rukundo of Kyambogo University; Sarah Nakibuuka and Esther Namukasa of Private Sector Foundation Uganda; Sunday Emmanuel of Uganda National Farmers Federation; Dr. Robert Mwadime of SPRING/Uganda; Dr. Hanifa Bachou of FHi360; Alfred Boyo of USAID; Beatrice Okello of the Food and Agriculture Organisation of the United Nations; Viorica Berdaga, Abiud Omwega, Nelly Birungi, Brenda K. Muwaga of the United Nations Children's Fund; Cheryl Harrison, Pedro Matos, Richard Sewava, Siti Halati, Tigest Sendaba, Amos Mwesigye, Cecilie Gundersen, Johannes Braun and Dr. Matteo Caravani of United Nations World Food Programme.

We are also indebted to the technical contributions from the following stakeholders: Civil Society Organisations, Private Sector, and Parliamentary Forums on; Nutrition, Children, Sustainable Development Goals, Food Security, and Population and Development.

The review also benefited from the strategic guidance by Mr. El Khidir Daloum, the WFP Country Director and the regional WFP technical team, which is greatly appreciated. Finally, I extend my sincere appreciation to Uganda Bureau of Statistics (UBoS) for generously sharing valuable datasets that informed the SDG2 review. Lastly, recognition also goes to other research materials and data sourced from local and international organisations.

I hope this report will be of much assistance to all stakeholders at national, regional and international levels as a reference in supporting the Government of Uganda in localizing the SDG2 and other Goals.

Kisamba Mugerwa
Chairperson, National Planning Authority
The Republic of Uganda

Executive Summary

The Government of Uganda (GoU) is committed to the realization of the Goals and targets enshrined in the 2030 Agenda for sustainable development. To this end, the GoU has already integrated Sustainable Development Goals (SDGs) in the National Development frameworks, including the Uganda Vision 2040, the Second National Development Plan (NDP II), and the Sector Development Plans. In addition, the United Nations Development Assistance Framework (UNDAF), which was developed in partnership with the Government, embraces the SDGs and is aligned with the national development agenda. To facilitate further localization of the SDGs, Uganda has undertaken a Strategic Review of Sustainable Development Goal 2 (SDG2). The aim of the SDG2 is to "end hunger, achieve food security and improved nutrition and promote sustainable agriculture by 2030".

The Strategic Review of SDG2 examines Uganda's preparedness in achieving the goal and its five (5) targets. The Review presents an in-depth analysis of the Food and Nutrition Security (FNS) situation in Uganda and examines the extent to which existing policies, legal and institutional frameworks and programmes have addressed the food and nutrition issues in the country. The Review further identifies gaps and makes recommendations of strategic interventions the country needs to implement in order to facilitate the achievement of SDG2 and its targets in an inclusive manner. While the Review focuses on SDG2, it takes cognizance of the inter-linkages between the overall 17 goals for sustainable development.

The Strategic Review is mainly based on data collected by the Uganda Bureau of Statistics (UBoS), and more specifically from the five waves of the Uganda National Panel Household Survey (UNPS) which were conducted during the period between 2009/10 and 2015/16. Other datasets used include the Uganda Demographic and Health Surveys (UDHS) and the Agricultural Technology and Agribusiness Advisory Services (ATAAS) dataset. The survey data was complemented with administrative data from Government Ministries, Departments and Agencies (MDAs), and data from the United Nations (UN) agencies as well as from the International Food Policy Research Institute (IFPRI).

The Review involved an assessment of the progress made in improving FNS indicators and existing policy and legal frameworks in relation to FNS in Uganda. The Review also benefited from consultations and feedback from key stakeholders, including: MDAs, UN agencies academia, private sector, Civil Society Organisations (CSOs), Parliamentary Forums on Nutrition, Children, Sustainable Development Goals, Food Security, Population and Development. The stakeholders were identified based on their engagement in implementing the FNS agenda in Uganda.

The following are the key findings of the Review:

➔ *The depth of hunger in the country remains high.*

On average, four out of every ten Ugandans are unable to meet the required dietary intake. There is a high reliance on staples for caloric intakes and yet their productivity is low, which is likely to affect future food security prospects.

The Review also shows that the diets of most Ugandans remain inadequate both in terms of quantity (adequacy and availability) and quality (diversity and safety). On average, in the last seven years, Ugandans have been consuming 1,860 kcal per day, as opposed to the minimum required intake of 2,200 kcal per person per day. Although there has been an improvement in the quality of diets as reflected by a dietary diversity score (number of food groups consumed over time) that grew from 7.6 in 2009/10 to 8.2 in 2015/16, the improvement remains below the average recommended score of 9.2.

While the SDGs are hinged on the premise that no one is left behind, the findings reveal uneven progress in improving the food security situation across the country. The trends in caloric intake, based on Uganda's geographical regions, shows that eastern Uganda is regressing, registering an increase in the prevalence of

food insecurity from 33 to 46 percent during the 2009/10 and 2015/16 reporting periods. Despite the low caloric intake observed in the eastern and northern regions, households in these regions consume a wider variety of food groups relative to their counterparts in the western region. The expansion of cash crop production in eastern Uganda (especially sugar cane and rice), is achieved at the cost of food production. This factor coupled with increasing land fragmentation appears to have compromised FNS in eastern Uganda.

➔ *The level of under-nutrition in the country has reduced.*

Stunting has reduced from 33 percent in 2009/10 to 27 percent in 2015/16. Given the trend, the country is likely to achieve the NDP II target of reducing stunting rates to 25 percent by 2019/2020. However, major efforts are required if Uganda is to meet the 2014 African Union Malabo Declaration target of reducing stunting rates to 10 percent by 2025. Wasting levels have remained generally stable at four percent, however, they are higher in the northern and western regions (above six percent). Underweight has substantially improved from 14.9 percent in 2009/10, to 7.4 percent in 2015/16.

Despite the improvements, a large population of children remains nutritionally insecure, with 16 percent of households being chronically undernourished and only four percent being food secure throughout the 2009/10-2015/16 period.

➔ *Overweight among women is increasing.*

Overweight among women has consistently increased over the past 20 years, raising from 8 percent in 1995 to 19 percent in 2011. This is mostly an urban problem. On the other hand, obesity rates among women have declined during the past 15 years, reducing from 10.6 percent in 2001 to 4.1 percent in 2011.

➔ *Low access to school meals.*

The largest proportion of Ugandan children go to school hungry, with only one out of every three (34 percent) children receiving meals at school. Urban children are more likely to receive school meals than their rural counterparts (41 versus 32 percent), with most of the current school meals provided by way of parental contribution. This has implications on cognitive development and school performance and achievement.

➔ *Low agricultural productivity.*

There are significant crop yield gaps between on-farm yields and those attainable at research stations. The low crop yield has negative implications for the food security of Ugandans, especially those who mostly depend on their own food production for subsistence. The low agricultural productivity is mainly due to low access to extension services and adoption of agricultural-enhancing technologies (such as fertilisers, improved seeds, and irrigation), and uncertainties around the land tenure system. Specifically, only one out of every five land parcel holdings had a formal title in 2015/16, with only a small share of females with parcel holdings having the holdings registered in their names. In addition, the limited documented rights to land affect investments on land parcels—especially investments in long term high value crops such as coffee.

With respect to agricultural incomes, the mean annual agricultural income in 2015/16 was UGX 1,13 million and this is significantly far off from the government's target of ensuring that agricultural households earn an average of UGX 20 million per annum.[01]

➔ *Constrained land rights.*

In terms of securing land rights and boosting agricultural productivity, the Review notes mixed progress on land reform in Uganda. There are important provisions in the current legal frameworks, which have also been operationalized, such as spouse consent to sell land or use land as collateral in the bank to access formal credit . However, despite some of these positive developments, the current land tenure system, growing land inequalities, fragmented land markets, and low formal land titling, continue to negatively impact households' decisions to invest in Sustainable Land Management (SLM) practices to boost their agricultural production and productivity, and support FNS. Less than 30 percent of cultivated land is under SLM approaches and this partly explains the low crop yields.

01 MoFPED (2007). Background to the Budget 2007/8: *Re-orienting government expenditure towards prosperity for all*, Kampala.

Under SLM, a larger share of land is used for cash crops compared to food crops, and this also negatively affects food crop yields.

This situation is also exacerbated by weak support in farmer production decisions from extension workers and district leadership . An example that illustrates the issue of the expansion of cash crop production are sugar cane and rice, which are achieved at the cost of families' own food productions. This situation, coupled with increasing land fragmentation, appears to have compromised food security in eastern Uganda.

➔ *Limited use of sustainable land management practices.*

Less than 30 percent of cultivated land is under Sustainable Land Management (SLM) approaches and this partly explains the low crop yields. A larger share of land used for cash crops is under SLM compared to food crops, and this negatively affects food crop yields. With respect to irrigation, less than 0.5 percent of cultivated land is irrigated and most of this land is for rice and sugarcane cultivations.

➔ *Increasing occurrence of weather related shocks aggravate food insecurity.*

Weather related factors, such as climate variability (e.g. drought), are cited as the major causes of inadequate food availability, which in turn results in higher food prices, which especially affect those individuals who depend on the market. As a consequence, a large portion of Ugandans are vulnerable to food insecurity. Although Ugandan households adopt a variety of strategies to cope with the consequences of climate changes, the overall resilience to shocks and climate variability is generally weak. In addition, the mitigation measures that have been adopted to address food shortages are *ad-hoc* and oftentimes unsustainable. For instance, the reduction in meals consumed in a day compromises future food security status, while distressed livestock sales severely affect household asset holdings, reducing resilience to future shocks.

➔ *Public funding for FNS is inadequate.*

Overall spending on FNS in Uganda is inadequate under the current financing framework, due to the fact that government funding for FNS activities is not distinguished from other activities, it is also difficult to identify specific FNS funding within sectoral budgets. This affects the ability to explicitly track resources available for FNS activities. The same applies to the FNS related projects funded by development partners. Where it is possible to track FNS funding, the funding appears inadequate, and this is particularly true for the budget vote functions related to research and development, genetic resources, and agricultural extension. This low budget allocation has partly affected the implementation of proposed programmes under UNAP. For instance, expenditures on research and development, which are critical for generation of drought resistant varieties to ensure climate resilience, are generally very low. On the other hand, although the government allocates a significant share of the agricultural budget to advisory services, wages account for a substantial proportion of this particular vote function. Furthermore, as a result of inadequate public funding, there are numerous small scale and uncoordinated interventions being implemented by non-state actors. This limits the possibilities of mainstreaming these interventions into government programmes for sustainability, and limits opportunities of scaling up good practices.

➔ *"Death" of critical institutions.*

A number of institutions that are critical for insuring food security at the household level and overall public health level, are no longer existent. These include the Mutongole chief, farmer field schools, and school gardens. For instance, the lack of farmer field schools and school gardens has not only contributed to low skills development in agriculture starting from an early age, but it has also contributed to children being hungry while at school. Development partners have come in to fill this void through provision of schools meals in specific districts, however, this is not a sustainable response. Evidence has shown that there are some children who do not receive any meals while at school. The school feeding responsibility cannot currently be taken over by the government due to the growing school age population, and the current policy

stance towards school meals is that parents are supposed to ensure that children have sufficient food at school. However, there are no regulations compelling parents to meet this obligation.

➔ *Food storages at all levels remain inadequate.*

This is also true for strategic food reserves at a national level. The 1995 Constitution calls for the establishment of national food reserves, however, at present, Uganda has no emergency food reserves. The few available food reserves (e.g., those operated by The Uganda Grain Council (TGCU) and those established with support from WFP in specific districts) are small and they are mostly grain silos owned by private entities. Unlike its neighbours, such as Kenya and Tanzania, Uganda has very limited policy options to address sudden food shortages. The adopted policy stance of liberalizing economic activities also frustrates the establishment of food reserves, as well as the adoption of other measures to address severe food shortages, such as the restricted export of foods during crises. In fact, differently from Kenya and Tanzania, Uganda is unable to cushion its citizens from excessive food price volatility. Therefore, Uganda's current trade policies do not envisage or account for the likely impacts of experiencing a food crisis, as was witnessed in 2016.

➔ *Erosion of Genetic Diversity.*

The largest proportion of Uganda's plant species are not being cultivated and thus face extinction. Thirty seven percent (37 percent) of plant species are currently being cultivated, while 19 percent are not being cultivated, but are being protected by communities. On the other hand, 43 percent of plant species are being harvested from the wild. There is limited direct support or promotion of the neglected plant species and this is likely to increase the threat of extinction. The need to formalise the preservation of indigenous species at the animal and plant Gene bank centres calls for the draft National Policy on Plant and Genetic Resources for Food and Agriculture to be fast tracked to pass into law.

➔ *Gender, age and vulnerability dynamics of FNS remain largely unexplored.*

The data available indicates that there are differences in the achievement of FNS between women, men, girls and boys. However, there are significant gaps in the data in disaggregation of sex, age and vulnerability factors, which makes it difficult to build a comprehensive understanding of what is causing the differences in outcomes and experiences, and limits the potential intervention to streamline positive outcomes and address inequalities.

There is an urgent need to renew the political commitment to FNS through the translation of various plans and policies into concrete actions, supported with the required budgets. The government must earmark funding for different proposed FNS interventions. Furthermore, it is important to mainstream development partner support for FNS within the public budget, and to strengthen the multi-sectoral approach in the delivery of interventions by engaging the private sector and NGOs.

There are some data gaps that limit the extent to which some SDG2 indicators can be effectively tracked and monitored. A number of the SDG2 indicators are presently not recorded and tracked by the UBoS, particularly for targets 2.4 and 2.5. Beyond lack of coverage, there is also limited gender disaggregation in the available data, which significantly limits the ability to analyse differences in how women, men, boys and girls experience and are impacted by food and nutrition insecurity. It is commonly evidenced in academia and literature (largely through qualitative data) that there is a gender difference in food and nutrition security, with gender inequality shown as a contributing root cause of household food and nutrition insecurity. The available data analysed in this research supports this fact, but the lack of more in depth disaggregation of the data makes it difficult to comprehensively understand and respond to these differences. Furthermore, there is also a need to improve the quality and regularity of administrative data from MDAs, as well as the harmonization of relevant data across stakeholders in terms of scope, data collection methods, definition and measurement. In partnership with development partners, the government must support the expansion of the coverage of the data needed to track the SGD2 targets or indicators. There is a need to expand the scope

of the regular household surveys by UBoS to capture more of the indicators for the SDG2 targets. In order to ensure that the necessary data is available to track the SDG2 targets, partners can support the design of appropriate instruments and finance the expanded scope of surveys.

➔ *Existing regulatory frameworks are adequate to address FNS.*

Even though they do not articulate the particular roles of the private sector and CSOs, the existing legal, regulatory and policy frameworks in Uganda are adequate for tackling the gaps in FNS. Furthermore, there are also policies that are yet to be put in place, as articulated in UNAP, such as the school meals policy. In addition, despite the Uganda Nutrition Action Plan's multi-sectoral approach to FNS, effective coordination remains a challenge, especially at lower levels of implementation. This challenge is exacerbated by *ad-hoc* and delayed response mechanisms. Some sectors also need to better achieve their roles and responsibilities as articulated in FNS. For instance, in order for stronger enforcement of standards to be achieved, the weak regulations for food standards and nutrition supplements need to be addressed by the trade sector. There are also imbalances in locations of focus for program implementation, such as with Karamoja, which is a highly represented region, while other areas identified as at risk or underperforming, such as the eastern region, continue to be highly overlooked.

Finally, Uganda has a number of pending legislations which affect the progress towards ensuring zero hunger for all. For instance, the proposed 2009 food and nutrition bill reaffirms Ugandans' right to food and the role of public authorities in protecting and fulfilling this right to food. In addition, the bill proposes to establish the Uganda Food and Nutrition Council and Food and Nutrition Committees in each district and sub-county. There is an urgent need to pass this particular bill. Other pending legislations that should be fast tracked include the 2012 National Biotechnology and Biosafety bill — to ensure the availability of drought and pest resistant plant species —, as well as the National Policy on Plant Genetic Resources for Food and Agriculture (PGRFA). Furthermore, there is also need to enforce the various food and nutrition provisions in the current legal framework. For example, the 1995 constitution calls for the establishment of national food reserves, however, at present, Uganda has no emergency food reserves.

Acronyms/Abbreviations

aBi Trust	Agricultural Business Initiative Trust
ALRP	Agricultural Livelihoods Recovery Program
ANC	Antenatal Care
ASSP	Agricultural Sector Strategic Plan
ATAAS	Agricultural Technology and Agribusiness Advisory Services
BMI	Body Mass Index
BoU	Bank of Uganda
CAO	Chief Administrative Officer
CDOs	Community Development Officers
CHD	Child Health Days
CSOs	Civil Society Organisations
DDS	Dietary Diversity Score
DSIP	Development Strategic and Investment Plan
ECD	Early Childhood Development
EFA	Education for All
EU	European Union
FAL	Functional Adult Literacy
FAO	Food and Agriculture Organisation of the United Nations
FNIS	Food and Nutrition Insecurity
FNS	Food and Nutrition Security
GDP	Gross Domestic Product
GMOs	Genetically Modified Organisms
HAZ	Height for Age Z scores
HMIS	Health Management Information System
HSSP	Health Sector Strategic Plan
KALIP	Karamoja Livelihoods Programme
KIIs	Key Informant Interviews
LDCs	Least Developed Countries
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MDAs	Ministries, Departments and Agencies
MDG	Millennium Development Goal
MDIs	Micro deposit-taking institutions
MoES	Ministry of Education and Sports,
MoFPED	Ministry of Finance, Planning and Economic Development
MoGLSD	Ministry of Gender, Labour and Social Development
MoH	Ministry of Health
MoLG	Ministry of Local Government
MoWE	Ministry of Water and Environment
MP	Member of Parliament
MTEF	Medium Term Expenditure Framework
NAADS	National Agricultural Advisory Services
NAGRC&DB	National Animal Genetic Resources Centre and Data Bank
NAP	National Agriculture Policy
NARO	National Agricultural Research Organisation
NAMAS	Nationally Appropriate Mitigation Actions

NECOC	National Emergency Co-ordination and Operations Centre
NCDS	Non-Communicable Diseases
NDP	National Development Plan
NDP I	First National Development Plan
NDP II	Second National Development Plan
NECDP	Nutrition and Early Child Development project
NEMA	National Environment Management Authority
NIECD	National Integrated Early Childhood Development
NSDS	National Service Delivery Survey
NPA	National Planning Authority
NUSAF	Northern Uganda Social Action Fund
OPM	Office of the Prime Minister
OWC	Operation Wealth Creation
PEAP	Poverty Eradication Action Plan
PGRFA	Plant Genetic Resources for Food and Agriculture
PLWDs	People Living With Disabilities
PMA	Plan for Modernisation of Agriculture
PRDP	Peace Recovery and Development Plan for Northern Uganda
SAGE	Social Assistance Grants for Empowerment
SCPs	Satellite Collection Points
SDG2	Sustainable Development Goal 2
SDGs	Sustainable Development Goals
SMP	School Meals Programme
SPCR	Strategic Programme for Climate Resilience
SUN	Scaling Up Nutrition
UBoS	Uganda Bureau of Statistics
UDHS	Uganda Demographic and Health Survey
UFNP	Uganda Food and Nutrition Policy
UNAP	Uganda Nutrition Action Plan
UNBS	Uganda National Bureau of Standards
UNCST	Uganda National Council for Science and Technology
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFP	Uganda National Food and Nutrition Policy
UNHS	Uganda National Household Survey
UNICEF	United Nations Children’s Fund
UNMA	Uganda National Meteorological Authority
UNMHCP	Uganda National Minimum Health Care Package
UNPS	Uganda National Panel Surveys
USAID	United States Agency for International Development
U-SIF-SLM	Uganda Strategic Investment Framework for Sustainable Land Management
UGX	Uganda Shillings
USD	United States of America Dollars
WAZ	Weight for Age Z scores
WFP	World Food Programme
WHO	World Health Organisation
WHZ	Weight for Height Z scores
WTO	World Trade Organisation

Definition of Terms

Food Security: This situation exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.

Child Stunting: This is determined by low height for age, reflecting a past episode or episodes of sustained undernutrition. It is analysed as the proportion of children under the age of five years who are stunted (that is, have low height for their age, reflecting chronic undernutrition).

Undernourishment: This state, lasting for at least one year, is typified by the inability to acquire sufficient food and is defined as a level of food intake which is insufficient for meeting dietary energy requirements. For the purposes of this report, hunger has been defined as being synonymous with chronic undernourishment. The report presents the proportion of undernourished people as a percentage of the population (reflecting the share of the population with insufficient caloric intake).

Undernutrition: This is the outcome of undernourishment and/or poor absorption and/or poor biological use of nutrients consumed, as a result of repeated infectious disease. It includes being underweight for one's age, too short for one's age (stunted), dangerously thin for one's height (wasted), and deficient in vitamins and minerals (micronutrient malnutrition).

Underweight: This is represented by low weight for age in children and a BMI of less than 18.5 in adults, reflecting a current condition resulting from inadequate food intake, past episodes of undernutrition or poor health conditions.

Child Wasting: This is low weight for height in children, which is generally the result of weight loss associated with a recent period of starvation or disease. In this report, child wasting is provided as the proportion of children under the age of five years who are wasted (that is, have low weight for their height, reflecting acute undernutrition).

Integrated Phase Classification: This categorises the severity and magnitude of food insecurity using two scales: a household scale and an area scale. The household scale provides an estimate of the size of the food-insecure population based on food security outcomes (e.g., household food consumption) and contributing factors (e.g., price levels, crop production). The area scale classification considers the highest severity of food insecurity faced by at least 20 percent of the area's population, the prevalence of acute malnutrition, and the death rate.

Dietary Diversity Score: This score is defined as the number of different food groups consumed during the past seven days prior to the survey.

Food Consumption Score: This score is calculated using the frequency of consumption of different food groups by a household during the past seven days prior to the survey.

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1. Introduction

1.1 Background to SDG2 Review in Uganda

There is a strong commitment at the global, continental, regional and national levels to address issues of food and nutrition security (FNS). At the global level, this is accomplished through the Sustainable Development Goals (SDGs). At the continental level it is accomplished through the Africa Agenda 2063 and the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods in Africa of 2014.[02] At the East African Community (EAC) level, member states aspire to achieve food security and improve the standards of nutrition, as enshrined in the 2005-2030 Agriculture and Rural Development Strategy of the region. In Uganda, issues of FNS are embedded in the overarching long term development strategy - Vision 2040.

Throughout the period between 2010 and 2015, Uganda's global Human Development Index (HDI) has improved. The value of HDI has increased from 0.422 in 2010 to 0.493 in 2015, and this is equivalent to about a 3 percent per annum (UNDP, 2016).[03] On the other hand, in comparison to other sub-Saharan African (SSA) countries, Uganda's FNS ranking at times remains low and lags behind. Based on the Global Hunger Index (GHI), Uganda was ranked 87 out of 118 developing countries in 2016 (IFPRI *et al.*, 2016).[04] Within the EAC, Uganda performs better on the GHI than other countries except for Kenya.[05] Based on the actual scores, Uganda's GHI score of 26.4 in 2016 is approximately 5.1 points higher than the developing world average of 21.3. The country has registered progress in reducing its GHI score, from 41.3 in 1992 to 26.4 in 2016 (ibid).

However, based on the GHI severity scales,[06] Uganda is in a similar position with the other EAC countries, and remains within the "serious range". With the exception of Sierra Leone, Chad, Central African Republic, Zambia and Madagascar, whose GHI scores are in the "alarming range", the majority of SSA countries are in the "serious range".

In the context of nutrition, the 2016 Uganda Demographic Health Survey (UDHS) reported a reduction in stunting levels from 33 percent in 2011 to 29 percent in 2016, while underweight and wasting reduced from 14 percent to 11 percent and from 5 percent to 4 percent respectively (Uganda Bureau of Statistics and ICF, 2017). This improvement comes at the time when the country had been ranked by the Global Nutrition Report 104th out of 132 countries in stunting prevalence; 60th out of 130 countries in wasting prevalence; and 56th out of 126 in under-5-years overweight prevalence (IFPRI, 2016).[07]

While the Millennium Development Goal (MDG) target 1.3 of "halving the proportion of people who suffer from hunger by 2015" was not achieved, the proportion of Ugandans living in poverty has reduced from 56 percent in 1992/93 to 20 percent in 2012/13. The Government of Uganda (GoU) recognises the slow progress in improving food and nutrition levels. Through the UNAP 2011-2016, there is a renewed momentum to ensure that the government scales up targeted nutrition interventions to improve the nutrition of women during reproductive age and of children during the 1,000 days critical window of opportunity from conception to the child's second birthday. Moreover, Uganda is a signatory to the SDGs and has pledged to commit the required resources to achieve these goals.

Uganda is currently implementing its Second National Development Plan (NDP II) (2015/16-2019/20). To some extent, efforts have been made to domesticate the global SDGs into the NDP II.

02 Successor to the Comprehensive Africa Agriculture Development Programme (CAADP).

03 The highest contribution to the change in the HDI was from life expectancy at birth, followed by the education index, while the income index made the lowest contribution.

04 The GHI captures multidimensional hunger based on four indicators: undernourishment; child wasting; child stunting; and child mortality.

05 Kenya has a better GHI rank (72), whereas Rwanda is ranked 91 and Tanzania is ranked 96 and there is no GHI information for Burundi.

06 GHI severity scales are divided in: low (≤9.9), moderate (10-19.9), serious (20-34.9), alarming (35-49.9) or extremely alarming (≥50).

07 Uganda's stunting prevalence rate was 34.2 percent, its wasting prevalence rate was 4.3 percent, and its under-5-years overweight prevalence rate was 5.8 percent in 2011 (UDHS, 2011).

The global SDGs have been identified as priorities for all people, to help build a better world for all, within the next 15 years, from 2016 to 2030. With regards to FNS, SDG2 aims to *'End hunger, achieve food security and improved nutrition and promote sustainable agriculture'.* Box 1 details all the SDG2 targets and sub-targets.

This Strategic Review provides a contextual analysis of Uganda's response to SDG2. It identifies key challenges Uganda may face in achieving the SDG2 targets and proposes actionable areas in which key stakeholders can effectively support progress towards achieving the SDG2 targets. In essence, the Review has been premised on four objectives:

Analysis of the situation of food and nutrition security within the targets of SDG2;

Assessment of the progress made towards improving food and nutrition security in Uganda;

Identification of gaps in the responses towards achieving food and nutrition security in the operating environment and to achieving the SDG2 targets by 2030; and

Exploration of opportunities and prioritization of actions required to accelerate progress towards the SDG2 targets.

1.2 Structure of the Strategic Review

The Review is structured in five sections. Section 1 provides the background and motivation for the Review. Section 2 provides a snapshot of the methodology used in the Review, a description of the SDG2 indicators and the main data sources used to construct these indicators, and identifies data gaps. Section 3 discusses the extent and scale of the food and nutrition insecurity (FNIS) problem in Uganda, and highlights areas of progress and areas in which the situation is either stagnant or worsening. Section 4 discusses the policy response to the existing legal, regulatory and policy frameworks, and the programmes relevant to FNS. More specifically, the section focuses on the extent to which these policies and programmes have addressed the previously identified scale of FNIS. It also discusses legal and policy gaps, mostly in terms of resources (including human and finance) and institutional capacities. Section 5 brings together the discussions in sections 3 and 4, highlighting the existing opportunities and identifying strategic interventions that would enable Uganda to achieve SDG2 targets in an inclusive manner.

Box 1: Sustainable Development Goal 2 Targets

Goal No.	Targets
2.1	By 2030, end hunger and ensure access by all people, particularly the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.
2.2	By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.
2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.
2.4	By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production; that help maintain ecosystems; that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters; and that progressively improve land and soil quality.
2.5	By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilisation of genetic resources and associated traditional knowledge, as internationally agreed.
2.5a	Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, particularly least-developed countries.
2.5b	Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round.
2.5c	Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, to help limit extreme food price volatility.

Source: UNDP, 2015

2. Methodology

2.1 Analysis of National Household Surveys

The Strategic Review analyses several sources of nationally representative data collected by the Uganda Bureau of Statistics (UBoS). These sources include the Uganda National Panel Household Survey (UNPS) data for the years 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16. To a large extent, these surveys capture information relevant to the computation of most of the SDG2 indicators[08] and provide room for understanding the interactions between the different target indicators based on the same data source. The UNPS periods align well with the implementation period of UNAP. The UNPS also has the advantage of providing more frequent indicators of FNS. The surveys are collected on a more regular basis than any other national household survey and provide information that can be compared over time.

In addition to the UNPS, the Uganda Demographic and Health Surveys (UDHS) data for 2006, 2011 and 2016[09] provides information on nutrition indicators for children and mothers at the individual level. The UNPS and UDHS data have been complemented with information from other nationally representative surveys, such as the 2014 Agricultural Technology and Agribusiness Advisory Services (ATAAS) survey and the 2015 National Service Delivery Survey (NSDS).[10]

The indicator estimates are based on nationally representative surveys and this data enabled the Review team to disaggregate the data by different poverty levels, gender and geographical area at sub-national level. In comparison to internationally provided global estimates, the ability to get sub-national indicators offers Uganda an opportunity for targeting purposes. In addition, the Review undertakes a trend analysis to shed light on Uganda's progress over time, and how it relates to government policies.

The survey-based results presented in this Review were weighted to a given population using the sample weights provided by UBoS. Where deemed necessary, the t-statistic was used to test the significance of the indicators either within or across time. A critical analysis of the coefficient of variation values was performed to ensure the statistical rigour of the target indicators disaggregated by selected social groupings.

2.2 Description of Key Indicators

Given the multidimensional nature of FNS, the Strategic Review proposed additional national-level indicators aligned with the global SDG monitoring framework. Such an approach would enable the GoU to address issues around FNS in a holistic manner. These indicators are either at the individual or household level or both, and were analysed by selected socio-economic groupings.[11]

Most of the indicators were calculated from 2009/10 to date, partly to match the availability of survey data points from UNPS and the fact that the surveys contain information on food access, utilisation and availability. The Review is mindful of the fact that some indicators overlap within and/or across a given target, thus, where appropriate, the indicators have been discussed.

2.2.1 SDG2 Target 2.1 indicators

Caloric intake and related indicators.

One of the indicators of food security has been based on the quantity of foods consumed in the past 7 days prior to the survey, as reported in the food consumption module of the UNPS questionnaire. Information on quantities consumed[12] was first converted into kilogramme/litre equivalents, using the conversion factors supplied by UBoS.

08 See section 2.2 for the descriotion of key indicators.
09 At the time of writing this report, UDHS 2016 data was not yet available to the public.
10 The various indicators computed from the above surveys are detailed in section 2.2.

11 See section 2.2.6 for the selected socio-economic groupings such as geography, income, source of livelihood, and gender, among others.
12 Households consumed food from three sources, namely, purchases (including consumption away from home), own production, and gifts/free collection.

These quantities were later converted into their caloric equivalents. Using the list of foods consumed at the household level, the various foods consumed were aggregated into major food items for deriving caloric intake. The daily caloric intake per person was derived from taking into account the household demographic composition in terms of age and sex. The minimum daily caloric requirements based on light physical activity were calculated based on guidelines from the World Health Organisation [WHO] (1985) and taking into account the demographic composition of each individual household. To determine the food security status at the population or household level, the estimated actual daily caloric intake per person was compared with the *derived* required dietary intake (RDI).[13] Using these caloric intake values, the following SDG2 indicators were analysed.

Prevalence of food insecurity.

Percentage of persons who are calorie deficient, i.e., unable to meet the RDI for light physical activity. This indicator refers to a severe condition of lack of food. The Review adopted the FAO (2004) threshold of inability to meet 75 percent of the RDI,[14] which is referred to as caloric deficiency in the main text.

Depth of hunger.

The additional indicator computed was the depth of hunger (or caloric deficit - kcal), which shows the extent to which the caloric intake of the undernourished persons fell below the RDI.

Percentage of caloric intake from food staples.

This is a household-level measure of the share of calories contributed by the main staples, i.e., cereals, roots and tubers, and matooke. This value was computed as the total calories from staples divided by the total calories from all foods consumed by the household, multiplied by 100. To a great extent, this measure provides insights into diet quality. This indicator is linked to nutritious food in the target. The following scale was used for interpretation of the indicator, from low to very high (very poor diet quality): <40 low, 40-60 medium, 60-75 high and >75 very poor dietary quality.[15] Efforts were also made to provide more insights into the share of caloric intake derived from own food production and purchases for selected food staples.

Dynamics of food insecurity as measured by caloric intake.

In this regard, the Strategic Review discusses food insecurity dynamics at the household level, both in the longer time period (2009/10 to 2015/16) and the shorter time period (2013/14 to 2015/16), based on the caloric intake values discussed above.[16] To provide insights into the persistence of undernourishment from one period to another, food-insecure (or caloric-deficient) households were split into chronically food insecure (chronically undernourished) and transiently food insecure. Specifically, a household was classified as living in *chronic food insecurity* if its caloric intake remained below 75 percent of the RDI in all survey years; classified as *transient food insecurity* if its caloric intake was below 75 percent of RDI in either survey period; and classified as *always food secure* if its caloric intake remained above 75 percent of RDI in all survey periods.

Dietary diversity and food consumption scores.

These indicators provide insight into the dietary diversity of foods consumed at both the household and individual levels. This Review computed these indicators at the household level. No information was collected at the individual level to enable the computation of these scores, e.g., for women and children. The Dietary Diversity Score (DDS) considers the number of main food groups consumed by the household. The Review categorised the different food items consumed by Ugandans into 12 major food groups and adopted the thresholds based on the FAO framework (for details see, Swindale and Bilinksy, 2006).[17]

13 See Appendix III for details.

14 The Review derives caloric intake based on the food consumption data collected in UNPS. These foods are converted into their caloric equivalent based on the reported quantities and conversion factors for non-metric household-based units of measurement. Because of possible errors in the computation of the caloric equivalent, the Review focuses on the inability to meet 75 percent of RDI controlled for demographic composition (in terms of sex and age) for a given household.

15 Adopted from Smith L.C. and A. Subandaro (2007), Measuring food security using household expenditure surveys, International Food Policy Research Institute, Washington DC.

16 It should be noted that the household-level caloric intake will be higher than the individual level, as the former does not take into account the household size.

17 The 12 major food groups captured include: starches; cereals and cereal products; pulses; meat and meat

The second diversity indicator is the Food Consumption Score (FCS). The World Food Programme (2008) defines the FCS as "*a score calculated using the frequency of consumption of different food groups consumed by a household during the 7 days before the survey*"; the score takes into account the relative nutritional importance of different food groups.[18]

Food insecurity self-reported experiences.

The UNPS gathered information on whether there was any time during the past 12 months when a household faced a situation of inadequate food to feed the family. In addition, the UNPS 2013/14 and 2015/16 adopted the FAO approach to gather information based on 'the Voices of the Hungry (VoH)'. This information was used to compute the food insecurity experiences scale, a one-dimensional scale using information from a set of questions analysed together. The food insecurity experiences scale was computed at the household level for the adult population (15 or more years of age). This indicator is linked to the concept of *access to food* that informs target 2.1.

2.2.2 SDG2 Target 2.2 indicators

Regarding nutritional status, child nutrition indicators in the form of height-for-age scores (HAZ), weight-for-age scores (WAZ) and weight-for-height scores (WHZ) were constructed based on the anthropometric information collected in the UNPS.[19] It is worth noting that in the UNPS, anthropometric information was collected for children aged between 6 and 59 months as opposed to 0-59 months, which is the case in other similar surveys. The following three standard definitions of child nutrition were used for children: (1) *stunting*—a child's weight-for-height falling below minus 2 standard deviations from the median HAZ of the reference population; (2) *wasting*—a child's height-for-age being less than 2 standard deviations from the reference population; and (3) *underweight*—a child's weight-for-age scores being less than 2 standard deviations from the reference population. Other indicators considered include: overweight/obesity status for children and women; micronutrient deficiencies (in terms of vitamin A and anaemia); and extent of exclusive breastfeeding during the first 6 months.

The other nutritional indicators considered included: overweight, obesity, and micronutrient deficiencies in terms of irons and Vitamin A.

2.2.3 SDG2 Target 2.3 indicators

This target focuses on *small-scale food producers*. In Uganda there is no formal/standard definition of who a small-scale food producer is. Based on the agriculture modules of the UNPS and ATAAS data, this Review applied the following criteria to define a smallholder farmer:

- *A smallholder farmer has access to a total agricultural land size between 1 and 10 acres*[20] **and/or** had a maximum of 10 large animals **or** 10 small animals **or** a minimum of 100 poultry.
- A farmer is a person engaged in agricultural-related activities, for example, someone who grows crops only, mixes crops with animal rearing, or only rears animals. He/she has managed and controlled the parcel holding for agricultural purposes.

These two definitions were combined to define a smallholder farmer.

Land.

Secure and equal access to land. The focus was placed more on parcels where households had ownership rights and less on parcels where households had only user rights. Analysis of the existence of secure and equal access to land was based on land parcels with either certificates, titles or other documented proof of ownership, as well as decision making by women and men in the household.

products, fish; milk and milk products; nuts and seeds; oils, fats, spices; sugar and sweets; vegetables; fruits; beverages and others; and outside food and drink. The threshold used in this report was based on the average dietary diversity of 33 percent of households with the highest diversity.

18 Once the FCS was calculated, three thresholds were determined based on the frequency of the scores, i.e., poor (score of less than 21 indicating failure to consume at least a staple and vegetables on a daily basis); borderline (score of 21-35 based on expected daily consumption of staples and vegetables complemented by frequent consumption of oils and pulses) and acceptable (scores of more than 35).

19 This is the most regular national household survey in Uganda.

20 Section 2 of agriculture module focusing on own rights.

Productivity.

Crop productivity was measured as crop yield per hectare and focused on the main food staples and/or food security priority crops, as identified in the agricultural sector strategic plan (ASSP) 2015/16-2019/20. The computation process involved converting household self-reported quantities produced and cultivated land area by farming season.[21] In order to establish the yield gaps, where possible, these crop yields at the farm level were compared to yields at the research station level. This Review did not include data on livestock and fisheries productivity due to lack of reliable information.[22]

The Review provides insights into livestock ownership.

Ratio of extension workers to number of farmers. This indicator is linked to knowledge dimension of the target. Due to unreliable data, the information on the ratio of extension workers to the number of farmers was complemented with the share of farmers who accessed public extension services during the previous farming calendar.

Smallholder farmer participation in markets. The target alludes to the different types of smallholder farmers, either as subsistence or commercial farmers. Unfortunately, this information is not readily available based on the UNPS crop module.

Non-farm employment. The Review considered the share of women deriving their livelihood from non-agricultural activities. The indicator was sourced from the UNPS labour modules.

2.2.4 SDG2 Target 2.4 indicators

The computation of the indicators under this target was guided by the Uganda Strategic Investment Framework for Sustainable Land Management (U-SIF-SLM). These indicators include:

Proportion of agricultural area under productive and sustainable agriculture.

The Review **defines** land under SLM as agricultural land at the level of a plot, where a farmer used single or a combination of practices, such as application of chemical fertiliser, animal manure, green manure, rhizobia; composite and organic residue management; mulching, terraces/trenches/grass bands and irrigation. This indicator was based on the ATAAS data and computed as a share of land under SLM to total cultivated agricultural land.

Number (or share) of farmers adapting sustainable land management.

Due to data limitations, the Review computed only three indicators among the many practices based on the UNPS data. These included the following: integrated nutrient management (fertilisers); intercropping (focusing on nitrogen fixation crops with at least one other crop); and agroforestry (focusing on coffee-banana systems).

Losses from natural disasters caused by climate- and non-climate-related events.

This indicator was derived based on self-reported shocks to food production. The UNPS captured several shocks and adaptation/coping strategies to mitigate the impact of such shocks on their food production in the last 12 months prior to the survey.[23] In this Review, a shock is defined as a distressful event. The UNPS enquired from households whether they had experienced a situation in which they did not have sufficient food to meet their household needs in the last 12 months, and the reasons that led to the reduction in food production.

21 Farming seasons July-December and January-June.

22 UBoS collect data on livestock and poultry (e.g. numbers, production and products - e.g. milk and eggs). However, the observations were not sufficient to provide a complete story on productivity issues. FAO emphasizes that indicators to measure SDGs should be based on reliable and sufficient data.

23 The surveys defined shocks as any distressful event that could be internal to the household or external to the household. These shocks could be categorised as 1) Agricultural-related shocks, such as natural calamities, crop/animal diseases and pests, high-input or low-output crises; and 2) Household-related shocks, such as the death of a household member, reduction in earnings from off-farm employment, serious illness or accident of a breadwinner, theft of money or property and fire.

Existence of irrigation and water harvest technologies.

These two indicators were derived from more than one data source. The sources included the household surveys complemented with administrative data.

2.2.5 SDG2 Target 2.5 indicators

Data informing the computation of the relevant indicators was scanty, especially data on genetic resources and the risk of extinction of local breeds. Data on plant resources was sourced from National Agricultural Research Organisation (NARO)'s National Gene Bank.

Data on animal genetic resources was acquired from the National Animal Genetic Resources Centre and Data Bank (NAGRC&DB). Additional information for SDG2 target 2.5 b and c relating to official flows, public spending on agriculture, and particularly on research and innovations, was sourced from the government's Medium Term Expenditure Framework (MTEF) documentation.

2.2.6 Description of other variables used in the analysis

The Review provides insights into the extent and nature of FNS based on the above identified SDG2 indicators. Where data is available, the Review further provides insights into sub-national level estimates and estimates for specific population. These include:

Income.

The income variable used in the analysis was based on the consumption expenditure module collected in the UNPS. The construction of this variable followed the standard approach used in the computation of income poverty measures in Uganda.[24] In comparison to self-reported income by households/individuals, the consumption expenditure is a better proxy for permanent income. The income variable was further broken down into income quintiles. To complement the income variable, the Review considered the main source of household income in the past 12 months prior to the survey and economic sector of employment for the household head. Other economic vulnerability indicators that have implications on food security include the percentage of expenditures devoted to food, which was computed as the ratio of expenditures on food to total consumption expenditures multiplied by 100, and the food poverty indicator,[25] which provides insight into the number of persons with income levels too low to meet minimum basic food needs.

Gender.

Uneven power relations between men and women is an important variable that impacts FNS. Unfortunately, some of the relevant variables informing FNS were captured at the household level and not at the individual level. In these cases, the Review provides insights on the gender dimension of FNS by using the sex of the household head, female-headed or male-headed households. Where the data permitted, especially in the agriculture module, individual information was used relating to decision making and control over resources.

Geography/sub-national level.

Due to differences in agro climatic conditions, geographical location matters in FNS. First, the Review considered the administration regions as defined by UBoS, including Central, Eastern, Northern and Western regions. It also considered the rural/urban dichotomy at the national level, but due to data limitations it could not consider this dichotomy within each region. Secondly, several studies (such as Brinkman and Hendrix, 2011) have shown how situations of conflict have a negative impact in terms of access and availability of food among the population. Conflict conditions exacerbate vulnerabilities to food and nutrition insecurity. This Review employed the GoU's Peace Recovery and Development Plan (PRDP) regional classification to explore the extent to which past conflict experiences are correlated with food security status of the population in the region, and the food security of the PRDP region was compared to that of the rest of the country.

24 For details, see Appleton and Ssewanyana (2003).

25 Based on the Cost of Basic Needs approach (Appleton *et al*., 1999), the total poverty line was defined as the sum of the food and non-food poverty lines. The food poverty line for Uganda is the cost of acquiring the most important food items consumed by the reference population and corresponding to the nutritional requirements of 3,000 calories per adult equivalent per day (which is equivalent to 2,283 calories per person per day).

The PRDP region included 55 districts, which were further categorised into three mutually exclusive sub-regions to reflect the intensity of the conflict as articulated in the PRDP II report: *severely affected* by conflict and/or cattle rustling, *sporadically affected,* and regions that experienced *spill-over effects*.[26] However, the analysis by PRDP categorisation was performed where the available data permitted, to reserve the statistical rigour of the analysis.

2.3 Policy Document Reviews

A critical review of past and present policy frameworks addressing food security and childhood nutrition in Uganda was performed to complement the statistical data analysis. This involved examining existing legal, regulatory and policy frameworks that impact FNS.

These include Uganda's long-term development strategies (Vision 2040 and NDP II); policies such as the Uganda Food and Nutrition Policy (UFNP) and their action plans (e.g. UNAP), and programmes at the national, sectoral and regional levels (such as the multi-sectoral food security and nutrition project, feed the future programme). This Review provides a basis for establishing the funding structure, arrangement and funding gaps for FNS in Uganda; as well as the extent to which the current policies are responsive to the nature and magnitude of the FNS issues identified in section 3.

2.4 Administrative Data

Beyond the household-based data, the Review made use of administrative data from the relevant government ministries, departments and agencies (MDAs). However, the administrative data can only provide information at the national and not the sub-national level. The administrative data were supplemented with data from the Food and Agriculture Organisation of the United Nations (FAO), IFPRI and other development partners, e.g. data on agricultural production, population, and food imports, as well as dietary food availability.

2.5 Stakeholder Consultations

This Review benefited from a number of stakeholder consultations. First, the Technical Advisory Group (TAG) convened by the National Planning Authority (NPA) provided extremely valuable inputs. The TAG is composed of representatives from NPA, WFP, UNICEF, FAO, and FHi360; technical officials from line ministries, especially from the Office of the Prime Minister (OPM), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Ministry of Health (MoH), and Ministry of Gender, Labour and Social Development (MGLSD); and academics from Kyambogo and Makerere Universities. In addition, key stakeholders in MDAs in the OPM, NARO and MGLSD were also consulted. Other groups, such as the private sector and CSOs, also provided valuable inputs into the Review. Finally, members of parliament (MPs) from the Parliamentary Forums on Nutrition; on Children; on Sustainable Development Goals and on Food Security and Population Development and the Uganda Women Parliamentary Association also participated. Stakeholders were purposively identified based on their involvement in the implementation of the FNS agenda in Uganda. In addition, more consultative engagements were held at the group level, rather than the individual level. The private sector group meeting, for instance, identified the key critical stakeholder institutions, and the EPRC team together with NPA and WFP held detailed discussions with respect to private sector involvement in attaining FNS, the nature of on-going programmes, and what more needs to be done to fill in the gaps.

26 The **severely affected** sub-region includes the districts of Adjumani, Gulu, Kitgum, Kotido, Moroto, Nakapiripirit, Pader, Abim, Amuru, Kaabong, Oyam, Agago, Amudat, Lamwo, Napak, Nwoya, and Otuke. The **sporadically affected** sub-region includes the districts of Katakwi, Kaberamaido, Amuria, Apac, Arua, Lira, Moyo, Nebbi, Yumbe, Amolator, Dokolo, Koboko, Alebtong, Kole, Zombo, Maracha, Masindi and Kiryandongo. Finally, the **spillover** sub-region includes the districts of Busia, Kapchorwa, Kumi, Mbale, Pallisa, Soroti, Tororo, Sironko, Budaka, Bududa, Bukedea, Bukwo, Butaleja, Manafwa, Bulambuli, Kibuku, Kween, Ngora, Serere, and Buliisa.

3. Situational analysis

The overall aim of this section is to provide highlights of the status and progress registered so far in achieving FNS in Uganda. The section relates to the FNS indicators as per the global SDG monitoring framework and highlights additional indicators to be monitored at the national level, as presented in section 2.

3.1 Country Context

3.1.1 Agriculture, Food and nutritional insecurity

While the contribution of the agricultural sector in terms of GDP has declined over time – from 51 percent in 1992/93 to less than 20 percent in 2010/11 – it is still plays a major role, comprising 23 percent of GDP in 2015 (MoFPED, 2016). The relatively recent trend, between 2010/11 and 2013/14, indicated that the real GDP growth for the agricultural sector 'has registered sluggish growth' (NPA, 2015). In terms of employment, on average, the agricultural sector employs about 77 percent of the rural adult population – particularly so for poorer households, employed at 89 percent (World Bank, 2016) –, and accounts for roughly 50 percent of merchandise exports (UBoS, 2011). Although the agricultural sector is the main sector of employment in the country, half of those engaged in agriculture rely on additional sources of income from non-farm activities to earn a living (World Bank, 2016).

Hunger, malnutrition, and food insecurity are firmly rooted in Uganda's colonial and pre-colonial history. To illustrate the point at hand, Annex 1 highlights two important cases – Bunyoro-Kitara Kingdom and Karamoja sub-region. These case studies suggest that famine, food insecurity and malnutrition in both Bunyoro-Kitara and Karamoja are really political. To the extent that this is true, these problems can hardly be resolved unless we get the governance equation right.

3.1.2 Structural Causes of food and nutrition insecurity

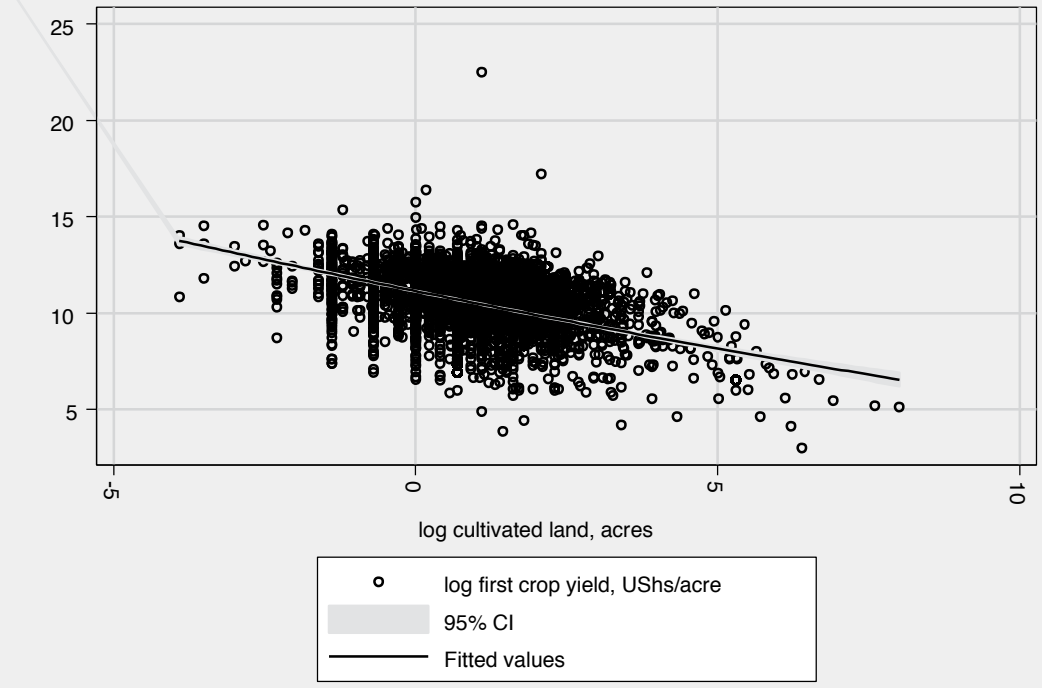
The land question

Land is a critical factor in Uganda's efforts to achieve and sustain FNS. Eighty three percent of Uganda's total surface area is covered by land. Of this land, 45.5 percent was under agricultural production in 2010. Despite the fact that land is a critical factor in supporting FNS, issues of land tenure systems, formal land titling, land fragmentation and land inequality continue to remain unresolved in Uganda. Nearly 45.5 percent of parcel holdings in all of Uganda are under the customary land tenure system, and more than 75 percent of parcels in the eastern and northern regions alone are under the customary system (UNPS 2015/16 data). This results in both the majority of the land still being under the customary land tenure system , and in an uneven land title system across the country . The channels through which land tenure systems affect production include land investments, transactions, and use of land as collateral for credit. Regarding investments, conflicts over land affect crop choices and SLM practises. The extent of land fragmentation is on the rise largely as a result of high population growth rates, and this is especially the case in the densely populated parts of the country. Given Uganda's low crop intensification levels, land fragmentation strongly impacts agricultural productivity (see Box 2).

Box 2: Land fragmentation and agricultural productivity

In Uganda, there is an increasingly fragmented pattern of land use in the country. This has implications for the discussion of population pressure, productivity, and the use of markets to consolidate landholdings for reasons of technical efficiency. There seem to be two dimensions to the land fragmentation problem, with different policy implications. On the one hand, there is a possibility of declining total landholdings per household. On the other hand, there is a possibility that patterns of inheritance mean that households, for a given total landholding, have this land spread across a number of disparate parcels. It is notable that the policy debate surrounding the economic ills of land fragmentation is premised in part on the existence of a form of increasing returns to farm size (whether at household or at parcel level). Several reasons are typically given in support of this view, including the existence of fixed costs in agricultural technology (e.g., tractors or other forms of mechanization), or the need for large parcels in order to obtain access to credit.

However, the policy debate rarely makes note of the inverse relationship between farm size and productivity as demonstrated in the chart below. The figure plots the value of first-crop output per acre by households in the UNHS 2005/06 against the total cultivated land of the household (both variables are given in logs). The UNHS reveals a strong negative relationship between the two. Put concretely, the log-linear relationship shown in the figure implies that moving from the 25th percentile of cultivated land to the 75th percentile of cultivated land is correlated with a decline in first-crop yield of approximately 44,000 UGX/acre. Thus any policy that seeks to facilitate the consolidation of landholdings should give careful consideration to the inverse relationship between farm size and productivity. Appropriate policies should give weight to other forms of market imperfections that may constrain the productive expansion of land.



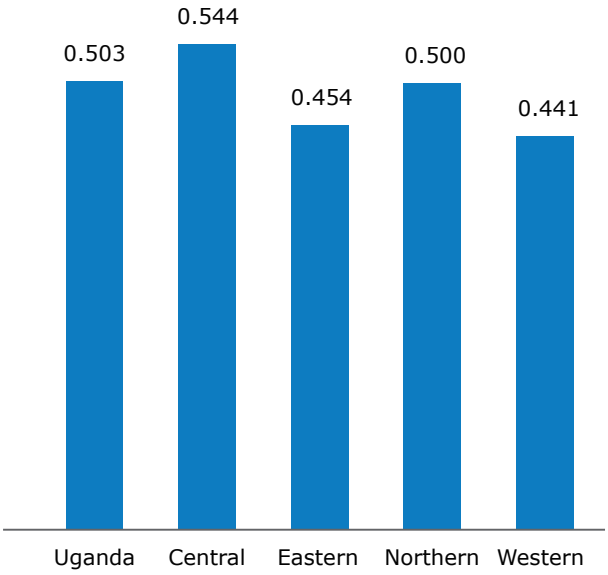
Source: UNHS 2005/06

The negative relationship may be explained by constraints in the labour market. A poorly functioning rural labour market, combined with finite household labour supply, may mean that households endowed with large landholdings are unable to cultivate their farms with the same level of labour intensity. If other input markets (e.g., fertilizer) are characterized similar supply constraints, then these may also need to be addressed as part of a comprehensive approach to raising rural incomes. Without redressing failures in input markets, policies intended to consolidate landholdings threaten to decrease negatively impact agricultural output.

Source: Economic Policy Research Centre (2009)

The distribution of land seems to be skewed. Figure 1 below presents land inequality in 2015/16, as measured by the Gini[27] coefficient. The coefficient for inequality of land is 0.503, which is significantly higher than the income inequality of 0.395 in 2013, which was based on UNHS 2012/13 findings. Regionally, the ranking of land inequality mirrors income inequality, with land inequality highest in the central region and lowest in the western.

Figure 1: Land inequality under ownership rights, 2015/16



Source: UNPS 2015/16 data

Demographic changes

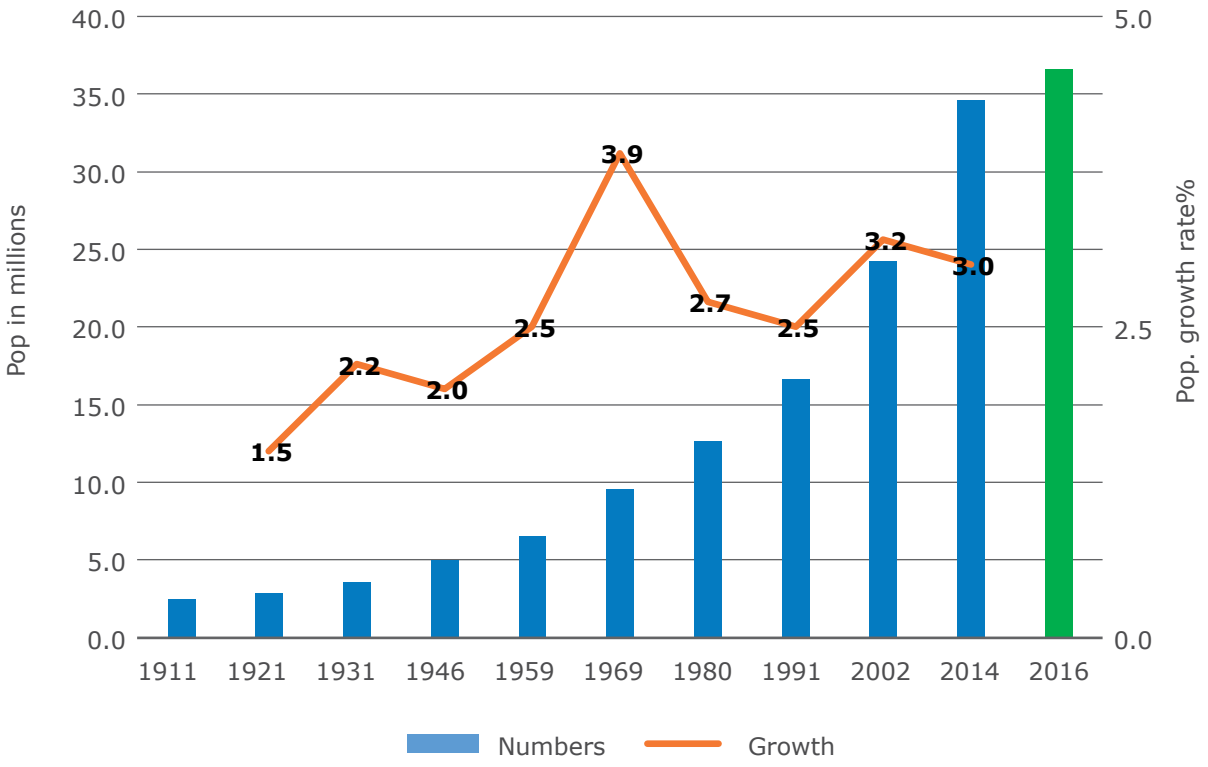
Demographic changes are increasingly exerting pressure on people's ability to meet the minimum dietary requirements for good nutritional outcomes. Uganda's population has doubled in the last three decades (see Figure 2) while the size of the arable land has not changed. The current population growth rate of 3 percent per annum, remains high in relation to the rate of agricultural growth (food production), which has stagnated at approximately 2 percent for over a decade. The high population growth rate is mainly the consequence of the high total fertility rate of 5.4 children per woman in 2014.[28]

Uganda's youthful population presents unique and critical nutritional needs. Indeed, Uganda has more 'mouths to feed than hands to work' to ensure FNS for all. In addition to these dynamics, there is also a higher growth rate of household formation, which is faster than the population growth, and growing population density threatens the management of land resources.

27 The Gini coefficient is a statistical measure of inequality of distribution and it is used for analysing income inequality. The measure ranges between 0 and 1, with 0 representing perfect equality and 1 representing perfect inequality. A higher or an increase in the Gini coefficient suggests that income is becoming more unevenly distributed. The measure ranges between 0 and 1, with 0 representing a perfect equality and 1 representing perfect inequality.

28 Total fertility rates decreased slightly from 6.3 children per woman in 2011 to 5.4 children per woman in 2016(UBoS, 2017).

Figure 2: Uganda population dynamics



Source: Several UBoS Census reports
Notes: Population statistic for 2016, refers to mid-year projection (highlighted in green)

Urbanisation is yet another factor that has implications on FNS. Approximately 21 percent of Ugandans reside in urban areas (7.4 million in 2014) up from 12 percent in 2002 (2.9 million). The most able-bodied individuals are leaving rural areas for urban areas. As a result, youth are leaving the agricultural sector to the elderly and they are also moving to urban areas in which there are limited economic opportunities. On the other hand, as the urban population rapidly expands, land becomes more constraining particularly for smallholder farmers. However, because of its close linkage with per capita income growth, if taken advantage of, urbanisation presents an opportunity for strengthening modern food production and marketing systems in Uganda.

Regional geopolitics affect human vulnerability in the PRDP region, especially with cross-border violence between the Turkana and Pokot in Kenya and the Karamajong in Uganda, and on-going civil war in South Sudan (UNDP, 2015). Geographical vulnerabilities resulting from increases in refugee populations have greater impacts on FNS in the northern region in comparison to other regions (see Box 3).

Box 3: Geographical vulnerabilities

Due to unending conflicts in neighbouring countries, Uganda is host to a large population of refugees. Specifically, by November 2016, 898,000 refugees and asylum seekers from 13 countries were resident in Uganda. More recent figures from the UNCHR show that an additional 192,000 refugees arrived in the first three months of 2017, and as such the total refugee population has surpassed the 1 million mark. Given that refugees receive monthly cash or food aid rations, the presence of such a large population of displaced persons offers opportunities for the local economy, especially in relation to stimulating food production. According to Zhu et al. (2016), estimates of the economic impacts of refugee settlements in Uganda show that an average refugee household receiving cash aid increases the income in the local economy by at least UGX 3.7 million. Furthermore, there is large income spill-over from the refugee presence accruing to local host country households. On the other hand, increasing refugee populations can threaten host communities, e.g. by increasing the prices of local goods. For instance, the recent surge in refugees from South Sudan has increased the refugee population in the Adjumani district to 198,000 (UNHCR, 2016), which is very close to the district population of 210,000. As such, the increasing refugee population and their associated purchasing power is likely to affect food prices faced by host communities. This can increase tensions and cause resentment among host communities.

Sources: UNHCR (2016, 2017) and Zhu et al., 2016

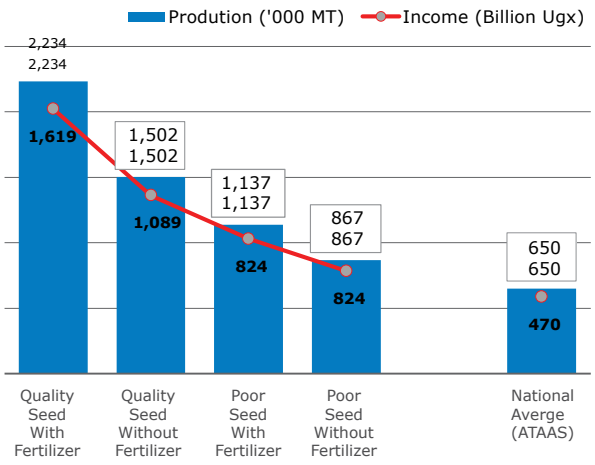
Static agricultural technologies

Although the importance of technology for enhancing agricultural production and productivity is not a new concept, low productivity continues to be a major hindrance to agricultural production in Uganda. Over time, actual performance of food crops shows divergence from research trials in which yields are on average up to 3-4 times higher (Pender *et al*., 2004). Several reasons have been put forth to explain the low and in most cases declining trends in yields, such as erratic rainfall patterns, land degradation, use of traditional planting materials, and high incidences of pest and disease occurrence, which is worsened by poor agronomic practices. These issues are compounded by limited adoption of production enhancing technologies.

Studies on Uganda have shown that up to 87 percent of Ugandan farmers use uncertified seeds, which are mainly kept from a previous harvest, exchanged with neighbours or grown locally by farmer groups (Joughin, 2014). Studies have also found that fertilizer application rates[29] in Uganda are 1kg/hectare in comparison to 31.3kg/hectare in neighbouring Kenya, which is attributed to scarcity and high prices (Todd *et al.,* 2012). Finally, studies have found that prevalence of irrigation stands at less than 1 percent and that annual crop yields follow rainfall patterns (FAO, IFAD and WFP, 2013). The figure below shows how different combinations of productivity enhancing technologies could lead to different yields and incomes for Irish potatoes in south western Uganda.

29 On the market, fake fertilisers registered with MAAIF are more likely to appear than those registered with the umbrella body UNADA.

Figure 3: Value of National potato Productivity and Income with and without intensification



(UGX
Source: Adopted from Mbowa and Mwesigye (2016)

Gender

Gender inequality is broadly recognised as one of the root causes of food and nutrition insecurity. For example, while women in Uganda constitute 82 percent of the agricultural workforce, they continue to be voiceless in the market chain and in economic decision making. Additionally, social norms on girls' education, early motherhood and child marriages have all significant impacts on household and child nutrition outcomes.

Bowen *et al*. (2015) have studied the productivity of female-managed plots relative to male-managed plots within the same household and have estimated a 30 percent gender gap, after accounting for plot size. They attribute *two-fifths* of the productivity gap to women's greater child care responsibilities and one-fifth to their difficulties accessing markets from more remote areas. They also found that male-managed plots are 60 percent larger than female ones, and they found male-managed plots 11 percentage points (25 percent vs 14 percent) more likely to be planted with cash crops such as bananas and coffee.

Use of improved seeds, fertilizers and crop protection chemicals, such as herbicides, pesticides, and fungicides, is strikingly low in Uganda among men and women alike, yet female managers are nonetheless less likely than males to use them, and when they do, they use far less. These factors explain some of the productivity gender gap, particularly women's lower uptake of cash crops such as bananas and coffee, and their lesser access to and use of improved seeds and pesticides.

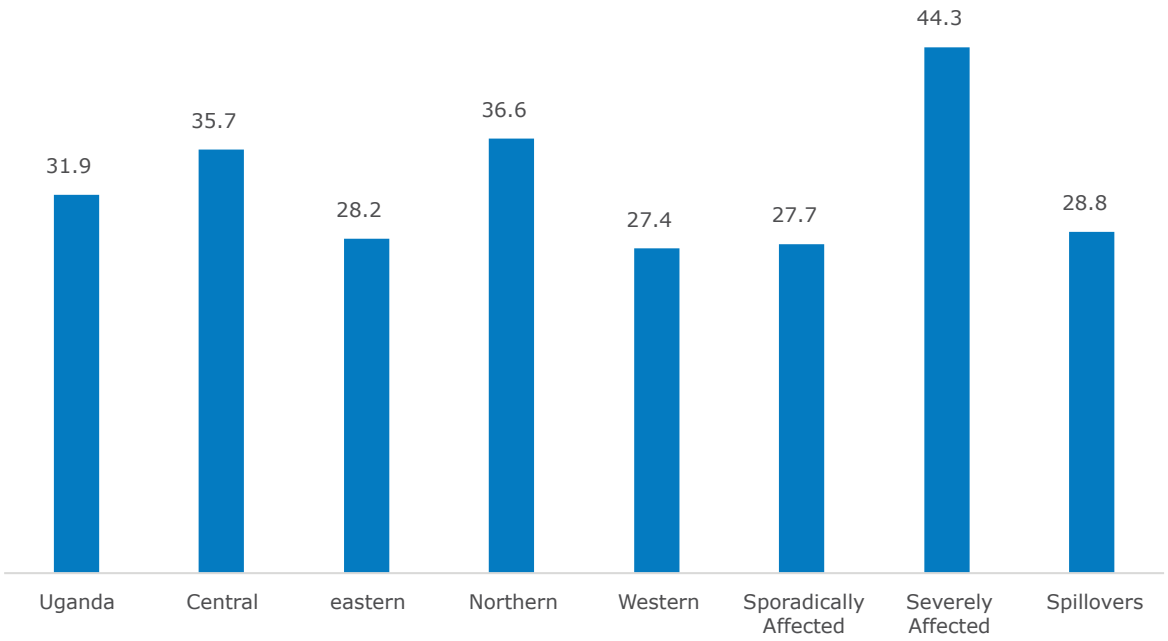
Women face other vulnerabilities based on the composition of the household[30]. Nearly 32 percent of the households in Uganda are headed by females and there are significant variations across different geographic regions (Figure 4). The civil war in northern Uganda (1986-2006) changed the demographics of the region and increased the extent of vulnerability.[31]

For instance, the share of households headed by widows was significantly higher in the PRDP region, at 12.3 percent in comparison to 10.3 percent in the rest of the country. The high share in the PRDP region was largely driven by the *severely affected sub-region* at 16.0 percent. As a result, the absence of a second breadwinner can constrain a household's ability to ensure FNS. Additionally, gender inequalities in entitlement and ownership of land, income security, access to agricultural labour, technology, credit and entry into the profitable market chain all significantly impact FNS for female headed households as well as for male headed households, with women's contributions to the economic security of the house being limited.

30 See UNDP (2015), Human Development Report on "Unlocking the development potential of Northern region".

31 See UNDP (2015), Human Development Report on "Unlocking the development potential of Northern region".

Figure 4: Share of female headed households by geography in 2015/16 in percentage



Source: UNPS 2015/16

Livelihood strategies

The main source of income in rural households is subsistence production (60.5 percent) whereas for urban households it is non-agricultural enterprises (38 percent) followed by wage employment (33 percent). With regard to dynamics, between 2013/14-2015/16, at least 69 percent of rural households maintained the same main source of income—predominantly subsistence production. Seven in ten urban households maintained the same source of income, and only 34 percent remained in wage employment.[32]

According to the Uganda National Household Survey (UNHS) data, the proportion of Ugandans living below the income poverty line has decreased from 56 percent in 1992/93 to 19.7 percent in 2012/13. Poverty in Uganda is still predominantly a rural phenomenon, with more than 88 percent of poor individuals living in rural areas.[33]

Income poverty reduction is strongly related to the performance of the agricultural sector. It is worth mentioning that there is uneven progress in income poverty reduction across geographical regions, with the northern region showing worse performances (especially among individuals resident in female headed households, in northern Uganda).[34] Despite significant reductions in income poverty, income inequality remains high with a Gini coefficient of 0.395 in 2012/13. Furthermore, although the level of income inequality in northern Uganda is lower than national average, disparities in incomes have worsened with the region's Gini coefficient increasing from 0.33 in 2005/6 to 0.36 in 2009/10 and 0.37 in 2012/13 (Ssewanyana and Kasirye, 2013).

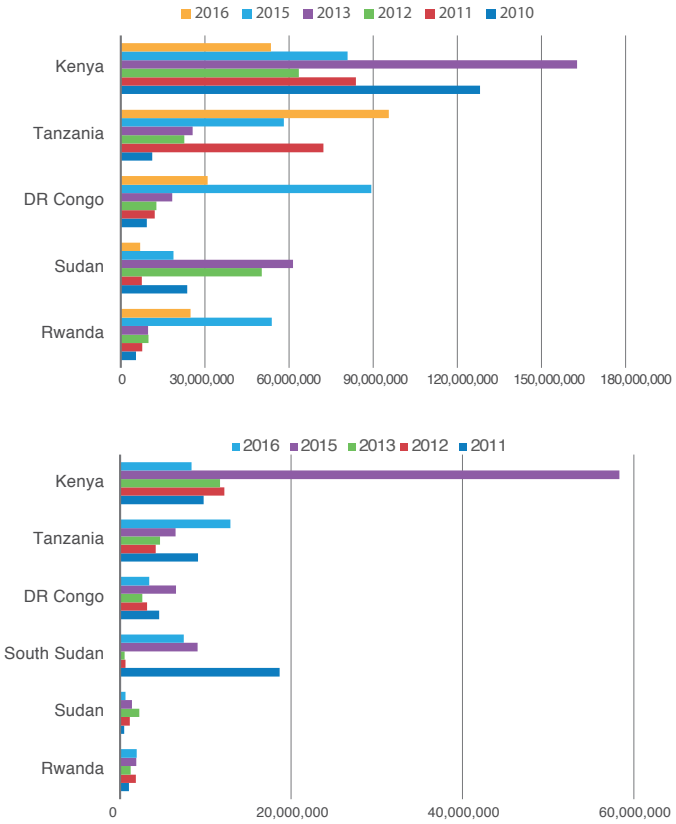
32 Estimates based on the UNPS 2013/14 and 2015/16 data.
33 Based on UNHS 2012/13 data.
34 The incidence of poverty among female headed households in northern Uganda is 50.2 percent compared to 40.7 percent for male headed households in the same region (UBoS, 2014).

The macro-political context

During the earlier years of implementation of the MDGs in the 2000-2015, Uganda was among the few countries in sub-Saharan Africa (SSA) to enjoy significant economic growth, as measured by the gross domestic product (GDP). However, since the early 2000s, growth has levelled off to a great extent. GDP averaged 4.7 percent[35] during the period between 2011/12 and 2015/16, with services and industry sectors as the major sources of growth, with an average growth of 5.2 percent and 4.4 percent respectively, per annum, and the agricultural sector as the least source growth , at 2.2 percent during the same time period (MoFPED, 2016). The agricultural sector growth contrasts poorly with the growth registered in the service and industry sectors. Within the agricultural sector, food crops performed the worse, with a growth rate averaging 1.1 percent per annum compared to cash crops' average of 4.1 percent per annum, during 2011/12-2015/16. In 2011/12 and 2012/13, the food sub-sector registered a negative growth rate, mainly due to drought, and the impact is evident in the caloric intake trends[36].

Although it still struggles to meet its own food requirement due to low crop productivity, Uganda has the potential to become a food basket (or exporter) (Figure 5) within the EAC partners states and beyond[37]. A number of past national budget speeches highlight this particular issue. The 2011/12 national budget speech noted that '*Increased regional demand for food contributed to the surge in food prices witnessed during 2010/11'.*[38] The 2012/13 national budget speech asserted that '*Staple food exports have a sure regional market since basic foods have a high price inelasticity of demand and have lower transport costs in view of our neighbour's proximity in the East African region'.*[39] However, while policy attempts to meet the food needs of neighbouring countries, many people in the country continue to face food insecurity.[40]

Figure 5: Uganda's value of food exports and imports to and from EAC partner states 2010-2016



Notes: figure of the left refers to Uganda food exports and on the right are Uganda's food imports from other EAC partner states

Source: URA 2017

The gains from liberalisation through an FNS lens are mixed. One of the key features of liberalisation is the change in export structures, which in Uganda have promoted non-traditional exports of agricultural origin (such as fish, beans, maize, etc.) in addition to traditional exports (e.g. coffee, tea). Maintaining the non-traditional exports momentum requires making smallholder food production profitable through significant scale enhancement. There are also public concerns over the continued export of fish vis-à-vis the slow reduction in stunting among children. Liberalisation has also, to some extent, promoted agro-industrialisation, with some food staples shifting into industrial crops. The rather rising costs of living have also pushed households to sell their food crops while they are still in the gardens. Previous research has shown that rural households

35 Future growth projections do suggest further contraction in the economy to 3.5 percent in 2016/17. This figure is below the target of 7 percent in the NDP II.
36 Caloric intake trends have been fully discussed in section 3.2.
37 National Agricultural Policy (2013).
38 See, pa…ge 3, paragraph 15.
39 See, page 4, paragraph 11.
40 During May-July 2009, Uganda experienced a major food crisis—with acute food shortage in at least 17 districts—mainly in the sub-regions of North, East and West Nile. More recently, during September-November 2016, at least 1.3 million Ugandans from 45 districts faced a food crisis.

increasingly rely on purchases to acquire food and that a large portion of rural households are net food buyers. In particular Benson *et al.* (2008) have shown that, regarding staples, at least 39 percent of rural households are classified as non-subsistence net food buyers.[41]

The policy debate on whether food self-sufficiency or food self-reliance should be emphasised more than ensuring food security through income security continues to remain open. Some argue that food security is no longer only an issue of food production and food availability (physical access), but also an issue of economic and social access to food, including aspects of access to agricultural markets (stability of demand and supply), market information, value chain development, distribution, transport infrastructure and access to financing and credit for agriculture. In their report[42,] Action Against Hunger, speak about Income Generating Activities as a key concept in sustainable food security and make a case for promoting income generation as a response for the strengthening of livelihood systems and food security, stressing the inevitable role of the market, if (or when) income is (or becomes) a fundamental dimension of these systems as well.

Death of critical institutions

Historically, there have been low-cost options for addressing the food challenges observed at the household level, and particularly the encouragement of food storage. During the colonial era, Uganda operated the Omutongole chief system, a village-level enforcer of ordinances for ensuring that households had access to food (through the allocation of part of the household land to food production and operating a granary for food storage), and maintaining an acceptable level of household hygiene. This ensured that households could not sell immature food or sell their whole food produce immediately after harvest. The civil war experienced during the 1970s and 1980s led to a breakdown of this system.

Although the chief system was replaced by the village local council (LC) system, the possibilities for the use of LCs as enforcers of food production is very limited because LCs are elected.

Other critical institutions, especially at the district levels, have been farmer institutions. Cooperatives and district farmer institutions have been key institutions in the entire production system. Previously, farmers operated under producer cooperatives, and these institutions operated large-scale food and produce storage silos. Currently, since farmers do not have storage facilities, middle men are the leading beneficiaries of the liberalised agricultural marketing regime. These institutions have currently been politicised, which has rendered them ineffective. Other institutions that are related to health and no longer exist are the community cooking demonstrations.

Under regulated food handling and marketing systems

The food marketing systems (including handling, processing, retailing, food service and transportation) seem to be developing with growing urbanisation. However, these systems do not seem to be regulated enough to ensure safe and nutritious food to the end consumer. For instance, the environmental factors (such as standard of hygiene) along the food supply chains are yet to receive policy attention. The breakdown of enforcement of public health system exacerbates the situation. Food contamination predisposes the population to common epidemics like cholera, diarrhea, typhoid, intestinal worms and other food and water borne diseases. Food safety is thus still a major risk to FNS in Uganda. Most foods are sold in their fresh form (limited processing) and marketing systems are dominated by informal retail trade. The retail and wholesale trade is undeveloped and poorly coordinated. Indeed, the uncoordinated and disorganised food marketing systems have implications for the growth and productivity of agriculture, and access to good, safe food at affordable prices, especially for urban populations. For instance, given Uganda's largely informal and unregulated food markets, there is no strict procedure for traders like herbalists, abattoirs etc., whose operations have direct implication on food safety, to enter the food market. In addition, food vendors seldom maintain the required levels of hygiene (Plate 1).

41 Benson et al. (2008) define non subsistence net food buyers are defined as households where the proportion of the value of their total reported food consumption is 25% or more is from the market/purchases.

42 Income generating activities: A key concept in sustainable food security.

http://www.actionagainsthunger.org/sites/default/files/publications/Income_generating_activities_A_key_concept_in_sustainable_food_security_09.2009.pdf

Plate 1: Vegetable market and adjacent waste disposal in Kalerwe market, Uganda

Photo by: EPRC on May 18, 2017

Changing socio-nutrition norms

Social and cultural practices are a critical determinant of food consumption, food preparation and household feeding practices worldwide. Food choices are affected by many factors among which are cultural norms[43] and farming practises. However, there is growing evidence that food habits in Uganda are shifting from traditional foods to more westernized diets. Although the traditional Ugandan diet mainly comprises bananas, cereals- such as maize, millet, sorghum, and roots such as sweet potatoes and cassava, over time maize and rice have become the most important cereal crops. According to FAO statistics, both area and production of rice and maize increased between 2010 and 2016. Unfortunately millet, which is profiled as a nutrient dense grain, has slowly become less dominant in Ugandan food systems (FAOSTAT, 2017; Ahmed, 2012).

In addition, production diversity, which is a risk mitigation measure, is on the decline. Since the majority of Ugandans still derive most of their dietary intake from their own production, change in production can be a proxy for changing food consumption patterns. With growing rice imports, transition in food habits also means a shift to more expensive diets, which directly impacts purchasing power at household level.

In the following sub-sections (3.2-3.6), the Review discusses SDG2 by each target. As detailed in section 2, the discussion goes beyond global monitoring indicators to include national [localised] indicators relevant to the Ugandan context.

43 An example of cultural impediments to a more nutritious diet are women in the Buganda region being traditionally barred from eating chicken and eggs, and women in the Bahima region being prohibited from eating fish.

3.2 End Hunger and Ensure Access to Food for all People all Year Round

SDG2 Target 2.1:

By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.

Indicators:

- Mean caloric intake per person per day
- Proportion of the population unable to meet 75% RDI
- Percentage of caloric intake from food staples
- Dietary diversity and food consumption scores
- Persistence of undernourishment
- Food insecurity self-experiences scale

3.2.1 Mean caloric intake per person per day

Households in Uganda acquire food from purchases, own production and/or through gift/in kind. A significant share of households access food through own production,[44] which implies that the performance of the agricultural sector remains key for food security.

Table 1 below indicates that during the period between 2009/10 and 2015/16, the mean caloric intake stagnated at approximately 1,860 kcal per day per person, at the national level. This number suggests that, on average, Ugandans were unable to consume the minimum RDI for light physical activity status. There were some marked spatial variations between urban and rural areas in terms of daily caloric intake that require the attention of both policy makers and practitioners.

The results indicate higher daily caloric intake in urban areas compared to their counterparts in rural areas. Since 2010/11, the daily caloric intake gap has widened between the rural and urban areas.

More noticeable is the fact that the urban population's daily caloric intake has changed at the national level and seems to indicate an increasing trend over time, from 1,956 kcal in 2009/10 to 2,030 kcal in 2015/16. In the earlier period (2002/3-2005/6), individuals resident in urban areas had a higher prevalence of food insecurity than their rural counterparts (such as Ssewanyana and Kasirye, 2010).

44 See, Box A1 in the appendix.

Table 1: Trends in mean daily per capita caloric intake (kcal) and share of undernourished persons (%)

	Mean, kcal per day per person					Prevalence of caloric deficiencies, %				
	2009/ 2010	2010/ 2011	2011/ 2012	2013/ 2014	2015/ 2016	2009/ 2010	2010/ 2011	2011/ 2012	2013/ 2014	2015/ 2016
Uganda	1,844	1,863	1,864	1,847	1,883	40.6	41.8	43.4	37.5	39.2
Spatial dimension:										
a) Rural-urban										
Rural	1,814	1,849	1,846	1,808	1,841	41.4	42.4	43.9	39.3	40.8
Urban	1,956	1,942	1,950	1,977	2,030	37.4	38.6	40.8	31.3	33.7
b) Region:										
Central	1,837	2,046	2,124	1,958	2,071	40.0	32.6	32.0	32.6	29.4
Eastern	1,913	1,692	1,563	1,757	1,692	33.2	47.1	56.9	36.4	45.8
Northern	1,607	1,600	1,633	1,651	1,620	56.8	57.4	53.3	53.5	54.6
Western	1,956	2,098	2,199	1,979	2,068	36.6	31.2	28.4	30.7	32.2
c) PRDP categorisation:										
All PRDP regions	1,743	1,663	1,684	1,709	1,681	46.0	52.4	50.4	45.0	48.8
Sporadically affected	1,771	1,691	1,719	1,706	1,696	48.4	51.2	46.0	47.2	48.2
Severely affected	1,258	1,450	1,512	1,518	1,454	75.7	72.4	63.0	64.4	68.0
- Karamoja	1,209	1,353	1,479	1,454	1,341	80.2	79.3	62.3	66.4	75.5
Spill-over	1,858	1,746	1,727	1,802	1,770	33.1	42.9	49.1	33.4	40.8
Rest of the country	1,897	1,998	1,983	1,928	1,990	37.9	34.6	38.8	33.0	34.2
a) Sex										
Female headed	1,802	1,918	1,856	1,905	1,915	44.0	38.0	42.8	36.4	38.3
Male headed	1,857	1,844	1,867	1,824	1,871	39.5	43.1	43.6	37.9	39.6

Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

Across regions, caloric intake was lowest among the population in the northern region and highest in the western region, on a year-by-year basis. Populations in the eastern and northern regions were likely to consume less calories compared to the national average, for the entire seven-year period (2009/10 to 2015/16). Specifically, there was a drastic decline in caloric intake per person per day in the eastern region, from 1,913 kcal in 2009/10 to 1,692 kcal in 2015/16. Some studies have raised concerns towards the achievement of food security through unguided commercialisation of agriculture in the region. According to Okumu (2015), for instance, the deteriorating food situation in the eastern region is greatly explained by the increased focus of farmers on cash crops at the cost of food production. Box 3 shows how policy makers from Busoga highlight rising commercial production of sugarcane as a threat to land availability for food crops.

Box 4: Busoga: Commercialisation of sugarcane cultivation and reduced land holding

The Speaker of Parliament Rebecca Kadaga has advised districts in Busoga to bar families from growing sugarcane if they do not have sufficient land. She said it is the only solution to the current food shortage. The Speaker said only households with more than five acres of land should be allowed to grow sugarcane. Of the five acres, she said two should be for growing sugarcane, while the rest must be reserved for planting food crops. … Kadaga asked local governments in Busoga to heed her advice by coming up with by-laws and ordinances to that effect. She expressed shock that all she saw on the way to the venue were sugarcane plantations. "I have not seen any food crops on my way to this place. This is very unfortunate", she said….There are four sugar factories in Busoga—at Kakira, Mayuge, Kalilo and Kamuli. Another factory in Njeru (Buikwe district) also feeds off cane from Busoga.

Source: New Vision 10th April 2017

The average caloric intake of individuals in the PRPD region, which was 1,743 kcal in 2009/10 and 1,681 kcal in 2015/16, was significantly below the national average in the same time period (Table 1). However, there were variations across the PRDP sub-regions – the caloric intake seems to have worsened with the intensity of the conflict experienced. The severely affected sub-regions, which includes the Karamoja region, had a very low caloric intake compared to the national average (e.g., 1,454 kcal vs 1,883 kcal in 2015/16). Overall, these findings indicate uneven progress in mean caloric intakes across the country.

3.2.2 Prevalence of undernutrition

Table 1 above shows that the prevalence of undernourishment remains high with nearly 4 out of every 10 individuals in Uganda classified as undernourished. In 2009/10, the undernourished population had a caloric deficit of 418 kcal on average per person per day, even though this deficit decreased slightly to 389 kcal in 2015/16 (Table 2). The declines in caloric intake in 2011/12 and 2013/14 coincided with food price spikes.45 The trends in caloric deficits in both rural and urban areas are similar to those observed at the national level, but the rural/urban depth of the hunger gap seems to be narrowing over time, as presented in Table 2.

Table 2: Mean caloric deficit among the undernourished population (kcal)

	2009/2010	2010/2011	2011/2012	2013/2014	2015/2016
Uganda	418	394	407	360	389
Rural	426	397	407	363	396
Urban	386	380	405	346	361
Central	418	352	391	338	302
Eastern	365	407	420	327	395
Northern	453	421	402	390	450
Western	425	373	397	381	396
All PRDP	422	412	382	379	436
Sporadically affected	435	431	378	392	428
Severely affected	485	401	431	387	481
Karamoja	501	406	501	405	541
Spill-overs	356	394	359	350	411
Rest of the country	415	377	428	344	353

Notes: Population-level indicator.

Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

More than half of the population in the northern region was unable to meet three-quarters of the recommended caloric intake. Within the northern region, the Karamoja sub-region prevalence rates ranged from 62 to 80 percent during the review period. Until 2013/14, the western region registered the lowest prevalence rates. Though the gap in caloric deficit is similar to that observed in western region in

45 The correlation between food prices and undernourishment is fully analysed in Figure 25.

2015/16, the situation in the eastern region worsened with prevalence of undernutrition increasing from 33 percent in 2009/10 to 46 percent in 2015/16. Furthermore, the regional variations indicate that, while the populations in the western and central regions were almost food secure (based on mean caloric intake in levels), there was still an element of food insecurity, as demonstrated by the prevalence of undernutrition.

In line with the UNPS findings, previous assessments also show that a large population of Ugandans is challenged by inadequate food intake. The January 2017 Integrated Food Security Phase Classification (IPC) showed that 26 percent of Ugandans were classified as having 'food security stress' and a further 5 percent faced a food crisis (Uganda IPC Technical Working Group, 2017).[46] Overall, the IPC report showed a recent surge in food challenges in Uganda, with only 11 percent and 17 percent of the population estimated to be affected by food challenges in the period between November 2015 and April 2016, and July and November 2016, respectively. Furthermore, the January 2017 IPC report also showed wide regional variations in food security status. Specifically, the Teso sub-region had the highest proportion of the population facing food challenges (67 percent), followed by East Central (60 percent) and Karamoja (42 percent). The same report showed that the majority of Ugandans consuming one meal a day were in the Teso sub-region (67 percent), followed by Karamoja (50 percent).

3.2.3 Household Dietary Diversity Scores

Table 3 presents the household dietary diversity scores (HDDS) disaggregated by spatial dimension, regions and PRDP categorisation. Out of 12 major food groups consumed national trends shows an increase from an average HDDS of 7.6 in 2009/10 to a score of 8.2 in 2015/16.[47] This finding implies that households have been able to access a wider variety of food groups over time.

However, the 2015/16 diet diversity scores remained below the average of 9.2, which is the estimated target level of HDDS for performance monitoring.[48] While urban households consumed a wider variety of food groups compared to their counterparts in rural areas, their dietary diversity score remained below 9. Despite the low caloric intake observed for the eastern and northern regions, households in these regions seemed to consume a wider variety of food groups, as measured by the dietary diversity score relative to their counterparts in the western region.

Table 3: Household dietary diversity scores based on 12 main food groups

	2009/ 2010	2010/ 2011	2011/ 2012	2013/ 2014	2015/ 2016
Uganda	7.6	7.6	7.8	8.5	8.2
Spatial dimension					
a) Rural-urban					
Rural	7.4	7.4	7.7	8.3	7.9
Urban	8.3	8.5	8.4	9.2	8.8
b) Region					
Central	8.0	8.3	8.3	9.1	8.8
Eastern	7.9	7.8	8.0	8.6	8.3
Northern	7.5	7.5	7.5	8.2	8.1
Western	7.0	6.8	7.5	8.0	7.3
c) PRDP categorisation					
All PRDP	7.5	7.6	7.7	8.3	8.0
Sporadically affected	7.8	7.8	8.1	8.6	8.3
Severely affected	6.4	7.1	6.8	7.3	7.4
- Karamoja	5.7	6.6	6.6	5.9	5.8
Spill-over	7.4	7.7	7.8	8.5	8.0
Rest of the country	7.7	7.5	7.9	8.6	8.2

Source: UNPS 2009/10, 2010/11, 2013/14 and 2015/16 data

46 It is worth noting that the IPC estimates may not be directly comparable to estimates provided in Table 2 due to differences in the methods used to generate the figures.

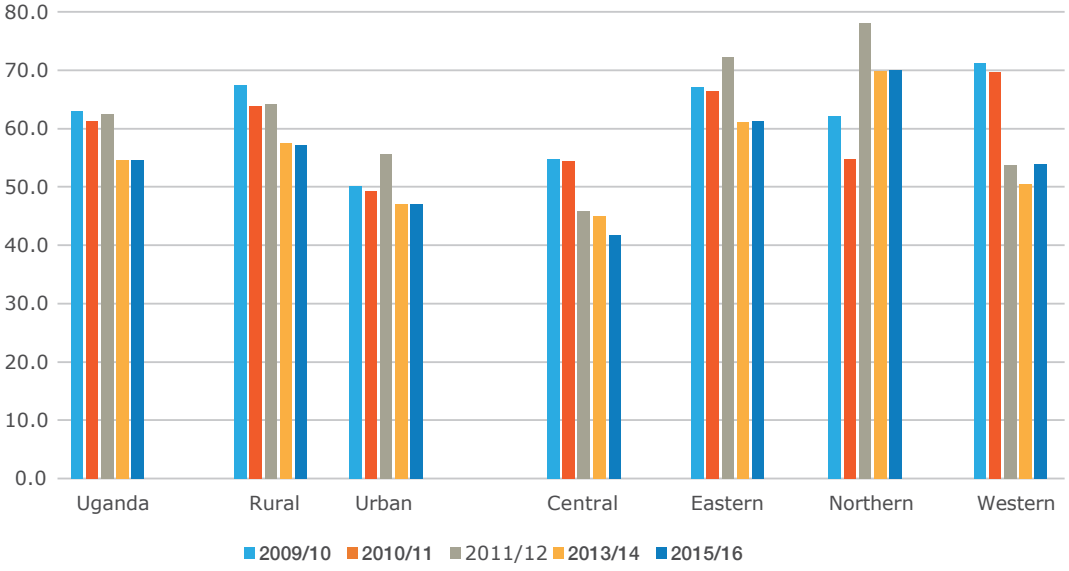
47 The targeted thresholds for dietary diversity were previously discussed in methodology section 2.2.1.

48 Based on the USAID framework for HDDS measurement of household food access, the *'average HDDS in the richest 33 percent of households can serve as a guide for setting the target level of HDDS'* (Swindale and Bilinsky, 2006); from the UNPS, the average HDDS for this group was estimated at 9.2.

3.2.4 Contribution of staples to caloric intake

The contribution of staples to food intakes is an indicator of dietary quality. Staples (cereals, roots, tubers and matooke) are generally relatively cheap foods but in some instances they are low in nutritional density. Previous research from other countries shows that a high staple contribution to food intakes is associated with micronutrient deficiencies (Arimond *et al.*, 2010; Ruel, 2003). A higher value of staple contribution to caloric intakes suggests lower dietary quality (Smith and Subandoro, 2007). Figure 6 shows that, in terms of food consumption, the contribution of staples to caloric intake remained high at over 60 percent of the daily caloric intake in the first two years 2009/10 and 2010/11, but by the end of 2015/16 it decreased to the medium range, standing between 40 and 60 percent.

Figure 6: Shares of caloric intake derived from main food staples in percentage



Notes: The following scale was used for interpretation of the indicators from low to very high (very poor diet quality) : <40 low, 40-60 medium, 60-75 high, and >75 very poor dietary quality.

Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

A majority of Ugandans' food consumption comes from calorie-rich foods which are generally low in protein and micronutrients. There is a growing contribution of non-staple foods to caloric intake, especially legumes, meat, fish, and milk. The contribution of staples to caloric intake was ranked as medium among urban households, but slowly moved from high to medium among rural households. Across different regions, the contribution of food staples remained high (greater than 50 percent) among households in the northern region, and medium (35-49 percent) among households in the central region.[49]

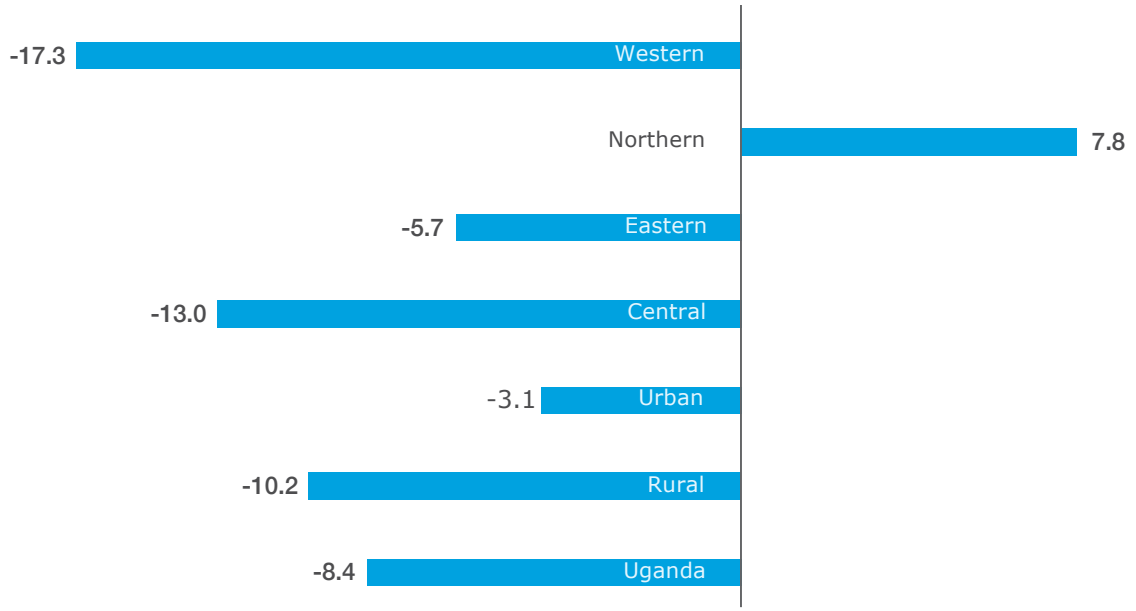
Figure 7 shows the changes in the share of food staples contribution to caloric intakes, between 2009/10 and 2015/16. The figure indicates a large reduction in contribution of food staples to caloric intakes in western and central Uganda. The significant reduction in staple contributions to caloric intakes (and consequently the improvement in the quality of diets) in the western region, partly explains the region's significant reduction in stunting rates.[50] The growth in mean income seems to be driving a shift in food preferences from staples towards more expensive sources of calories. The types of foods consumed in Uganda are partly driven by regional tastes and agro ecological food production zones.[51]

49 See rankings under notes in Figure 3.

50 Stunting rates will be discussed in section 3.3.

51 As previously demonstrated by Ssewanyana and Kasirye (2010), matooke is predominantly consumed in the central and western parts of the country. On the other hand, cassava is predominantly consumed in the north and sweet potatoes are consumed eastern Uganda more than in any other region.

Figure 7: Changes in the share of food staples contribution to caloric intakes (2009/10-2015/16)



Source: UNPS 2009/10, and 2015/16 data

The food security problem in the western region seems to be more a function of insufficient quality (limited diversity) than of the quantity of foods consumed. Insufficiency in knowledge/ education especially for mothers about what constitutes a balanced diet, might partly explain the observed food situation (Ssewanyana and Kasirye, 2012). On the other hand, in the eastern and northern regions, the food security problem has to do with inadequate food access and availability. However, both dietary quantity and quality remain key challenges in ensuring that all Ugandans are food secure.

3.2.5 Persistence of undernourishment

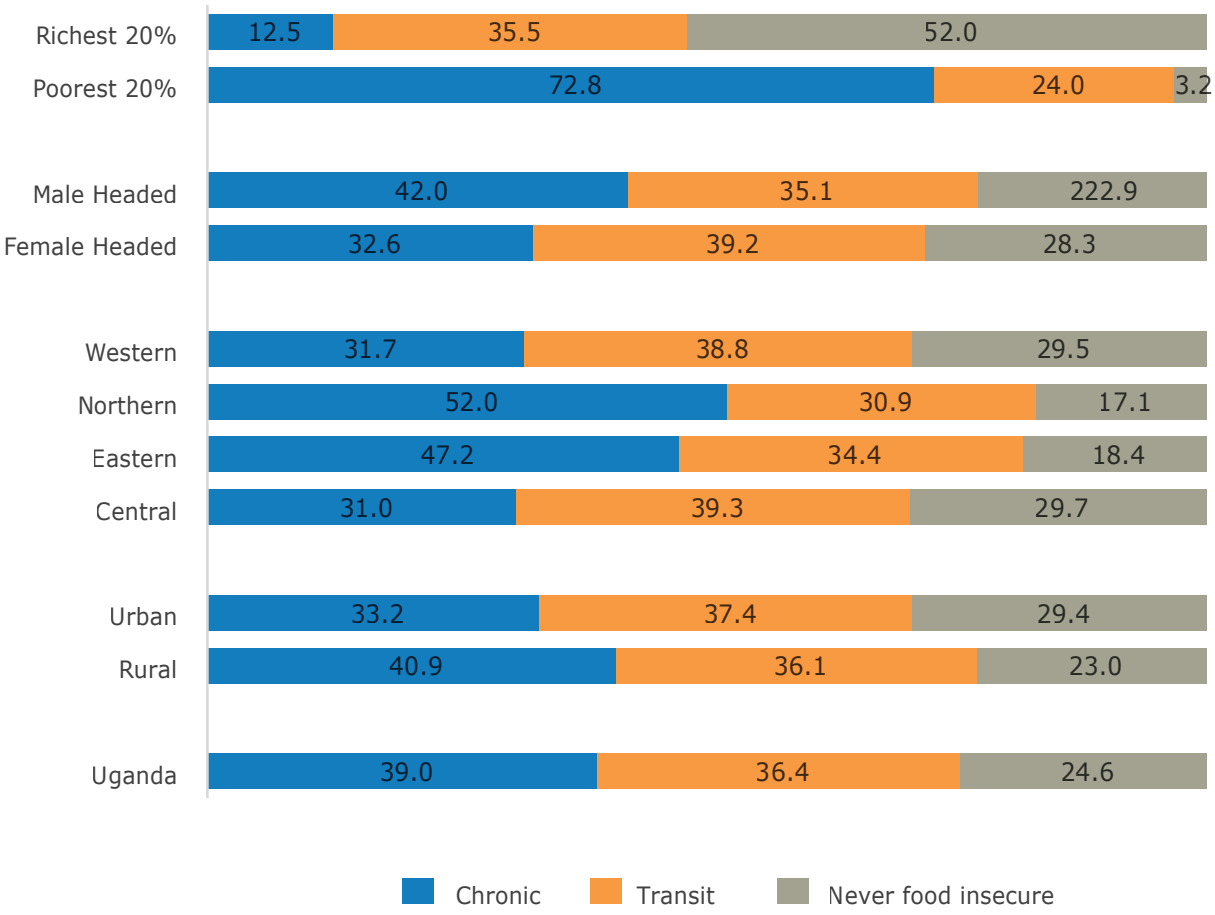
For policy purposes, it is important to have insights into food insecurity dynamics[52] or stability in terms of *access to food*, especially for targeted interventions. This analysis was performed only based on those panel households covered in all five panel surveys, and for a shorter period it focuses on panel households visited in both 2013/14 and 2015/16. The measure for persistence is inability to meet the minimum recommended dietary intake in more than one survey round. On a national level, throughout the period 2009/10-2015/2016, 16 percent of the households were chronically undernourished and only 4 percent of the households remained food secure. Of great concern is the rather high vulnerability to food insecurity, with 80 percent of the households having suffered transient food insecurity.[53] At the regional level, the northern region was home to nearly 40 percent of the chronically food insecure households, followed by the eastern region at 27 percent. Compared to their share of the total household population the two regions account for a disproportionate share of the chronically food insecure households.

This Review also explores food insecurity dynamics among panel households based on households covered in both 2013/14 and 2015/16 (shorter time period). The results, presented in Figure 8, show that, at the national level, nearly four of ten households (with 14.9 million persons) were unable to meet three quarters of RDI in both years. For households in urban areas and in the western and central regions, a notably higher prevalence of transitory food insecurity than chronic food insecurity was observed. Within a shorter time period (2013/14 to 2015/16), the eastern region (28.7 percent) was home to a majority of chronically food insecure households, followed by the northern region (25.2 percent).

52 See definition in section 2.2.1.

53 Transient food insecure households are those households moving either out of or into food insecurity.

Figure 8: Food insecurity trajectory by selected social groupings in 2013/14-2015/16 in percentage



Source: UNPS 2013/14 and 2015/16 data

3.2.6 Food insecurity self-reported experiences –Voices of the hungry

This section focuses on household self-reported food insecurity experiences throughout the past 12 months, in the UNPS.[54] Firstly, food related shocks during the past 12 months are examined. Despite Uganda's aspiration to be a food basket for the EAC region, a significant share of households reported food inadequacies (Box 5). Qualitative assessments of the food security situation also show that a large proportion of Ugandans are affected by food shortages.

54 The recall period of 12 months was used by UBoS instead of a 30-day recall period used by FAO.

Box 5: Self-reported food inadequacies in percentage

The share of households with self-reported food inadequacies decreased significantly from 41.1 percent in 2009/10 to 18 percent in 2015/16. It is worth noting that the majority of households that reported experiencing food shortages in 2013/14 were in the northern region (36 percent), followed by the eastern region (26 percent), which is not indicated in the chart. In terms of demographic groups, widow-headed households were more likely to report food shocks (33 percent) compared to single-female- or married-female-headed households (24 percent).

	2009/10	2010/11	2011/12	2013/14	2015/16
National	41.1	22.6	21.6	23.5	18.1
a) Rural-urban					
Rural	46.1	24.0	22.4	27.1	20.4
Urban	26.4	15.0	18.2	13.2	11.3
b) Region					
Central	29.6	14.7	7.6	17.0	14.4
Eastern	45.5	25.0	21.0	24.3	19.6
Northern	67.4	36.8	38.9	35.0	33.8
Western	33.4	14.7	21.2	18.4	10.2
c) PRPD categorisation:					
All PRDP	59.1	31.6	31.9	31.8	26.4
- Sporadically affected	61.8	30.0	32.7	28.5	23.5
- Severely affected	77.5	52.9	47.2	47.9	52.4
Karamoja	91.8	68.8	52.7	60.8	79.5
- Spill-overs	49.8	22.3	22.2	26.5	17.3
Rest of the country	32.2	16.3	15.0	18.1	14.0

Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

Second, as part of the global SDG2 monitoring indicators, the Review analyses 'the voices of the hungry', based on the eight-item food insecurity experiences adopted from FAO by the UBoS. This information is available from 2013/14 and 2015/16 UNPS data. Table A6 in the appendix shows the scale of food insecurity experiences. The proportion of households reporting "Not able to eat healthy and nutritious food" reduced from 42 percent in 2013/14 to 37 percent in 2015/16. The proportion of households who "went without eating for a whole day" also reduced from 21 to 17 percent during 2013/14-2015/16. Overall, the table shows how in 2015/16, slightly above one out of every three households was faced with mild food insecurity, i.e. worrying about how to access food. Another20 percent of households reported facing moderate food insecurity, i.e. either compromising on quality and variety or reducing quantities and skipping meals. Finally, about 15 percent of households reported severe food insecurity, i.e. experiencing hunger.

3.2.7 Economic vulnerability

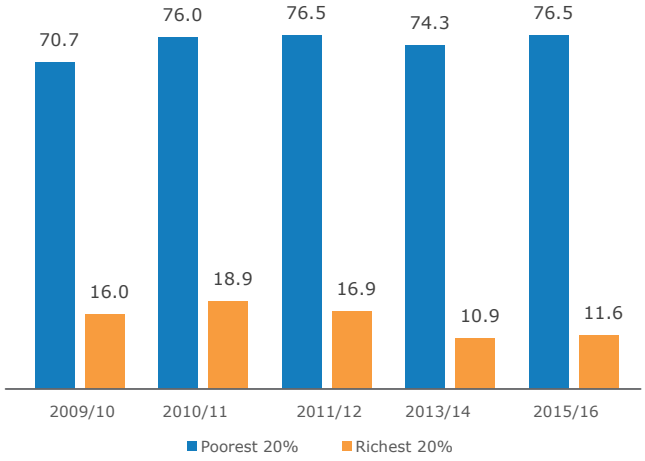
Figure 5 shows there was a positive correlation between food security indicators and income quintiles, with the prevalence of undernourishment significantly lower for households at top income quintiles. The prevalence of undernourishment decreased among the richest 20 percent (from 16 to 12 percent) but increased among the poorest 20 percent (from 71 to 77 percent).[55] While the mean caloric intake for the richest 20 percent

55 See Figure 8 above.

was above the RDI in all the survey periods, a significant share of this welfare group was undernourished. The latter result is more indicative of the uneven food access rather than inadequate food availability. In terms of food stability, more than 7 out of every 10 households in the poorest 20 percent quintile experienced persistent undernourishment; whereas 35 percent among the richest 20 percent suffered transitory food insecurity. This finding suggests that there are other factors beyond incomes that are driving caloric deficiency. Overall, there is an urgent need to focus on the food intake of the poorest households if Uganda to meet the SDG targets of ensuring access to food all year round.

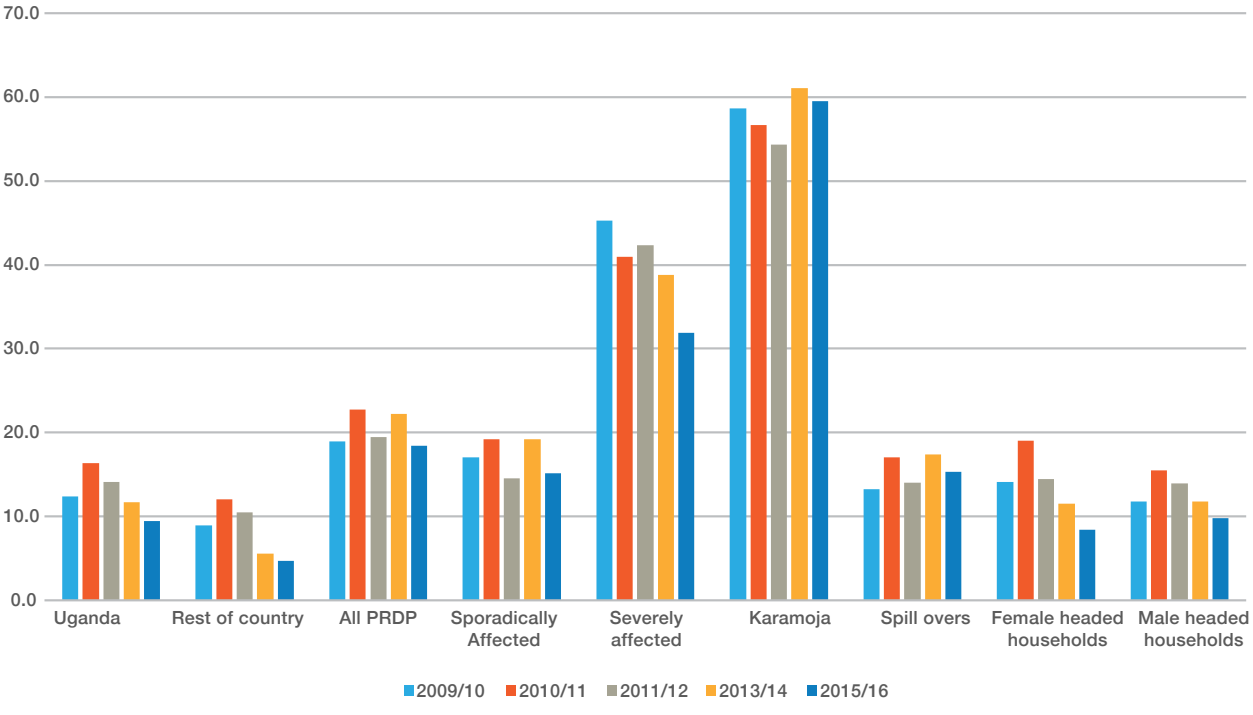
Under income is a key contributor to household food security. The Review considered another dimension of a household's ability to meet the cost of basic food requirements, which is whether the current household income exceeds the food poverty line. The inability of a household income to cover basic food needs is defined as food poverty. This metric captures the proportion of households with very low incomes that are unable to meet the cost of basic food needs, before considering non-food needs. Figure 10 shows how the food poverty situation is improving with the prevalence of food poverty at the national level declining from 12.4 percent in 2009/10 to 9.4 percent by 2015/16.

Figure 9: Prevalence of undernourishment by income quintiles in percentage



Source: UNPS 2009/10-2015/16 data

Figure 10: Prevalence of food poverty in percentage

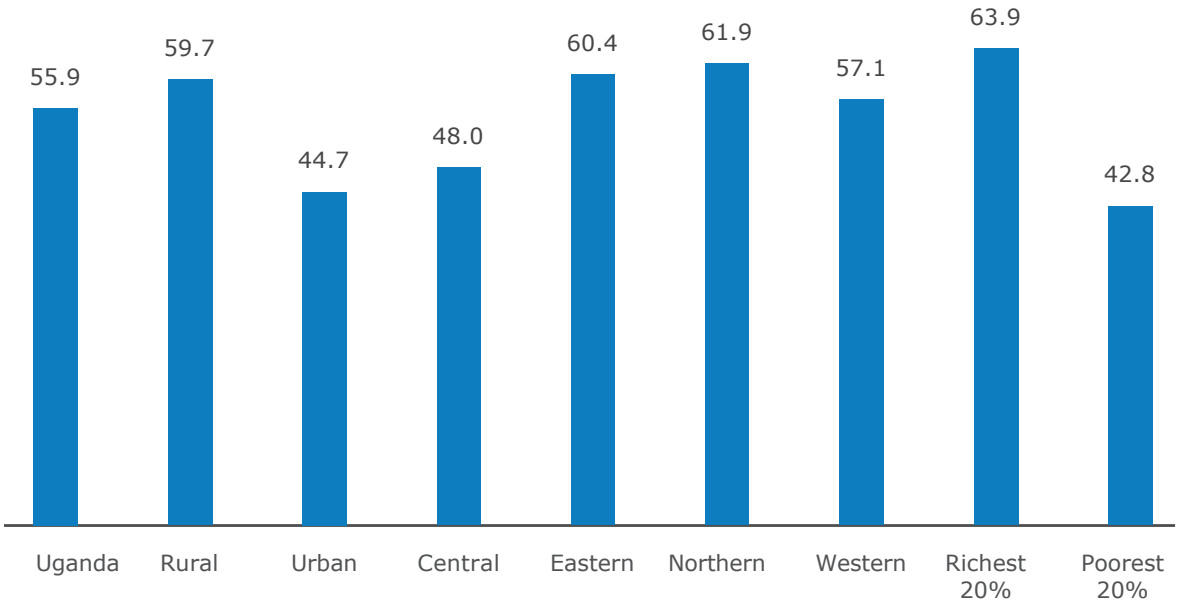


Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

Most of the households affected by food poverty were within the PRDP region, particularly in the *severely affected* sub-region. The food poverty rate in this sub region reduced from 45 percent in 2009/10 to 32 percent by 2015/16. Overall, the relatively higher food poverty status in the severely affected sub region was driven by the rather high food poverty among the Karamajong, which was nearly 60 percent in 2015/16.

Figure 11 shows the share of food in total household expenditures in 2013/14 as another measure of economic vulnerability to food insecurity (or access indicator). This measure could be affected by disposable income, which is in turn affected by employment opportunities, changes in food prices, and the efficiency of food markets.

Figure 11: Share of food in total consumption expenditure in 2013/14 in percentage



Notes: Scale = low food expenditure share <50 percent; 2) medium expenditure share 50-65 percent; 3) high food expenditure share 65-75 percent: 4) very high food expenditure share >75 percent

Source: UNPS 2013/14 data

In terms of trends, Table A7 (in the appendix) shows that the average share food of total household expenditures was in the range of 55 percent to 61 percent over the 2009/10-2013/14 period, implying medium vulnerability to food insecurity. Similar patterns were observed in rural areas. In contrast, urban areas registered low vulnerability to food insecurity in the range of 37 percent to 44 percent. The same results held true for households in the central region and households in the richest 20 percentile.

The share of food expenditure within total consumption expenditure in relation to food poverty demonstrates how economic vulnerability to food insecurity declines as income increases. Increasing household income remains a key strategy for improving food security, and this is in line with past (such as PMA) and existing government initiatives, such as Operation for Wealth Creation (OWC) aimed at enhancing household incomes.

3.2.8 Food safety

Food safety is linked to this target through *access to safe food.* Along the production to consumption value chain, there is growing attention on food safety as an essential element for improving food security. One aspect of food safety—food contamination, especially through aflatoxin—is a major public health concern with implications for stunting among children. At the continental level, the African Union has adopted the Perishable and Agricultural Commodities Act (PACA) partnership as an effective mitigation measure against aflatoxins (toxins from fungus), as a means to ensure adequate safe and nutritious food. Box 6 is an example on how to deal with aflatoxin for the case of maize.

Box 6: How do you deal with aflatoxins? The case of maize

Steps to follow in combating aflatoxins:

- ➔ Harvest from the garden when it's beginning to dry
- ➔ Place on a dry platform (not on the ground)
- ➔ Dry up to 13 percent of moisture content
- ➔ De-husk the maize if you are making maize flour

Source: AU Commission meeting held in Entebbe on October 11, 2016

In Uganda, Kaaya (2005) has shown that aflatoxin concentrations are highest in products such as maize, groundnuts, mukene (*silver*) fish, and sunflower. More recent estimates by Makerere University[56] have shown that Uganda's total exports have deteriorated by USD 38million per annum due to aflatoxins, and that the amount of households' disposable income lost is more than double, at USD 79 million per year.

Based on the Health Management Information System (HMIS), at least 14 percent of all treated illnesses in Uganda are due to food borne-related illnesses (MoH, 2014a). Such illnesses include cholera, dysentery, acute non-bloody diarrhoea, persistent non-bloody diarrhoea, some forms of helminthiasis (intestinal worms), typhoid, and paratyphoid fevers and, more recently, hepatitis E.

The consumption of raw cassava is also associated with food poisoning, predominantly from cassava cyanide[57], though the level of cyanide depends on the cassava type, with lower levels in the sweet type. At the same time, cassava is a major staple for households in the eastern and northern regions. Previous research conducted by Ssewanyana and Kasirye (2010) has shown that fresh cassava (un-milled) accounted for a substantial proportion of the household food budget, especially in the northern region (10 percent). As such, a large proportion of Ugandans might have been exposed to the threat of cassava cyanide poisoning. Apart from cassava cyanide, Ugandans have also been exposed to heavy metal contamination, especially lead, in their diets. Lead contamination is high in foods consumed in urban areas; estimates by Mbabazi *et al.,* (2010) for vegetables have shown that lead contamination in vegetables was more than 10-fold higher in urban areas in comparison to rural areas.

56 Partnerships for aflatoxins control in Africa (Tanzania, Uganda and Gambia).

57 Food poisoning also depends on the type of cassava, i.e. whether it is the sweet or bitter variety.

3.3 End All Forms of Malnutrition

SDG2 Target 2.2:

By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons

Indicators:

- Prevalence of stunting
- Prevalence of wasting
- Prevalence of underweight
- Percentage of children born with low birth weight
- Micronutrient deficiencies
- Percentage of exclusive breastfeeding

3.3.1 Prevalence of stunting

The NDP II targets a reduction in stunting rates to 25 percent by 2020 (NPA, 2015), while the Malabo declaration aims to reduce stunting to 10 percent for SSA by 2025. Based on the UNPS data, stunting has decreased from 32 percent in 2009/10 to 27 percent in 2015/16 (Table 4).[58] Based on the projected population of 36.6 million in 2016 and the fact that infants account for 18 percent of the Ugandan population, the above statistics indicate that at least 1.8 million children aged less than 5 years were stunted in 2015/16. It is evident that Uganda was able to reduce stunting by 5 percentage points in a period of five years. This implies that, by 2030, stunting will affect approximately 11 percent of the population under five-years.[59]

In order to meet the global target of zero stunting, government programmes will have to maintain the momentum, and this calls for a more transformative approach in addressing nutrition by all stakeholders.

In Uganda, during the period 2009/10-2015/16 there were large geographical variations in stunting rates. Table 4 below illustrates that children in rural areas were substantially more likely to be stunted than urban children.[60] Table 5 also illustrates that western Uganda maintained the highest stunting rates during 2009/10-2015/16.

58

59 Assuming that all factors remain constant.

60 The rural-urban gap in the stunting rate narrowed from approximately 14 percent in 2009/10 to approximately 9 percent in 2015/16, whichis partly explained by the consistent reduction in stunting rates in rural areas.

Table 4: Children's nutrition indicators – stunting rate for children 6–59 months in percentage

	2009/10	2010/11	2011/12	2013/14	2015/16
Uganda	33.5	33.9	28.9	32.0	27.2
Rural/Urban:					
Rural	35.9	35.7	31.3	33.8	28.8
Urban	22.3	20.1	13.7	24.8	20.4
Region:					
Central	26.9	27.6	25.1	30.7	25.5
Eastern	34.0	33.6	29.8	33.7	28.2
Northern	32.3	34.0	26.0	27.2	23.6
Western	42.4	46.1	37.2	36.2	31.7
PRDP categorisation:					
All PRDP	31.9	32.1	25.4	28.5	24.2
Sporadically affected	27.6	32.7	27.4	25.7	25.0
Severely affected	44.4	34.4	22.8	30.0	20.0
Spill-over	33.2	29.8	23.9	30.6	25.3
Rest of the country	34.5	35.4	31.3	34.2	28.9
Income quintiles:					
Poorest 20%	38.2	38.2	31.0	38.7	29.4
Quintile 2	39.3	45.0	34.9	33.4	34.3
Quintile 3	39.7	35.5	34.1	38.2	28.2
Quintile 4	28.7	29.3	27.8	29.5	22.1
Richest 20%	21.5	22.3	16.2	22.3	19.1
Child's sex:					
Males	37.4	38.7	32.6	35.0	29.6
Females	29.5	28.9	25.7	29.0	24.8

Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

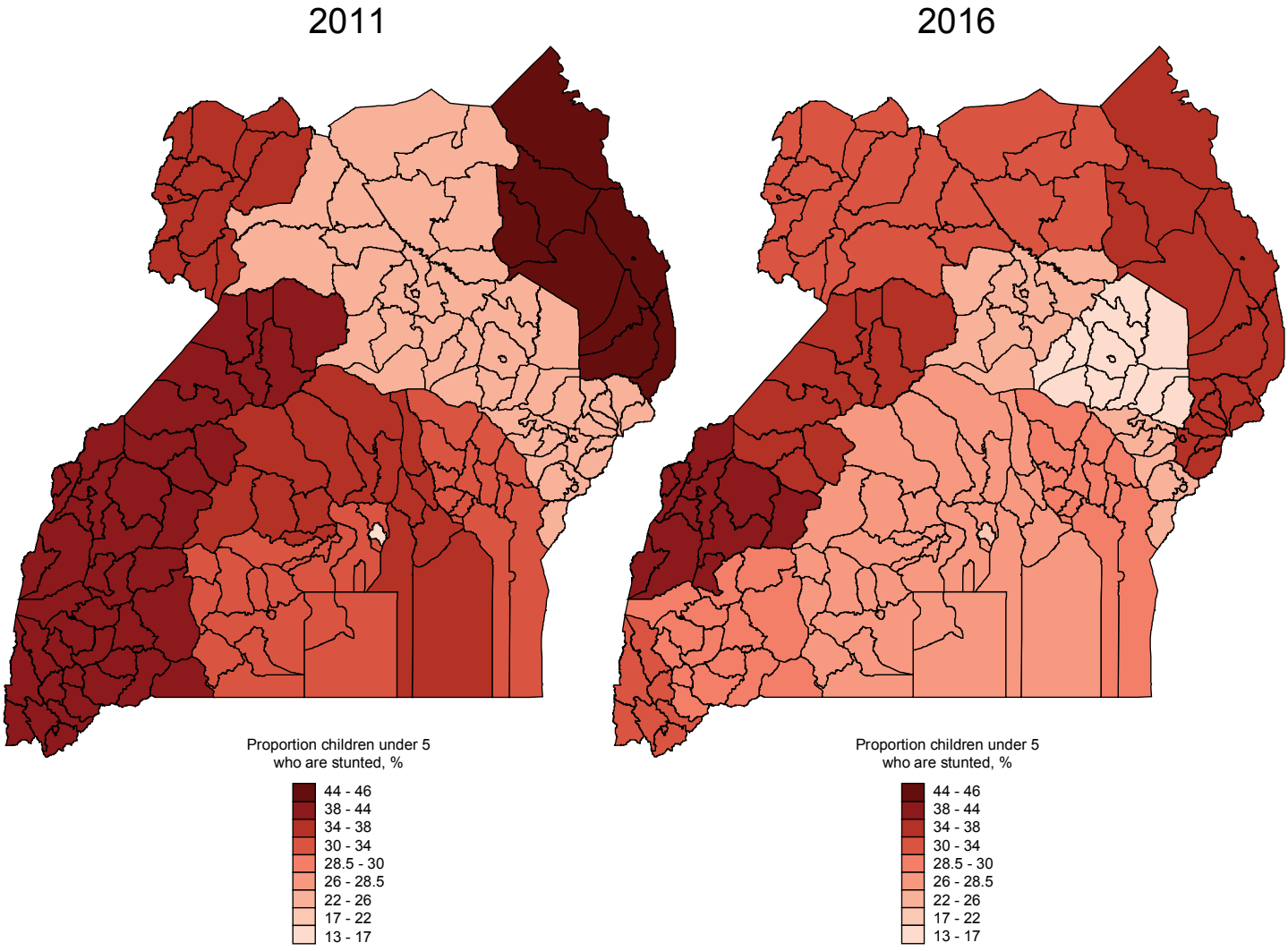
The above finding is consistent with the USAID (2014) report which showed how western Uganda's superior production of staple foods has not translated into lower stunting in children under five. In terms of dynamics, the highest reduction in stunting during this period was recorded in the northern region (7.7 percentage points), especially in the PRDP's *severely affected* districts. The *severely affected* districts reduced stunting rates by more than half, i.e. from 44 percent in 2009/10 to 20 percent in 2015/16. The nutritional performance of the northern region relative to its income status may be partly explained by its dietary diversity.

The latest 2016 UDHS figures for stunting are in line with the above trends. Specifically, the figures indicate that the stunting rate decreased from 33 percent in 2011 to 29 percent in 2016 (UBoS and ICF, 2017). Furthermore, Map 2 below – which compares the geographic distribution of stunting in 2011 and 2016 based on the UDHS – illustrates how stunting levels have generally reduced across most geographical areas.

Even though the male-female gap has decreased over time, there are large gender differences in stunting rates. In 2009/10, male stunting rates were approximately 8 percentage points higher than female stunting rates; the gap increased to 10 percentage points in 2010/11 before decreasing to 7 points in 2011/12, and finally to 5 percentage points in 2015/16.

Stunting rates decrease with increases in income status. In 2015/16, for example, the families in the poorest 20 percentile had a stunting rate of 29 percent, while the families in the richest 20 percentile had a stunting rate of 19 percent. The reduction in stunting rates was greater among individuals in the poorest 20 percentile (8.8 percentage points) compared with individuals in the richest 20 percentile (2.5 percentage points). This result is partly explained by some of the targeted interventions which occurred in the northern region.[61] Factors that go beyond income include mothers' education attainment, access to nutrition education information, and cultural attitudes towards food consumption that determine dietary diversity.

Map 1: Trends in stunting rates in 2011 and 2016



61 See for details, section 4.

3.3.2 Prevalence of wasting

With regards to wasting – a measure of immediate or short-term nutrition deprivation among infants resulting from either starvation or severe disease (e.g., diarrhoea) – Table 5 shows that at the national level, wasting levels have remained generally stable at approximately 4 percent; however, there are large spatial and welfare gaps. In particular, wasting rates are highest in the northern and western regions (above 6 percent in 2015/16) and lowest in the central and eastern regions.

Table 5: Children's nutritional indicators – wasting rate for children 6-59 months in percentage

	2009/10	2010/11	2011/12	2013/14	2015/16
Uganda	4.6	3.6	4.5	4.6	4.0
Rural/Urban:					
Rural	5.3	3.9	5.0	4.8	4.1
Urban	1.6	1.3	1.1	4.0	3.2
Region:					
Central	3.2	3.1	4.1	4.3	1.5
Eastern	4.3	3.0	5.1	3.1	3.0
Northern	6.7	4.5	5.2	5.5	6.2
Western	5.0	3.8	2.6	6.4	6.4
PRDP categorisation:					
All PRDP	6.6	3.3	6.2	4.4	4.7
Sporadically affected	8.4	3.6	4.0	5.2	2.3
Severely affected	3.4	5.6	9.3	5.6	13.6
Spill-over	5.4	1.4	7.6	3.0	3.0
Rest of the country	3.4	3.8	3.3	4.8	3.5
Income quintiles:					
Poorest 20%	3.2	3.1	4.1	4.3	1.5
Quintile 2	4.3	3.0	5.1	3.1	3.0
Quintile 3	6.7	4.5	5.2	5.5	6.2
Quintile 4	5.0	3.8	2.6	6.4	6.4
Richest 20%	0.0	0.0	0.0	0.0	0.0
Child's sex:					
Males	5.9	3.2	5.4	4.8	3.4
Females	3.3	4.0	3.7	4.5	4.5

Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

Based on the income distribution household status, children from households in the middle quintile exhibit higher stunting rates compared to children from the poorest and richest households. On the other hand, the difference in wasting rates between the poor and non-poor has widened, from a difference of one percentage point in 2009/10 to approximately 4 percentage points in 2015/16. Most of the above changes appear to be driven by spatial location, especially in areas that were previously affected by war. The wasting rates in the PRDP's *severely affected* districts increased fourfold, from 3.4 percent in 2009/10, to 13.6 percent in 2015/16.

3.3.3 Prevalence of underweight

Uganda has made substantial improvements in reducing underweight status from 14.9 percent in 2009/10 to 7.4 percent in 2015/16. Table 6 shows the prevalence of underweight children between 6 and 59 months of age. The reduction in underweight status was one of the indicators Uganda achieved during the implementation of the MDGs.[62] However, underweight remains highest in the northern region and in particular in the sub-region that was severely affected by the civil conflict.

Table 6: Children's nutritional indicators – prevalence of underweight rate for children 6-59 months in percentage

	2009/10	2010/11	2011/12	2013/14	2015/16
Uganda	14.9	12.0	11.7	11.3	7.4
Rural/Urban:					
Rural	16.2	13.1	12.3	11.7	7.8
Urban	8.8	4.2	8.1	9.7	5.4
Region:					
Central	12.7	9.0	9.8	10.8	5.9
Eastern	14.0	12.0	11.9	10.4	8.5
Northern	17.9	12.8	12.4	14.7	11.5
Western	16.1	16.4	13.1	9.8	3.8
PRDP categorisation:					
All PRDP	16.9	11.9	12.9	13.0	9.6
Sporadically affected	16.3	10.8	8.5	11.9	8.1
Severely affected	22.9	15.1	22.4	19.6	16.9
Spill-over	15.7	11.3	14.0	11.2	7.7
Rest of the country	13.7	12.2	10.9	10.3	6.0
Income quintiles:					
Poorest 20%	18.9	15.5	16.2	14.8	11.8
Quintile 2	18.1	17.1	13.6	13.7	9.0
Quintile 3	16.8	14.2	13.9	11.9	5.3
Quintile 4	13.0	8.7	7.4	9.9	6.4
Richest 20%	7.5	5.2	7.7	7.2	3.2
Child's sex:					
Males	16.1	12.5	13.3	11.7	7.6
Females	13.6	11.6	10.3	10.9	7.1

Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

62 Uganda was able to reduce by more than half the proportion of underweight children under five years of age, from 25.5 percent in 1995 to 10.5 percent in 2016 (UBoS and ICF, 2017).

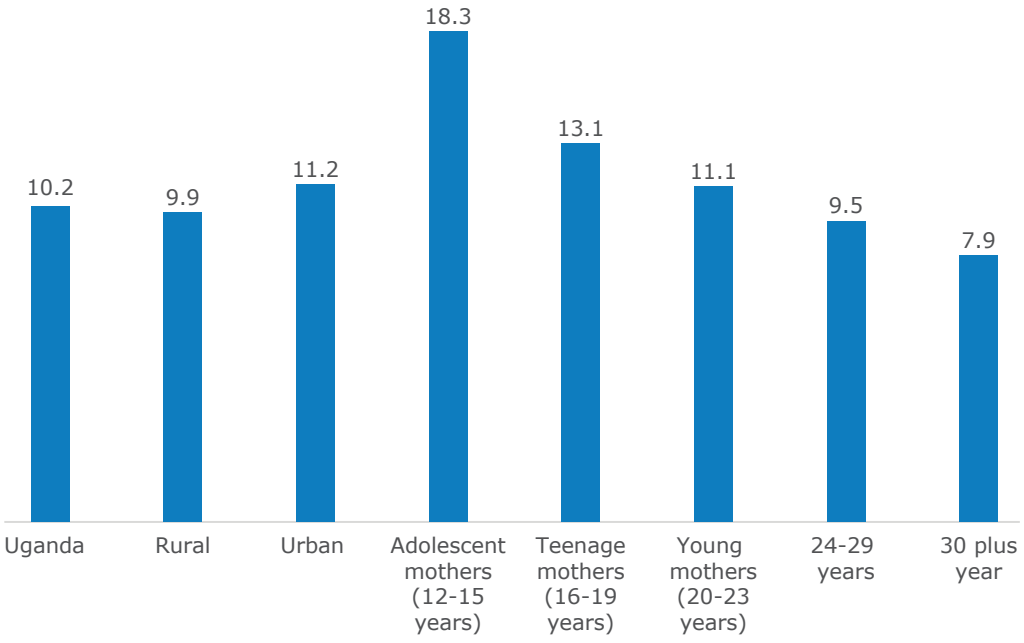
3.3.4 Percentage of children born with low birth weight

Based on the 2011 UDHS, the prevalence of low birth weight (less than 2.5 kg) was only 10 percent. Nonetheless, Uganda's low birth weight rate was slightly higher than that of neighbouring countries, e.g., Tanzania at 7 percent and Rwanda at 6 percent. Figure 8 shows that, in Uganda, low birth weight was most prevalent among adolescent mothers aged 12-15 years, followed by teenage mothers (13 percent), relatively older mothers aged 24-29 years (9.5 percent), and finally mothers at least 30 years of age at the time of birth (8 percent). This may be explained by the poor nutritional status of younger mothers at the initiation of childbearing, and by birth order, with lower birth weight status being a factor mainly for first and second children. Deficiencies in micronutrients, such as anaemia,[63] can also lead to lower birth weight among children and affect the extent of exclusive breastfeeding.

3.3.5 Over-nutrition among children

Given the rising rates of over-nutrition in mothers, it is also important to consider trends in childhood over-nutrition. Figure 13 illustrates trends in infant obesity (defined as children aged less than 5 years, with WHZ scores more than +2 SD from the median), by sub-region. The levels of infant obesity in Uganda are generally low; in both 2006 and 2011, only 3 percent of infants were classified as obese. However, there are wide sub-regional variations with infants in south western Uganda and, to a limited extent, in the central parts of Uganda, more likely to be obese. Furthermore, there are minimal variations in obesity rates by gender, although male infants exhibit slightly higher obesity rates than females (this is not indicated in the chart).

Figure 12: Prevalence of low birth weight in 2011 by mother's age at birth (percent)

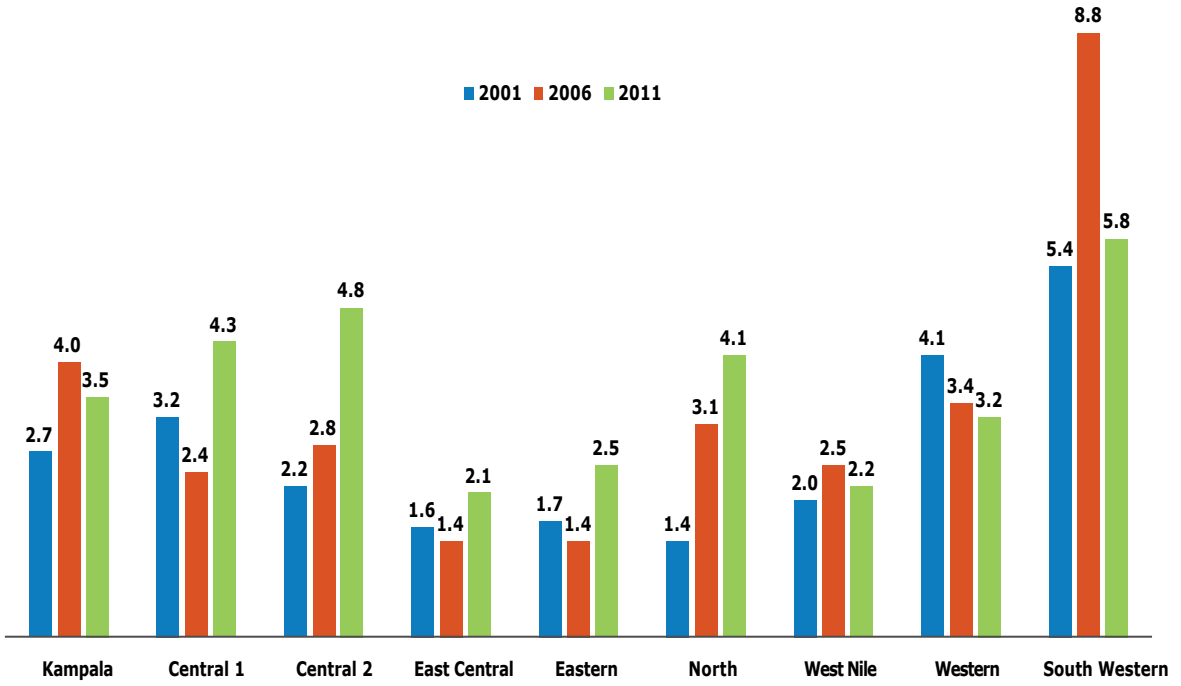


Notes: Low birth weight defined as a birth with a reported birth weight of less than 2.5 kilograms

Source: UDHS 2011

63 Anaemia was discussed in section 3.3.5.

Figure 13: Trends in infant obesity rates, 2001-2011 in percentage



Sources: UDHS 2001, 2006 and 2011 data

3.3.6 Micronutrient deficiencies

An issue which is often neglected regarding nutrition is micronutrient deprivation. Micronutrient deficiencies affect optimal child growth and can contribute to early child death. Deficiencies in micronutrients, such as vitamin A and iron, can reflect hidden hunger due to insufficient intake of quality foods. Due to data limitations, in this Review, this discussion is limited to considerations of deficiencies related to vitamin A and anaemia.

Vitamin A

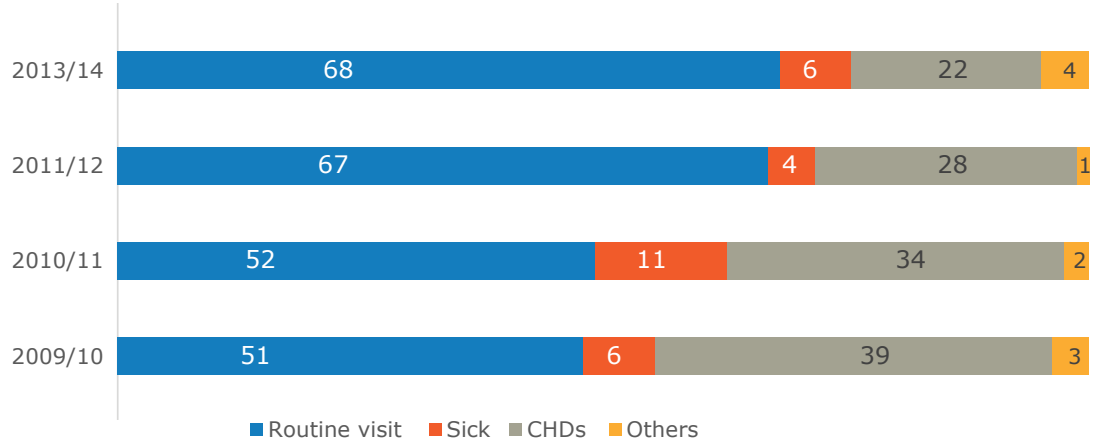
Vitamin A deficiency can increase the severity of childhood illness. Based on the UNPS, the proportion of children aged 6-59 months who received a Vitamin A capsule remained constant at approximately 28 percent during the 2009/10-2015/16 period.[64]

The reason for this stagnation in Vitamin A supplementation has been the significant decline in the observance of Child Health Days (CHDs).[65] According to the MoH, overall coverage of CHDs has declined across Uganda due to inadequate health worker capacity and lack of district resources to effectively assimilate the programme in district activities (MoH, 2014). Indeed, for children who received vitamin A supplementation, an analysis of the UNPS shows that CHDs as result of vitamin A supplementation declined over time, from 39 percent in 2009/10 to 22 percent in 2013/14. Figure 14 shows in percentage the different sources of vitamin A supplementation for children between 6 and 24 months.

64 The current Health Sector Strategic Plan (HSSP) 2015/16-2019/20 targets to increase Vitamin A coverage to 66 percent by 2019/20 (MoH, 2015).

65 A child can receive vitamin A not necessarily during CHD but also from health facilities as part of a routine visit, which is how a substantial proportion of children received the vitamin A capsule. The declining observance of CHDs may partly explain why vitamin A supplementation has not increased during the 7 year period.

Figure 14: Sources of vitamin A supplementation for children aged 6-24 months in percentage



Sources: UNPS 2009/10, 2010/11, 2011/12 and 2013/14 data

The most dramatic decline was registered in the northern region, where CHDs accounted for only 4 percent of vitamin A supplementation in 2013/14, decreasing from 31 percent in 2009/10. However, although acquisition of vitamin A directly through the capsule has remained the same, there are alternative sources of vitamin A (through specific food products). There is evidence showing that bio-fortification interventions, e.g., through the introduction of the orange sweet potato in rural Uganda, have significantly increased vitamin A intake (Hotz *et al*., 2012).

Anaemia in children

Anaemia occurs due to insufficient levels of red blood cells, and iron deficiency anaemia is the most common type of anaemia. According to the 2015/16 Annual Health Sector Performance Report, anaemia was the third leading cause of in-patient death for children under five years, following pneumonia and malaria (MoH, 2016). Table 7 shows trends in anaemia status by haemoglobin levels, for children aged 6-59 months.

Table 7: Micronutrient deprivation: Prevalence of anaemia in children in percentage

	Any anaemia (11.0 g/dl)			By form of anaemia: Mild anaemia (10-10.9 g/dl)			Moderate anaemia (7.0-9.9 g/dl)			Severe anaemia (<7.0 g/dl)		
	2006	2011	2016	2006	2011	2016	2006	2011	2016	2006	2011	2016
All	72.6	49.3	52.8	22.4	22.3	23.7	43.4	25.5	26.9	6.8	1.5	2.3
Rural	74.3	50.9	54	21.7	22.7	23.8	45.3	26.5	27.6	7.3	1.6	2.6
Urban	56.6	38.0	47.7	28.5	19.3	23.1	26.1	18.3	23.7	2	0.4	0.9
Sex												
Male	74.9	50.2	53.7	22.9	22.1	22.5	45.6	27	28.6	6.4	1	2.6
Female	70.3	48.4	51.8	21.9	22.5	24.8	41.2	24.0	25.1	72.0	1.9	2
Wealth quintile												
Lowest	79.7	59.0	65.5	19.9	23.6	26.0	53.5	33.1	34.8	6.3	2.4	4.7
Second	74.8	51.7	54.4	22.5	21.4	23.1	44.3	28.3	29.8	8.1	2.1	1.6
Middle	73.3	51.0	48.7	21.4	25.6	22.6	44.1	24.4	23.4	7.8	1	2.7
Fourth	72.3	42.8	48.5	23.6	19.2	23.5	41.4	22.5	23.4	7.3	1.1	1.6
Highest	60.6	38.2	44.7	25.2	21.0	22.8	31.4	16.6	21.7	3.9	0.5	0.3

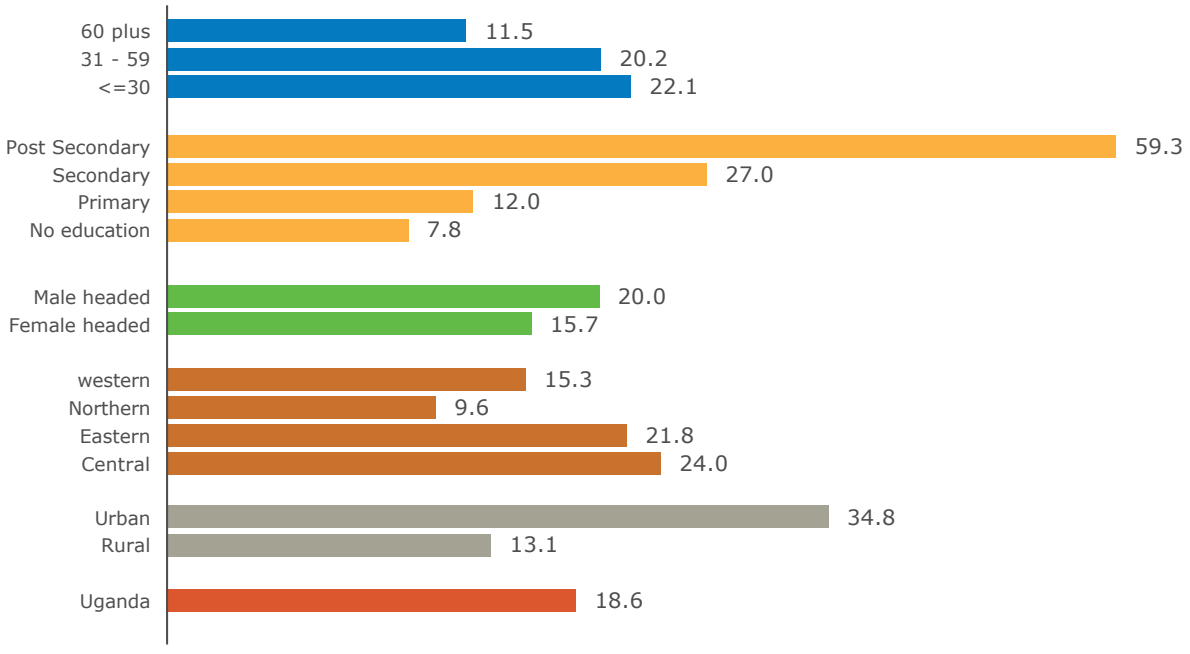
Notes: g/dl refers to Haemoglobin in grams per decilitres
Source: UDHS 2006, 2011, and 2016 data

Although approximately one in two children were anaemic in 2016, the situation has improved significantly between 2006 and 2011 with the level of anaemia decreasing by approximately 22 percentage points. These changes were mainly driven by a large reduction in anaemia among children in the western region (this is not shown in the table).[66] The above results are in line with the HMIS figures, which show a reduction in the burden due to anaemia. For instance, the contribution of anaemia to infant death decreased by approximately half, from 18 percent in 2010 to 9 percent in 2012 (MoH, 2012).

However, in the last 5 years, between 2011 and 2016, there have been only marginal improvements in reducing the prevalence of anaemia and the efforts have been minimal in comparison to the period from 2006 to 2011. As part of the Strengthening Partnerships, Results and Innovations in Nutrition Globally (SPRING) project, there has been an on-going pilot intervention in the Namutumba district, using supplements in the form of micronutrient powders (MNPs) to tackle anaemia in Uganda. These kinds of interventions need to be scaled up.

There have been efforts by the GoU and other stakeholders to promote micronutrient intake through food fortification. As part of the implementation of DSIP, MAAIF has promoted the production and consumption of nutrient-dense foods. Such initiatives include vitamin A-fortified potatoes (commonly known as orange-fleshed), which contribute to improving micronutrients, iron-fortified beans, which contribute to improve iron intakes, and pearl millet, which is rich in magnesium. Figure 15 presents knowledge about food fortification at the household level.

Figure 15: Share of households with knowledge about food fortification in 2015/16 in percentage



Sources: UNPS 2015/16 data

66 It also worth noting that the rates of severe malaria have significantly decreased across Uganda—from 6.8 percent in 2006 to 1.5 percent in 2011.

Only 18.6 percent of households had food fortification related knowledge in 2015/16, and the share in urban areas was almost three-fold that in rural areas. There were regional variations ranging from 9.6 percent of households in the northern region to 24 percent of households in the central region. Knowledge about food fortification was lower in female-headed households than male-headed households. This finding is partly explained by the low educational attainment among females, as the figure reveals that knowledge about food fortification increases with education attainment. Figure 15 further reveals that knowledge was higher among households with younger heads and lowest among households with elderly heads.

3.3.7 Access to food by children while at school

Table 8 shows the extent of receipt of school meals among children attending school in 2013/14. It is indicated that at least one out of every three children received meals at school, for a total of 34 percent, with urban children, as expected, more likely to receive schools meals than their rural counterparts (41 versus 32 percent). However, most of the current school meals are provided by way of parental contribution. Overall, Table 8 illustrates how the largest proportion of Ugandan children go to school hungry, which has implications on their cognitive development, and this situation persists despite UNAP and NDP advocating for community-based school meals programmes (SMP). Previous research points to the positive impacts of SMP in the northern region on school enrolment, attendance, grade repetition, as well as nutrition status of siblings (Alderman *et al*., 2012; Aderma *et al*., 2009). However, as shown in Table 8, this is currently the region has the largest proportion of children lacking school meals. As part of the post-conflict recovery (2006-2009), international organizations such as the WFP have been providing meals in northern Uganda. However, the meals in the Acholi sub-region have been phased out as attention has turned more towards the Karamoja sub-region. As highlighted by previous authors, e.g. Bird *et al.* (2011), due to the severity of poverty in the region, households in northern Uganda require support to retain children in school. The Review also notes the government's efforts to revive the school farms/gardens and support the achievement of FNS targets at the school levels.

Table 8: Extent of receipt of school meals, 2013/14 in percentage

All school going children	Type of school		
	Nursery	Primary	Secondary
Meals provided either free or through parental contribution			
All	34.2	35.6	33.7	35.3
Rural	32.2	31.7	32.0	33.5
Urban	40.9	47.0	40.6	38.5
Central	40.5	32.1	42.3	41.6
Eastern	56.2	68.5	57.3	44.2
Northern	14.8	65.9	11.6	13.9
Western	14.4	13.6	12.4	23.5

Source: UNPS 2013/14 data

Box 7: School farms can promote agriculture and nutrition – Lessons from Gayaza High School

Gayaza High School farm was established using a grant from the church missionary society to train the girl child on food production, preparation and nutrition. However, not much attention was paid to the farm until 2013, when the school realized that better use of farm resources could support learning and nutrition.

Since then, the farm has been revamped as a semi-autonomous body, with the oversight of the Board of Governors constituted into a farm committee. Day to day operations are managed by a farm manager with support of farm employees and the financial management is undertaken by the school bursar. Indeed the primary market for the farm produce is the school itself, however the finances are separated and so far, farm income has been used to pay staff salaries, and purchase inputs and profits are reinvested in the different on-farm initiatives.

Our visit to the school revealed that the school has about 40 acres of land. The moistest parts are used for production of vegetables like cabbage, tomatoes, amaranthus spp, onions, egg plants and a variety of other indigenous species. In addition, GHS has initiated a student led approach to banana production. This is effected by providing the student with a sucker, agronomic lessons, manure and equipment to plant and nurture a banana. The student has the overall responsibility of taking care of the plant until harvest while the farm manager maintains records and undertakes marketing. Any income generated is shared between the student or group of students and the farm on equal basis. Where a student has departed, a mechanism exists for another student to take over the management of the crop.

GHS has extended this initiative to twenty schools including Ndejje S.S, Nyakasura School, St. Catherine, Mary Hill High school, and Our Lady of Good Counsel among others, through an annual school camp which is attended by five students and one teacher from each of the invited schools. Some of these schools have embraced farming and now have their own innovations, like the production of coffee and yoghurt by Nyakasura School and the production of mushrooms in Mary Hill. The school has also established a demonstration center to support hands on learning.

Although the school still relies on rain water for production, soil quality is maintained by use of water from the swamp and the application of organic fertilizers.

- *The farm produces the meat, vegetables, sweet potatoes and milk consumed by the school community. Local food production permits inclusion of milk and vegetables to students' diets all year round*
- *The farm has imparted long term knowledge and life skills by linking farming to other subjects, e.g. planning and forecasting yields, business skills, financial management and leadership*
- *The farm has also generated income which has been reinvested for expansion*
- *Students have replicated lessons from the school farm in their family gardens and become change agents in their communities.*

Photos by: EPRC May 18, 2017

3.3.8 Women's nutrition status

Table 9: Trends in poor women's nutritional status by sub-regions, 2006 and 2011

	2006			2011		
	Thin (BMI<18.5)	Overweight (BMI>25)	Obese (BMI>30)	Thin (BMI<18.5)	Overweight (BMI>25)	Obese (BMI>30)
All women aged 15-49 years		**16.5**	**4.1**	**11.7**	**18.8**	**4.2**
Sub-region						
Kampala	4.8	34.4	15.3	7.7	40.4	13
Central 1	7.1	22.9	4.3	7.3	23.3	6.3
Central 2	7.4	22.0	4.6	8.2	20.4	3.6
East Central	13.4	11.1	1.0	11.9	15.7	1.4
Eastern	18.7	4.9	2.2	20.0	9.2	1.9
Karamoja				32.8	1.0	0.0
North	20.8	6.1	1.0	16.3	7.2	0.2
West Nile	19.9	6.7	0.9	20.9	4.5	0.6
Western	9.6	16.6	3.2	7.8	22.9	5.6
South Western	6.6	26.7	5.8	4.8	23	4.1

Source: UDHS 2006 and 2011 data

Women's nutritional health is important not only for their own health status but also for the health status of current and future offspring. Table 9 examines trends in poor maternal nutritional health, such as: thinness, overweight and obesity.[67] Overweight status among women has consistently increased during the past 20 years, constantly rising from 8 percent in 1995 to 19 percent in 2011. The above trends are consistent with international literature, which shows declines in women's nutritional health with increase in general welfare, which relates to nutrition transitions of changing diets in response to welfare improvements (Ecker *et al*., 2016). Table 9: shows how, over time, overweight rates have increased in the most affluent parts of Uganda, and most notably in the capital, Kampala. On the other hand, obesity rates have generally declined in the past 15 years, decreasing from 10.6 percent in 2001 to 4.1 percent in 2011.

Despite reduction in obesity rates, there are large variations in female obesity in different parts of the country. In 2011, obesity rates in Kampala were more than 3-fold the national rate (15.3 percent versus 4.2 percent) and were more than double the rates in the south-west, which is the sub-region with the second highest rates. This large variation suggests that overweight and obesity rates in Uganda are mainly an urban problem, which partly ties back to the nutrition transition hypothesis mentioned earlier.[68]

Prevalence of Anaemia among women

With regards to anaemia among pregnant and non-pregnant women, table 10 illustrates how Uganda has registered a reversal in previous gains. Specifically, the prevalence of anaemia reduced between 2006 and 2011 but increased in 2016 to 32 percent. The reversal was mainly driven by the surge in mild anaemia prevalence rates across spatial location and socio-economic status.

67 Due to data limitations, the Review does not consider either acute energy deficiency or chronic energy deficiency, which are indicators used to examine nutrition deficiencies in adults.

68 It is worth noting that rates of female thinness increased, from 8.5 percent in 2001 to 12 percent in 2006, and they were maintained in 2011. Female thinness was most prevalent in north and eastern Uganda, where the rates were approximately 20 percent in 2011. In the year 2011, for which there are reliable estimates for Karamoja, this sub-region had the largest proportion of underweight females, at 32 percent.

Table 10: Micronutrient deprivation: Prevalence of anaemia in women in percentage

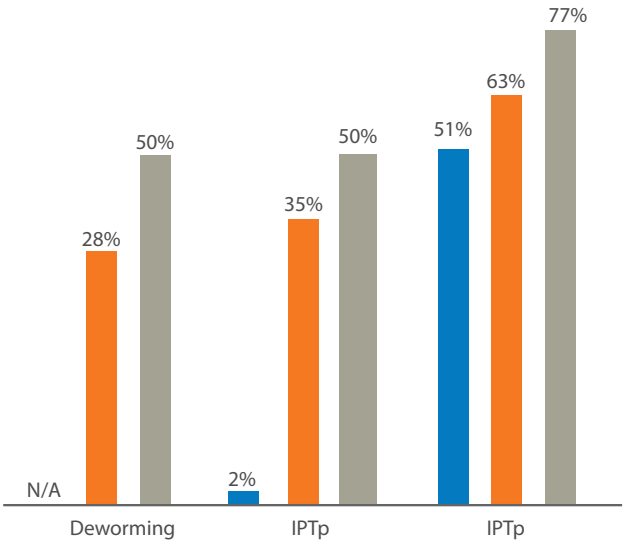
Any anaemia				By form of anaemia								
				Mild anaemia			Moderate anaemia			Severe anaemia		
Non pregnant	(<12.0 g/dl)			(10-11.9 g/dl)			(7.0-9.9 g/dl)			(<7.0 g/dl)		
Pregnant	(<11.0 g/dl)			(10-10.9 g/dl)			(7.0-9.9 g/dl)			(<7.0 g/dl)		
	2006	2011	2016	2006	2011	2016	2006	2011	2016	2006	2011	2016
All	49.0	23.0	31.8	34.9	17.7	25.2	13.3	4.8	6.0	0.8	0.6	0.6
Rural	51.8	23.8	33.2	36.7	18.6	26.3	14.2	4.5	4.8	0.9	0.7	0.7
Urban	34.9	19.9	27.4	25.6	13.9	21.9	9.2	5.8	6.4	0.1	0.2	0.6
Wealth quintile												
Lowest	57.8	28.6	40.6	42.0	21.9	31.2	14.9	6.5	8.8	0.9	0.2	0.5
Second	55.3	26.4	32.9	39.4	22.1	27.2	14.9	4.3	5.1	1.0	0.0	0.6
Middle	50.1	19.0	30.7	34.6	14.4	24.5	14.2	4.4	5.5	1.3	0.2	0.6
Fourth	47.2	22.2	31.9	31.9	16.9	25.0	14.7	4.6	6.5	0.5	0.7	0.4
Highest	39.0	20.5	25.1	29.2	14.7	19.7	9.7	4.3	4.6	0.4	1.5	0.8

Notes: g/dl refers to Haemoglobin in grams per decilitres
Source: UDHS 2006, 2011, and 2016 data

Prevention of Anaemia among pregnant women

To prevent anaemia, which is also prevalent among expectant mothers, the GoU has over time implemented different interventions, including food fortification, deworming, iron supplementation, and the use of intermittent preventive treatment during pregnancy. Figure 16 shows how the uptake of anaemia-related interventions increased between 2001 and 2011. Specifically, the chart shows how, between 2006 and 2011, deworming nearly doubled from 28 percent to 50 percent among women giving birth within the past 5 years. Furthermore, iron supplementation has consistently increased, from 51 percent in 2001 to 77 percent by 2011.

Figure 16: Use of Select Anaemia-Related Services during ANC among Women who had given Birth in the Past five Years (%)



Source: SPRING (2015)

3.4 Double Agricultural Productivity and Incomes for Small-Scale Food Producers

SDG2 target 2.3:

By 2030, double the agricultural productivity and incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.

Indicators:

- Percentage of women/men with secure rights to land
- Percentage of land parcels with documented or recognised evidence of tenure
- Percentage who perceive that land rights are being not recognised or protected
- Smallholder farmer agricultural income
- Number/share of rural labour force employed in farm activities vis-à-vis off-farm activities
- Crop yield gap (farm level/research station)
- Share of farmers covered by public agricultural extension services
- Cereal yield growth rates per annum
- Livestock yield gap [Insufficient data to compute this indicator as explained in the methodology section]
- Access to drying, storage and processing facilities post-harvest

3.4.1 Context of smallholder farmers

In 2015/16 nearly 92 percent of land holding was under smallholder farmer control and management.[69] There were regional variations, however, ranging from 88 percent in the western region to 97.2 percent in the northern region. Nearly 24 percent of smallholder farmers were engaged in crop agriculture only, 46.7 percent were engaged in some degree of mixed farming, and the rest were engaged in animal husbandry only. Throughout the country, livestock husbandry is an activity that is predominantly conducted by men, while women are mainly engaged in crop agriculture.

The quantity of land cultivated in Uganda has steadily increased over time, between 1961 and 2014) (FAOSTAT, 2017).

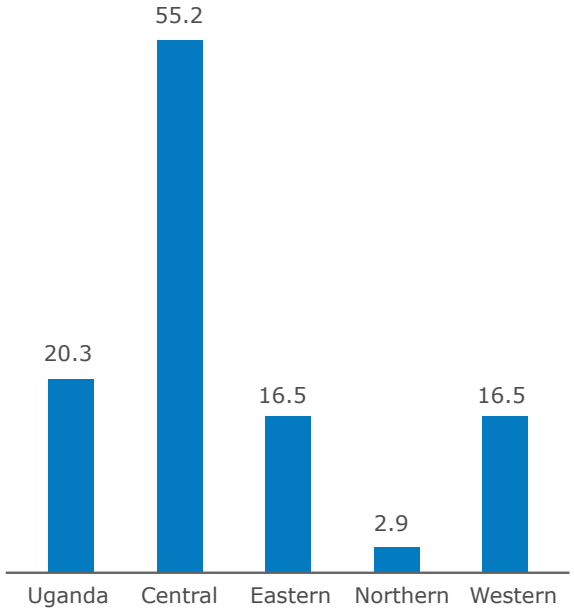
However, while land cover areas used by smallholder farmers have fundamentally remained the same, large scale farmers have registered a substantial increment of cultivated land by 36 percent.

3.4.2 Percentage of farmers with documented or recognised evidence of land tenure

UNPS surveys from 2015/16 enquired on whether parcels of land owned by households had a formal certificate of title or customary of ownership issued and registered by government authorities. Figure 17 below indicates that, nationally, 20.3 percent of the parcel holdings had a formal certification.

69 In sub section 2.2.3, the Review provided a definition of smallholder farmers in the Ugandan context.

Figure 17: Share of land parcels with titles in 2015/16 in percentage



Source: UNPS 2015/16 data

Across regions, there were significant differences in land titling formalisation, with the central region having the highest share of titled land (55 percent), and the northern region having the most negligible share (3 percent). This result is greatly influenced by the current land tenure system. The lack of formal land titles impacts farmers' investments in land and adoption of productivity-enhancing technologies. There is large evidence in the literature showing that households usually make long-term agricultural investments on land with full ownership. Deininger and Ali (2008), for instance, showed that movement from land occupancy to ownership was associated with expansion in soil conservation and large increases in tree investment, especially coffee trees. Indeed, the low share of formalised land titles has implications on the government's on-going efforts to enhance the agricultural production and productivity of smallholder farmers.

Furthermore, the panel survey enquired about information on the name(s) of the household member(s) who appeared on the parcel title. It is evident that land is titled either individually or jointly, and individually land titling was more than two-fold the joint land titling. Efforts were made to disaggregate this information further by sex (males and females) and relationship to head of household.[70] About 68 percent of parcels were under individual names, of which 72 percent were under the names of a male.

Table 11 (Panel A) examines whether land titles are either in male or female names and who within the household has control over the land parcels.

70 It should be pointed out, for joint titling, that the survey gathered information on the first names of the title (referred to as primary) and the second names (referred to as secondary).

Table 11: Land title, ownership rights and decision making by relationship in 2015/16 in percentage

Sex	Description	Head	Spouse	Others	All
Panel A: Titled land (in whose name(s))[a]					
Males	Single	54.1	5.5	1.4	61.1
	Primary	33.8	1.4	0.2	35.4
	Secondary	2.5	1.0	0.0	3.5
	Total	90.4	7.9	1.7	100.0
Females	Single	34.9	0.8	1.9	37.6
	Primary	1.6	2.8	2.5	6.9
	Secondary	2.3	51.2	2.0	55.5
	Total	38.7	54.8	6.5	100.0
Panel B: Owner rights					
Males	Single	29.7	1.8	0.5	31.9
	Primary	57.5	1.7	0.4	59.5
	Secondary	6.3	2.1	0.0	8.5
	Total	93.5	5.6	0.9	100.0
Females	Single	23.9	0.8	0.3	25.0
	Primary	2.5	1.9	7.6	12.0
	Secondary	1.9	60.2	0.9	63.0
	Total	28.3	62.9	8.8	100.0
Panel C: Decision to sell/collateral parcel					
Males	Single	31.3	1.6	0.4	33.3
	Primary	55.7	1.4	0.6	57.6
	Secondary	7.2	1.8	0.0	9.1
	Total	94.2	4.8	1.0	100.0
Females	Single	23.0	1.6	0.5	25.2
	Primary	2.3	2.5	8.4	13.2
	Secondary	1.7	58.5	1.3	61.6
	Total	27.1	62.6	10.3	100.0

Note: estimates for only those parcels with certification/documentation; Single refers to titles/owner rights/decision making by one individual whereas primary and secondary refers to joint documentation/ owner rights/decision making.

Source: UNPS 2015/16 data

Fifty four percent of males carried titles in their individual names compared to only 38 percent of females (mainly through being a head), and they are likely to be heads of households. The likelihood of joint land titling was higher among females (mainly through marriage) than males, with males' names more likely to appear first, mainly as a head (34 percent) and females' names more likely to appear in second position, mainly as spouses (51 percent). These results suggest an unequal formal land ownership between women and men, with a small share of females with parcel holdings registered in their own names. The results also show how, through marriage, a higher share of females have their names appearing on the land titles together with their husbands.

3.4.3 Percentage of women and men with secure rights to land

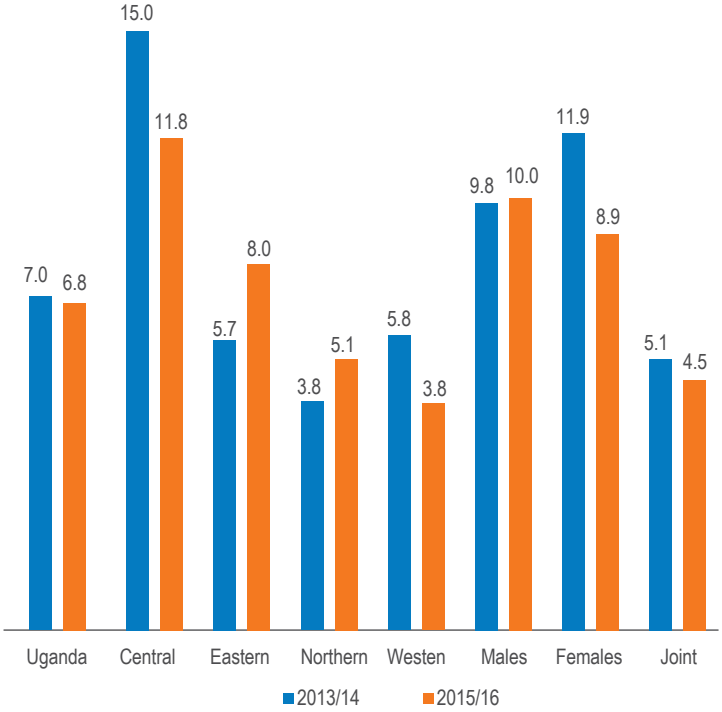
Smallholder farmers access agricultural land either under owner rights and/or user rights (e.g. through renting). The Review focuses on owner rights divided by gender, as presented above in Table 12 (panel B). In 2015/16, nearly 32 percent among males had individual owner rights over parcel holding compared to 25 percent among their female counterparts. Under joint ownership, males who are at the same time heads of households were more likely to be the primary owners (57 percent) and females were more likely to be secondary owners through marriage (60 percent).

The UNPS further enquired about who would make a decision on whether to sell the parcel or use it as collateral.[71] Under this indicator, the Review considered a decision making dimension for parcels under owner rights. The distribution for this particular decision making is similar to what was observed under land ownership rights, which is that, by virtue of marriage, females have significant secondary decision making power regarding the selling/use of land parcels. To a great extent, these results are explained by the provision within the **Land Amendment Act (2004)** that requires the consent of spouse (and children) prior to parcel holding sale, or use of the parcel as collateral to access formal credit.

3.4.4 Smallholder farmers perceiving their rights to land to be disputed

Other than differences in land tenure systems, the second indicator of secure land rights is related to the percentage of women and men who perceived disputes over their land rights as formally recognised and protected. element provides complementary information about the likelihood of future land conflict. The UNPS asked households the following question: '*Have you ever been concerned that somebody might dispute your ownership/use rights on this parcel*?' Figure 18 shows the responses to this question, including those parcels with formal titles.

Figure 18: Shares of parcel holding with perceived ownership rights disputes in percentage



Notes: Estimates for the western region in 2015/16 have high coefficient of variations and need to be interpreted with caution; males and females estimates refer to those parcel holdings under individual ownership rights and joint ownership rights for joint parcels.

Source: UNPS 2013/14 and 2015/16 data

Overall, only a small portion of land owners cited possible future disputes on their land parcels. Specifically, dispute concerns were cited for only about 7 of every 100 parcel holdings under ownership rights. There were notable variations across regions and composition of ownership rights. The perceived threat of land disputes was highest in the central region[72] (the region with the highest share of land with titles), and growing in the eastern and northern regions. In terms of ownership rights, threats were more likely to be cited for those parcels under individual ownership compared to parcels under joint ownership (see Figure 18). Further analysis of single ownership rights indicates a higher threat for parcels under male ownership (10 percent) than for those under female ownership (9 percent) in 2015/16.

71 See, Table 11: panel C.

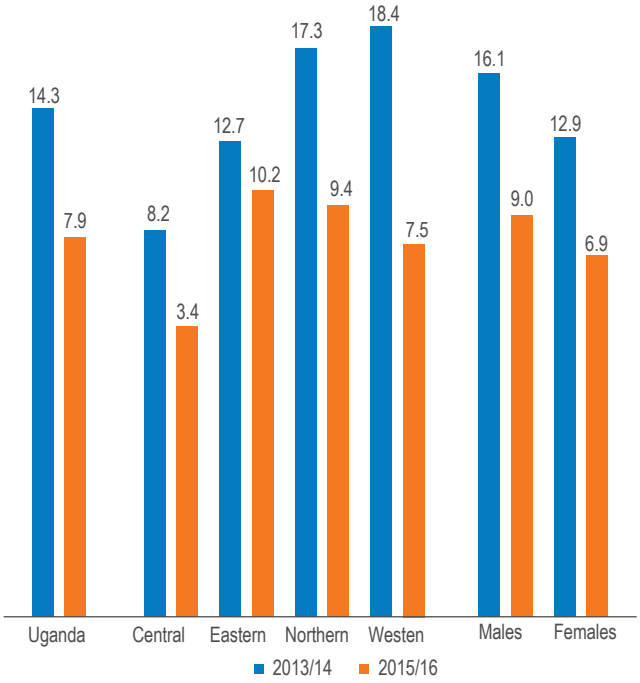
72 In the central region the trend of the perceived threat of land disputes was noted to decline from 15 percent in 2013/14 to 12 percent in 2015/16.

3.4.5 Percentage of farmers with access to extension services

Within SDG target 2.3, the availability of extension services is considered key to attaining sustainable agriculture. As part of the overall restructuring of the extension service delivery, in 2014, through the MAAIF, the GoU formulated the 'Single Spine' extension system model. In 2014/15, recruitment of extension workers at district level commenced. As of 2015, the extension staff human resource gap was estimated to be approximately 86 percent, and of the 6,952 approved technical positions, only 994 have been filled to date (Barungi et al., 2016). The proportion of the approved structure that has been filled has since increased exponentially, from 11 percent in 2014/15 to 50 percent in 2015/16. As of March 2017, at least 61 percent of the approved posts were filled and it is expected that by the end of June 2017, the district extension will number 4,000 workers, which is equivalent to 80 percent of the approved posts (MAAIF, 2017). If the target of 4,000 extension workers is attained, the ratio of extension workers to farmers in Uganda will be reduced to 1:1,000 in 2017, decreasing from 1:5,000 in 2014/15. Based on UNPS data, there are about 8.9 million smallholder farmers which implies that the number of approved technical positions will need to increase from 6,952 to over 8,000 in order to reach the desired target ratio of extension workers to farmers of 1:1,000.

The Review notes that the 'Single Spine' model does not address the entire food system to include extension provision on nutrition, which is critical to FNS. There are private actors in the provision of extension services but the Review focuses on public provision only. Figure 19 shows the share of farmers who accessed information on agricultural and livestock activities, through public extension services (National Agricultural Advisory Services [NAADS]), during the past 12 months prior to the survey.[73] Of over 8 million smallholder farmers, less than one million (only 0.635 million) accessed public extension services.

Figure 19: Share of farmers with access to public extension services in 2013/14 and 2015/16 in percentage



Source: UNPS 2013/14 and 2015/16 data

Figure 19 shows a significant reduction in the share of farmers who accessed public extension services, from 14 percent in 2013/14 to 8 percent in 2015/16. The observed reduction was partly attributed to changes in the provision of public extension services from NAADS to a 'Single Spine' extension service. Notwithstanding this development, smallholder farmers' access to public extension services remained low during the implementation of the NAADS programme. Similar to the national level, significant reductions in access to public extension services were noted by region, with the highest reduction in the western region (11 percentage points), followed by the northern region (8 percent points). The observed reduction in the eastern region was not significant. Regardless of the survey period, farmers in the central region were less likely to access public extension services compared to their counterparts in the other regions.

73 Both in 2013/14 and 2015/16.

In terms of gender, male farmers were more likely to access public extension services than their female counterparts in both 2013/14 and 2015/16.[74] Furthermore, both males and females registered a decline in access to extension services during 2013/14-2015/16. The reduction in access was greater for male farmers (7 percentage points) than for their female counterparts (6 percentage points), and this translated into narrowing the gender gap in access to public extension services. As discussed earlier, females were more likely to engage in food crop agriculture, whereas males were more likely to engage in cash crop and livestock husbandry. This means that access to extension services for those individuals in food crop agriculture remains limited, which has implications on crop productivity.

3.4.6 Crop yield gap of the major food staples

Table 12 presents the crop yields for the main food staples based on the UNPS 2013/14 and 2015/16 data. The crop yields varied by farming season and type of crop. Cassava, for instance, registered the highest growth, followed by banana and maize, whereas millet, groundnuts and beans registered declines in crop yields during the 2013/14-2015/16 period. The crop yield reduction for millet, sorghum, beans, and groundnuts has negative implications on the food security of Ugandans, especially those who depend on own food production for their subsistence.[75]

Table 12: Food crop yields 2013/14-2015/16 (tonnes/hectare)

	2013/14			2015/16		
Food crop	**Farming season**			**Farming season**		
	Jul-Dec	**Jan-Jun**	**Year**	**Jul-Dec**	**Jan-Jun**	**Year**
Maize	1.11	1.49	1.31	1.46	1.83	1.65
Rice	1.16	1.05	1.10	1.17	1.36	1.28
Millet	0.54	0.91	0.73	0.65	0.35	0.48
Sorghum	0.34	0.47	0.42	0.40	0.39	0.40
Beans	0.70	0.67	0.68	0.59	0.52	0.55
Groundnuts	0.50	0.47	0.49	0.31	0.42	0.37
Irish Potatoes	2.86	2.47	2.68	2.72	3.52	3.11
Sweet potatoes	2.13	1.44	1.75	1.82	1.71	1.77
Cassava	0.85	0.62	0.71	1.42	1.04	1.23
Banana	3.80	2.64	3.12	4.57	3.90	4.22

Notes: Crop yields in tonnes per hectare at research stations were as follows: 5-8 for maize, 2-4 for beans, 2.7–3.5 for groundnuts and 4-5 for banana (MAAIF, 2010). No information was available for other crops

Source: UNPS 2013/14 and 2015/16 data

74 Accessing extension services may require movement to centralized areas such as the sub-county headquarters; women's movements to such distant places in order to access extension and other services may be constrained by either spouses or lack of funds for transport.

75 See Box A1.

Table 12: Food crop yields 2013/14-2015/16 (tonnes/hectare)

	2013/14			2015/16		
Food crop	Farming season			Farming season		
	Jul-Dec	Jan-Jun	Year	Jul-Dec	Jan-Jun	Year
Maize	1.11	1.49	1.31	1.46	1.83	1.65
Rice	1.16	1.05	1.10	1.17	1.36	1.28
Millet	0.54	0.91	0.73	0.65	0.35	0.48
Sorghum	0.34	0.47	0.42	0.40	0.39	0.40
Beans	0.70	0.67	0.68	0.59	0.52	0.55
Groundnuts	0.50	0.47	0.49	0.31	0.42	0.37
Irish Potatoes	2.86	2.47	2.68	2.72	3.52	3.11
Sweet potatoes	2.13	1.44	1.75	1.82	1.71	1.77
Cassava	0.85	0.62	0.71	1.42	1.04	1.23
Banana	3.80	2.64	3.12	4.57	3.90	4.22

Notes: Crop yields in tonnes per hectare at research stations were as follows: 5-8 for maize, 2-4 for beans, 2.7–3.5 for groundnuts and 4-5 for banana (MAAIF, 2010). No information was available for other crops

Source: UNPS 2013/14 and 2015/16 data

Table 13 shows significant crop yield gaps between on-farm yields and those attainable at research stations. Low access to extension services,[76] adoption of agricultural-enhancing technologies (such as fertilisers, improved seeds, and irrigation), and uncertainties around land tenure greatly explain the low farm yields. Indeed, one of the key objectives of the 2010/15 Agricultural Development Strategic Investment plan (DSIP) was to reduce these crop yield gaps.

As a result, one can question the effectiveness of government programmes targeting smallholder farmers. These yield gaps coupled with unsustainable growth in crop yields present a threat to FNS. Even if the smallholder farmers were to double crop yields by 2030, the yield gaps for some crops will remain lower than those attainable at research stations.

Table 13: Crop yield gaps (tonnes/hectare)

	2013/14		2015/16	
Food crop	Actual	Gap	Actual	Gap
Maize	1.31	3.69	1.65	3.35
Beans	0.68	1.32	0.55	1.45
Groundnuts	0.49	2.21	0.37	2.33
Banana	3.12	1.38	4.22	0.28

Notes: Computations are based on the lower bound of the expected yields at research stations

76 See section 3.4.5.

3.4.7 Agricultural income for smallholder farmers

The SDG target 2.3 calls for doubling smallholder farmers' income derived from agriculture. According to UBoS (2016), the share of households trapped in subsistence agricultural production remained at about 69 percent between 2002 and 2014.[77] Similar results can be observed through the UNPS data, with most smallholder farmers producing for their own home consumption and not for the market.

Table 14 presents agricultural income among smallholder farmers. All agriculture income includes income from crops, livestock and poultry, and their related products.

Smallholder farmers derive a higher share from crop than from livestock and poultry agriculture. Broadly speaking, smallholders in the western region reported higher income (mean and median) compared to their counterparts in other regions. With the current level of income from agriculture, it would be difficult for agricultural households to meet the government's target of UGX 20 million per household per annum.[78] In addition, as long as the binding constraints to productivity remain unaddressed, farmers will continue to receive low incomes from agriculture. On a positive note, there are pockets of smallholders, especially in urban areas, who have managed to demonstrate that agriculture is profitable (Box 8).

Table 14: Annual income from agriculture, UGX

	2013/14				2015/16			
	Crop		All agriculture		Crop		All agriculture	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Uganda	792,840	312,000	859,562	350,000	934,798	332,000	1,138,879	398,000
Central	1,093,503	372,000	1,184,896	400,000	1,398,874	460,000	1,589,805	618,000
Eastern	351,768	155,000	434,012	200,000	546,259	170,000	634,550	252,000
Northern	501,925	195,000	521,408	193,000	544,359	235,000	602,365	243,000
Western	1,069,068	541,000	1,177,676	628,000	1,146,510	520,000	1,599,166	692,000

Notes: a) The mean and median estimates are indicative of high inequalities in agricultural incomes among smallholder farmers. b) Income computed for only those smallholder farmers that reported sales in the last 12 months

Source: UNPS 2013/14 and 2015/16 data

77 Based on the Uganda National Population and Housing Census of 2002 and 2014.

78 See MoFPED, 2008.

Box 8: Smallholders can exploit urban farming to harness the opportunities from urbanisation

*Kwagala farm located in Kulambiro, a Kampala suburb, stands on less than 0.5 acres of land but produces organic vegetables (mainly onions, eggplants, cabbage, sukumawiki, tomatoes, and carrots), yams and strawberry jam, peat soil and organic fertilizers all year round. Although it was started mainly to permit owners' cut expenditures by consuming home grown vegetables, since 2010 the farm has grown and now generates a return on investment of over USD 25,000 annually. The model involves a few levels. First, e**fficient space utilization**: owing to the limited land holding on which the farm operates, there has been extensive use of pots and biodegradable polythene to hold the soil on which crops are grown; second, i**dentity**: the farm is organic and has therefore coined itself as a reliable source of organic products in Kampala, with quality is assured by permitting customers to harvest directly or for harvesting to occur in their presence; third, d**iversification**: knowing the different farm resources as well as customer needs, Kwagala farm has put in place a livestock unit consisting of poultry and dairy; the milk from the farm is largely consumed by the family, however animal wastes are used as inputs for biogas production and soil replenishment; fourth, v**alue addition:** arising from customer demands and the need to improve shelf life of some farm products, the farm innovated simple techniques to add value, by making straw berry jam and organic manure, which is packaged and sold to organic farmers in Uganda and Rwanda; and fifth, k**nowledge sharing:** when the farm hit a return on investment of USD15,000, the proprietor decided to give back to the community by skilling and empowering young mothers.*

Because of this initiative the farm won best urban farmers award in 2015 and the American Express Leadership award. The glaring lesson for all smallholders is that limited space can be used to achieve food and nutrition security with innovation and hard work.

Notes: Dr. Diana Nsubuga at her Kwagala Farm in Kulambiro, a Kampala suburb
Photo by: EPRC on May 18, 2017.

3.4.8 Number and share of females deriving their income from agricultural activities

Table 15 shows the rural labour force employed in the agricultural sector. Between 2013/14 and 2015/16, the proportion of rural labour force increased by 2.5 percent.[79] The share of women in the total rural labour force remained stable at approximately 56.5 percent. Nearly 4.5 million women were engaged in agricultural activities in 2013/14, and this figure increased to 4.8 million in 2015/16, representing a 7 percent increase.[80]

The share of females in agricultural activities increased from 78 percent in 2013/14 to 82 percent in 2015/16, whereas that of their male counterparts remained at 66 percent in both periods. These findings suggest that women are increasingly relying on low-productivity agricultural activities.[81] However, even in this context, women are able to provide better caloric intake for their households.[82] These findings imply that, if Uganda is to achieve zero hunger by 2030, efforts should be initiated to unlock the binding constraints to agricultural productivity.

Table 15: Rural labour force employed in agricultural activities

Survey year	Description	Females	Males	All
2013/14	Total population (millions)	5.7	5.5	11.1
	In agriculture (millions)	4.5	3.6	8.1
	% in agriculture	78.1	66.2	73.1
2015/16	Total population (millions)	5.8	5.6	11.4
	In agriculture (millions)	4.8	3.7	8.5
	% in agriculture	82.1	65.6	74.7

Source: UNPS 2013/14 and 2015/15 data

79 In absolute terms, the rural labour force increased to 11.4 million persons in 2015/16 from 11.1 million persons in 2013/14.

80 Compared to a 2 percent increase for men.

81 See section 3.5.

82 See section 3.2 for female-headed households.

3.5 Ensure a Sustainable Food Production System

SDG2 target 2.4:

By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

Indicators:

- The proportion of agricultural under productive and sustainable agriculture practices
- Losses from natural disasters by climate- and non-climate-related events
- The existence of irrigation and water harvest technologies
- The number of farmers adopting sustainable land management

3.5.1 Proportion of agricultural area under productive and sustainable agricultural practices

The aim of sustainable production approaches is to intensify production and create greater yields by using fewer inputs. Sustainable food production involves approaches that combine ecological soundness with economic viability, social justice, humanity, and adaptability (Reijntjes *et al.*, 1992). They account for social, economic and ecological considerations in food systems by employing appropriate technology (e.g., infrastructure and storage), avoiding wastage, and improving and preserving water quality, and resource use efficiency.

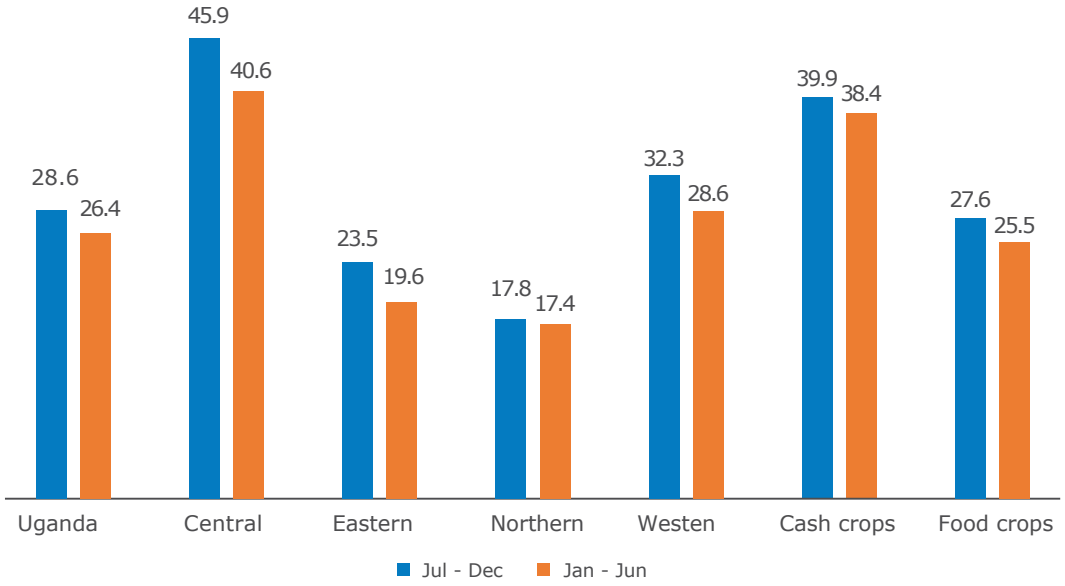
To date, in Uganda, sustainable food production systems and resilient agricultural practices have been promoted through irrigation and the use of water-harvesting technologies, sustainable land management practices, climate-smart agriculture, adaptation planning, and the provision of early warning systems.

Farmers have also been encouraged to integrate agroforestry practices into routine farming by planting fruit trees and building tree or shrub boundaries around gardens to reduce the speed of runoff and to serve as wind breaks.

The agricultural sector in Uganda is charged with multiple roles, including ensuring food security through increased productivity and income, fostering adaptation to climate change, extreme weather, drought, flooding and other disasters, and steering climate change mitigation efforts.

The global measure for SDG target 2.4 is the proportion of agricultural area under productive and sustainable agricultural practices. Figure 20 shows the proportion of land under SLM, by farming season, based on the ATAAS 2014 data.

Figure 20: Proportion of cultivated land under sustainable agricultural practices in 2014 in percentage



Notes: Focuses on soil fertility management practices that include: application of chemical fertiliser, animal manure, green manure, Rhizobia, compositing and organic residue management, mulching, trenches/terraces/grass bands; and irrigation. Therefore, the estimate refers to the application of at least one of the above mentioned practise

Source: ATAAS 2014 data

From the data, the following observations can be made: first, the land cultivated under SLM in 2014 was below 30 percent, which may explain the low crop yields;[83] second, a higher share of SLM is prevalent during the July-December agricultural season; third, under SLM, a larger share of land is used for cash crops compared to food crops. As discussed previously, men dominate cash crops and women dominate food crop production; consequently, Figure 16 suggests that land used by women registers lower rates of SLM. Finally, most of the land under SLM is in the central region followed by the western region, and these two regions registered the highest caloric intakes.

3.5.2 Existence of irrigation and water-harvesting technologies

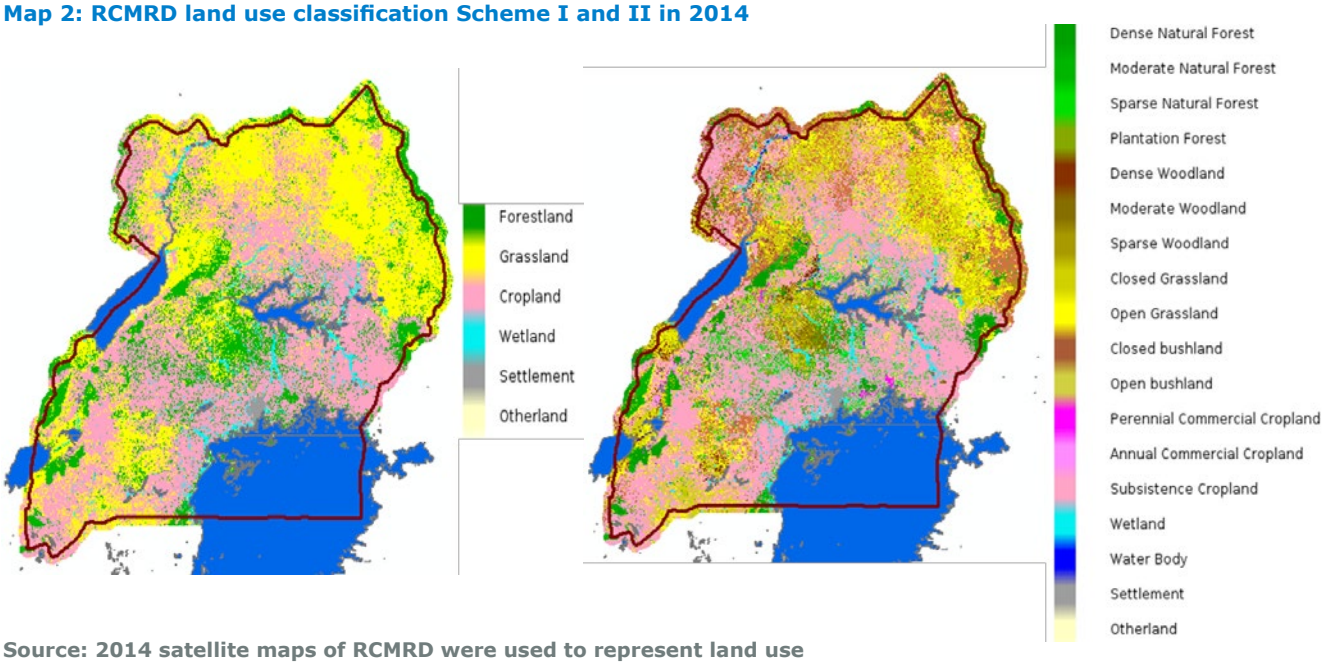
The majority of Ugandan households are subsistence farmers and rely on rainfalls for agricultural production. Historically, rainfall patterns were reliable and predictable in terms of timing and intensity, which aided production planning. However, this has changed with the onset of climate variability. In some cases, prolonged dry spells have been followed by unusually heavy precipitation. The potential of irrigation to contribute to food security, income growth and poverty alleviation through enhanced production and productivity, particularly in the face of climate change, is well understood. Nevertheless, the use of irrigation in Uganda is still minimal. Although data on irrigation is limited, FAO estimates indicate that the total area equipped for irrigation in Uganda is of 11,137 hectares, which represents only 0.1 percent of the country's total arable land, with the crops under irrigation mainly being rice and sugarcane (FAO, 2012).

83 The low crop yield was observed in section 3.4.6.

Although UBoS estimates are slightly higher and in line with those in the Irrigation Master Plan (2010-2035), in which the total area under irrigation in 2010 was 14,418 hectares, overall irrigation coverage for Uganda is still less than 0.5 percent, with stark differences across regions (ATAAS, 2014). In most cases, rain-fed agriculture is complemented by moisture from swamps and wetlands.[84] There is low access to and usage of drainage networks.

According to the Ministry of Water and Environment [MoWE] (2010),[85] in 2010, the land under irrigation by crop type was: 79 percent for rice; 4 percent for maize; 5 percent for vegetables; and 12 percent for sugarcane. The low adoption and usage of irrigation technologies in Uganda is partly attributed to the high cost of funds required to invest in appropriate technologies. Recognizing the high cost of investment in irrigation technologies, the government, through the MoWE, is now embarking on investment in small, medium and large scale irrigation schemes and enhancing the mechanisation of production. Investment in irrigation is being undertaken complementarily with the promotion of water conservation in moisture-stressed areas. Other contributors to poor irrigation coverage are small land holdings (Nakano and Otsuka, 2011), poor coordination among relevant stakeholders, and limited technical capacity to manage irrigation facilities, particularly at lower levels (districts and farmers themselves), exacerbated by multiple overlapping land rights with weak tenure systems (MoWE, 2011). As previously analysed, there are limited incentives to make long term investments on land in an environment that is characterised by insecure ownership.[86]

Map 2: RCMRD land use classification Scheme I and II in 2014



Source: 2014 satellite maps of RCMRD were used to represent land use

84 See, Map 2.

85 MoWE (2010). A National Irrigation Mater Plan for Uganda, 2010-2035. Republic of Uganda, Kampala.

86 Land titles were discussed in Figure 17 in section 3.4.2.

3.5.3 Farmers adopting sustainable land management

In Uganda, land degradation, particularly through erosion and the depletion of soil nutrients, is a common phenomenon and a principal cause of declining agricultural productivity. In 2014, it was estimated that 24 percent of Ugandan farmers experienced erosion in their parcels and that 58 percent assessed their soils as good (ATAAS, 2014). Poor land use practices can be attributed to several factors, including income and population density, and Nkonya (2004) also identifies education as the most significant determinant affecting land management practices.

Some of the SLM practices prioritised by the government include: integrated nutrient management (fertiliser, manure), contour bunds, grass contours/bunds, intercropping (legumes and others), agroforestry (coffee-banana systems), woodlots, and terracing. Table 16 presents the percentage share of land cultivated under SLM practises in 2013/14 and 2015/16. Irrespective of cropping season, cultivated areas under mixed stands remained below 40 percent, and areas under coffee-banana systems remained at approximately 7 percent. There is an equally low usage of fertilisers on land plots, especially for farmers applying inorganic fertilisers.

Table 16: Share of land plots under sustainable land management systems in percentage

	2013/14		2015/16	
	Jul-Dec	Jan-June	Jul-Dec	Jan-June
Mixed stand:	35.4	30.9	34.1	35.3
Coffee-banana systems	6.7	7.3	7.2	7.2
Nitrogen fixation	22.2	18.5	20.7	22.5
Fertiliser:	7.2	3.3	5.3	3.3
Organic	4.9	2.2	3.7	1.8
Inorganic	2.4	1.1	1.8	1.5
Pesticides/herbicides*	5.7	3.9	4.3	4.0
Mixed stand:				
Central	44.1	45.5	41.5	41.6
Eastern	39.5	28.0	38.4	45.4
Northern	25.9	14.5	15.0	20.2
Western	30.4	28.1	34.9	30.3
Coffee-banana system:				
Central	13.9	13.4	11.1	11.5
Eastern	7.1	8.6	10.0	10.2
Northern	0.2	0.1	0.1	0.1
Western	4.1	4.7	5.7	4.9
	0.0	0.0		
Nitrogen fixation:				
Central	24.1	25.3	23.4	23.3
Eastern	26.2	16.9	26.0	32.6
Northern	15.4	7.8	9.1	12.4
Western	21.5	19.1	20.8	19.5
Fertiliser:				
Central	13.4	5.7	8.8	5.7
Eastern	7.7	5.1	7.9	*3.9*
Northern	1.1	0.0	0.2	1.0
Western	5.2	1.8	3.2	*1.8*

Notes: (a) Analysis was done at plot level; (b) integrated nutrient management proxy by fertiliser (organic and inorganic); (c) agroforestry proxy by coffee-banana systems; (d) mixed stand refers to any combination of two or more crops on the same plot
***refers to share of farmers that used integrated pests management and this very indicator is not part of the SLM**

Source: UNPS 2013/14 and 2015/16 data

The use of agricultural inputs has declined across Uganda (Kigima *et al*., 2011). Despite the low integrated nutrient management, organic farming was practiced more than inorganic farming, with notable disparities across farming seasons. Although there are no stark differences in land use under mixed farming and nitrogen fixation across regions other than in the northern region, at a regional level heterogeneities can be noted among the coffee-banana systems and regarding land under fertiliser application. The central region depicts relatively better SLM with regard to all chosen indicators, however, the adoption of SLM declines in the January-June farming season. In part, farmers find it expensive to practise SLM throughout the agricultural seasons and hope that the nutrients from the previous season last throughout the year.

The agricultural sector continues to exert pressure on land resources through nutrient mining, without matching replenishment and low use of land management practices. Recent evidence indicates that up to 80 kg of nutrients per hectare are removed from Ugandan soils annually but that fertiliser use averages 1-1.5 kg, which is one of the lowest rates worldwide (MAAIF, 2016). In addition to low levels of fertiliser use, the sector remains faced with shoddy and low quality fertilisers on the market. This has partly slowed down the adoption progress of the recommended SLM, which is still very low. This issue is compounded by weak and insufficient monitoring and evaluation of progress in line with set targets (MoWE, 2010).

3.5.4 Losses from natural disasters by climate- and non-climate-related events

Part of SDG Target 2.4 aims to foster resilience by reducing losses from droughts, floods, and other disasters. Table 17 below highlights the household self-reported experiences with food shocks in the past 12 months prior to the survey. Between 2009/10 and 2015/16 households reported decreasing episodes of shocks.[87] Indeed, the prevalence of food shocks is correlated to climate experiences in specific years. According to meteorological data, Uganda experienced El Niño in 2009/10, leading to floods, which explains the high food insecurity prevalence that year.[88] In general, at a national level,

87 The share of households that reported such shocks reduced with time, from 54.9 percent in 2009/10 to 26.3 percent in 2015/16.

88 See Ssewanyana and Kasirye (2010).

Table 17 demonstrates that, for some households, food shocks were recurrent but varied in severity for different panel periods. The households reporting a high prevalence of food shock experiences were in rural areas and were more likely to be reliant on agricultural sources. Such households have lower average wealth levels to act as buffers in difficult times. Given that the recurrent (or chronic) experience of food shocks may be particularly devastating, it is vital that sustainable food reserve systems are established to anchor households, particularly in the northern region, from shocks arising from disasters. The reason for specific focus on the northern region is that the region continues to have a widespread presence of households that experience food shocks, which are partly caused by rainfall patterns, as it has one long rainy season. Table 17 below indicates that urban areas experience a lower prevalence of shocks in comparison to rural areas.

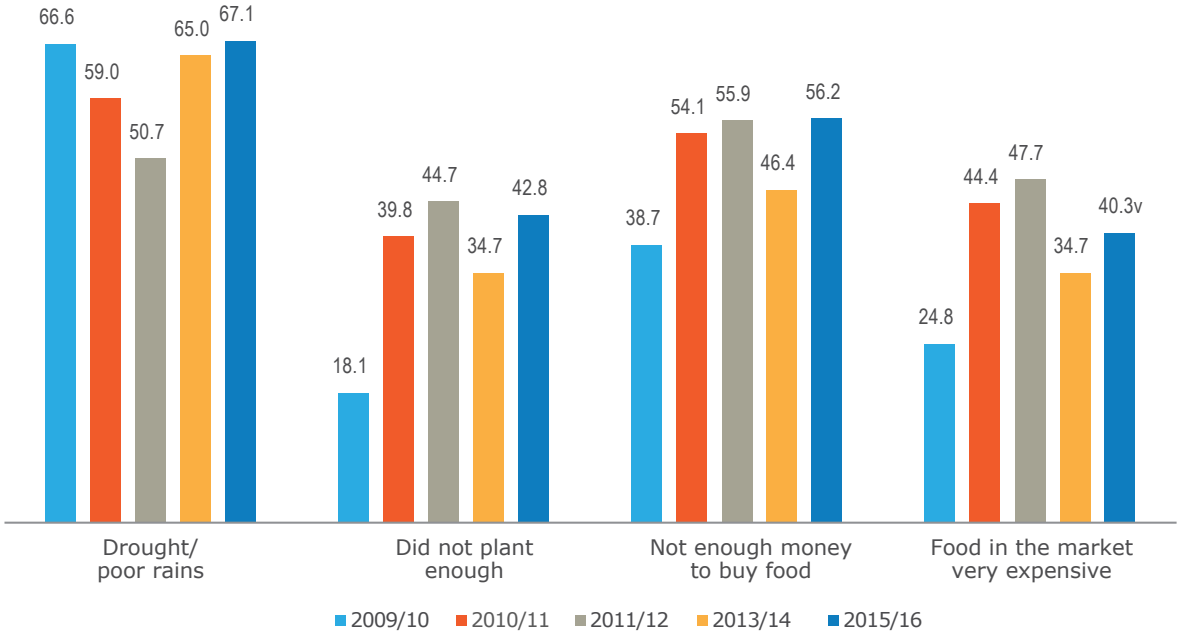
Table 17: Prevalence of food shock experiences at the household level in percentage

	2009/ 2010	2010/ 2011	2011/ 2012	2013/ 2014	2015/ 2016
National	54.9	38.6	32.3	39.8	26.3
a) Rural-urban:					
Rural	61.1	41.8	32.7	45.2	29.2
Urban	36.5	22.4	30.7	24.2	17.7
b) Region:					
Central	51.8	39.2	32.4	35.9	23.5
Eastern	49.1	39.3	34.8	37.7	19.9
Northern	73.0	50.7	26.8	46.6	51.8
Western	51.0	25.1	34.5	41.8	17.5

Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

Figure 21 below shows the reasons behind food shocks experienced during the past 12 months prior the surveys conducted between 2009 and 2016, with more households reporting food production inadequacies due to shocks. Drought/poor rains are the most cited reason for food shocks, particularly for rural households. This cause is followed by income insecurity, particularly in urban areas, and high food prices, which equally affect both rural and urban households. A large portion of households also reported they did not plant enough to ensure availability of food stocks. This partly reflects inadequacies in storage facilities at the farm level.

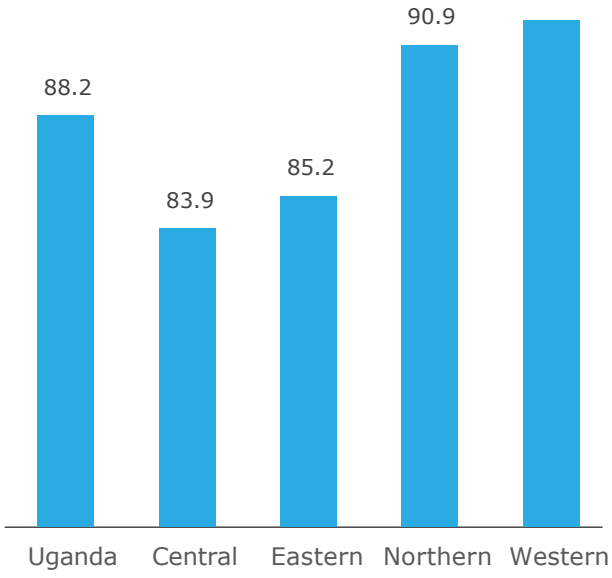
Figure 21: Trends in the reasons behind food shocks experienced during the past 12 months prior to the survey in percentage



Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data

Figure 22 shows the percentage of households that suffered a reduction in food production due to weather-related shocks, in 2013/14. Nearly nine out of every ten households reported suffering reductions in food production due to weather-related shocks, with minimal variations across regions. Such high experiences of reduction in food production suggest a limited adoption of resilient agricultural practices. Furthermore, this situation highlights the missing synergies between the research and development of high-yield resilient crop varieties and the adoption of necessary inputs by farmers.

Figure 22: Households that suffered a reduction in food production due to weather-related shocks in 2013/14 in percentage



Source: UNPS 2013/14 data

3.5.5 Early warning system

FAO (2014) defines resilience as '*the ability to prevent disasters and crises as well as to anticipate, absorb, accommodate or recover from them in a timely, efficient and sustainable manner. This includes protecting, restoring and improving food and agricultural systems under threats that impact food and nutrition security, agriculture, and food safety/public health'*. Following this definition, practices that encourage and empower people to anticipate, respond to and recover from shocks in a timely manner can be categorised as sustainable and resilient. Resilience is dependent on several factors, including access to adequate income, access to basic services, possession of assets, agricultural technology employed, availability of social safety nets, climate change, adaptive capacity at the individual and household levels, and the extent to which relevant institutions are protective and environmentally enable citizens to cope.

As part of preparing farmers to know and respond to climate variability and along with international best practices, Uganda has instituted a climate information and early warning system. At the national level, there have been significant improvements in weather forecasting. For example, since the establishment of the Uganda National Meteorological Authority (UNMA) – which is supported by UNDP and GIZ –, the provision of meteorological and climatological services to agriculture and other sectors such as aviation has improved. In order to permit easy comprehension and access to farmers, the UNMA has also facilitated the translation of weather information into various languages and has disseminated the information in both print and electronic media. Although this is supposed to provide a quasi-early warning system for FNS, it has not been effective because farmers do not seem to be heeding the advice. On the other hand, weather forecasting information is not synchronised with the farming calendar. To a certain extent, the IPC also provides information on a bi-annual basis on food insecurity hotspots. Nonetheless, there is a need to develop a formal early warning system and to establish an effective communication strategy to ensure that farmers receive and adhere to the warning provided by the government. In addition, National Emergency Co-ordination and Operations Centre (NECOC) is a disaster management unit in the OPM which is mandated to provide early warning messages on anticipated disasters in a given location. NECOC and UNMA are expected to produce forecast of drought index and flood index. However, there are capacity gaps in human resource and equipment to ensure more reliable forecasts. Beyond government, there are non-government organisations (NGOs) that are active in providing similar early warning information mainly via mobile phones.

Additionally, community-based initiatives have also been established to empower people to manage disaster risks through effective land use resource planning, livelihood diversification and the promotion of peace, particularly among pastoralist communities. Areas for improvement would be increasing the frequency in and accuracy of weather information, alongside ensuring the availability and functionality of disaster risk detection and management tools within the district disaster management committees.

To further enhance resilience, consultations with officials revealed that the Bank of Uganda is partnering with Centenary Bank to provide weather-based insurance for agricultural borrowers. Centenary Bank has previously cushioned their agriculture production borrowers through loan guarantee schemes involving collaborations with development partners such as the Agricultural Business Initiative Trust (aBi Trust) and DANIDA. This guarantee scheme provided 50 percent repayment to the bank in cases in which farmers experienced covariant production risks, and the farmer was expected to repay the remaining 50 percent. However, with the help of weather information generated from early warning systems, up to 100 percent of farmer loans are now covered once they are insured against weather shocks. With the help of the UNMA, which will set up regional whether stations, production risk reduction through insurance is expected to reduce the cost of borrowing while stimulating private investment in agricultural enterprises.

Government will also invest in water for production infrastructure to boost commercial agriculture and industrial activities. The emphasis is on construction of large and small scale water schemes for irrigation, livestock and rural industries, while increasing cumulative storage from 27.8 to 55 million cubic metres (NPA, 2015).

3.6 Maintain Genetic Diversity

SDG2 target 2.5:

By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and the fair and equitable sharing of benefits arising from the utilisation of genetic resources and associated traditional knowledge, as internationally agreed upon.

Indicators:

- The number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities
- The proportion of local breeds classified as being at risk, not at risk or at an unknown leve of risk extinction

3.6.1 Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities

There are two main government agencies that ensure genetic diversity in seed and crop agriculture and animals: the National Gene Bank under NARO and NAGRC&DB. The National Gene Bank, under NARO, is mandated to maintain Uganda's rich diversity of crops and seeds collection. To preserve and maintain genetic diversity, dried (orthodox) seeds of different species are kept under frozen conditions, as shown in Plate 2. Under such conditions the seed can be preserved for up to 50 years. Species whose seed cannot survive very low temperature levels are conserved in the Entebbe Botanic gardens as live collections.

Plate 2: Seeds in storage packs frozen at minus 20^{0}C

Photo taken by Madina Guloba at the National Gene Bank in Entebbe, April 2017

Table 18: Crops groups documented at Gene bank

Cereals	Vegetables	Fruits	Legumes	Gum
Peal millet	Okra	*Garcinia buchananii*	Bambara nut	Gum Arabic
Sorghum	Pigeon pea	*Carissa edulis (Muyonza)*	Groundnuts	
Sesame	Chick pea	*Eriosema shirense*	Cotton	
Rice	Spider plant	*Parinari curatellifolia*	Beans	
Quinoa	Amaranthus	*Landolphia dawei*	Soya Beans	
Finger millet	Eggplant	*Rhus vulgaris*	Cow peas	
Maize	Pumpkin		Oyster nut	
Simsim	Solanum (Nakati)		Acacia Senegal	
	Tomatoes		Gynandra	

Source: Plant Genetic Resource Centre, 2017

Table 18 summaries the various crops/plants that are being conserved at the National Gene bank. The Gene bank has 3,705 accessions of 419 species.[89]

The NAGRC&DB was established under the *Animal Breeding Act, 2001* and came into being in 2003, in line with the National Animal Breeding Policy, to optimise livestock production through animal breeding. The policy was meant to enhance food security and eradicate poverty in Uganda. NAGRC&DB is in charge of ten government stock farms and ranches.[90] The institution has a leading role in establishing a comprehensive national animal breeding programme in Uganda. Table 19 shows the different types of livestock breeds that have been maintained.

Table 19: Types of breeds

Breed	Livestock	Products
Panel A: Tropicalized breeds		
Duroc	Pig	Pork
Cambrough	Pig	Pork
Boer	Goat	Milk and meat
Titus	Cattle	Dairy
Rock	Cattle	Dairy
Kalunda	Cattle	Dairy
Bv Lock	Cattle	Dairy
Panel B: Imported breeds		
Simmental	Cattle	Beef and dairy
Sahiwal	Cattle	Beef and dairy
Brown Swiss	Cattle	Beef and dairy
Jersey	Cattle	Dairy
Ayrshire	Cattle	Dairy
Romagnola	Cattle	Beef
Charolais	Cattle	Beef
Brahman	Cattle	Beef
Boran	Cattle	Beef
Bonsmara	Cattle	Beef
Panel C: Indigenous breeds		
Nganda	Cattle	Beef and dairy
East African Short-Horn Zebu	Cattle	Beef and dairy
Ankole Breed Kayenje	Cattle	Beef and dairy
Ankole Longhorn	Cattle	Beef and dairy

Source: National Animal Genetic Resources Centre and Data Bank

89 See table A7 in the appendix which provides the detailed breakdown of the species by gene type and the number of varieties collected and conserved at the bank in Entebbe.

90 Ibid.

3.6.2 Proportion of local breeds classified as being at risk, not at risk or at an unknown level of risk of extinction

Uganda is a signatory to the international treaty on Plant Genetic Resources for Food and Agriculture, the Convention on Biological Diversity, and the Nagoya Protocol on Access to Genetic Resources. Uganda is implementing the Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture[91] which gives greater emphasis and visibility to plant breeding, as reflected in Priority Activity 9, *supporting plant breeding, genetic enhancement and base-broadening efforts*. On the other hand, climate change is causing diversification in production and practices, as well as in the occurrence of pests and diseases of crops and livestock. As such, indigenous species will likely disappear as new breeds are brought on board to adapt to new conditions, thus making the need for conservation Gene bank centres vital for the preservation of indigenous species.

NARO uses plant diversity to control pests and diseases. Furthermore, there are three community seed banks in Bushenyi, Luweero and Ruboya. However, these seed banks specialise in beans only, and over 50 different bean types are being kept for preservation. The largest proportion of Uganda's plant species are not cultivated and thus face extinction. Mulumba *et al*. (2009) report that in the western and eastern parts of Uganda, 37 percent of plant species are cultivated in the national seed banks while 19 percent are not cultivated but are being protected by the communities, and that 43 percent of the plant species are being harvested from the wild. Generally speaking, there is limited direct support or promotion of neglected species and this is likely to increase the threat of extinction.

Uganda has a draft National Policy on Plant Genetic Resources for Food and Agriculture (PGRFA) which is yet to be tabled before parliament.[92]

However, some of the aspirations of PGRFA have been echoed in the National Agriculture Policy (2013), which, among other key strategies, commits government to restocking, multiplying and ensuring access to improved genetic resources by producers. Currently, it is difficult to come across statistics on the diversity and variations within the different species comprising Uganda's PGRFA since not all of them have been identified and studied. The current germplasm holding capacity at the Uganda National Genebank is 5,000 accessions (samples), which translates into 1 percent of the estimated 500,000 accession that would be representative of Uganda's PGRFA diversity.

Plate 3: Demonstration of critical PGRFA now under threat of erosion

Source: Plant Genetic Resource Centre, Entebbe (2013)

91 http://www.fao.org/fileadmin/templates/agphome/documents/PGR/GPA/GPA2/GPA2_en.pdf

92 Uganda is facing challenges in addressing current threats to food security due to the delayed passing of the 2012 National Biotechnology and Biosafety Bill. The absence of this particular legislation implies that genetically modified organisms (GMOs) species developed by NARO—which are drought and disease resistant—cannot be utilized.

3.7 Increase Investment to Enhance Agricultural Productive Capacity

SDG2 target 2.5b:

Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with an equivalent effect, in accordance with the mandate of the Doha Development Round

Indicators:

- Producer estimate support
- Agricultural export subsidies

3.7.1 Total official flows to the agriculture sector

The African Union's Maputo Declaration of 2003 required all African countries to increase their agriculture[93] expenditure to 10 percent, within the national budgets. In this regard, Uganda is yet to meet the target, with the average share of the agriculture expenditure in the national budget remaining at less than 3.5 percent (Table 20), which remains far below the Maputo Declaration commitment. The GoU progressively reduced public spending in agriculture from 10 percent of the total budget in 1980 to 3.7 percent in 2008-09 (Martiniello, 2015).

Table 20 shows how government allocations, excluding external support to the entire agriculture sector, are still low; UGX 344 billion in 2014/15 and a projected to UGX 388 billion in 2015/16, which is 2 percent of the national budget. Moreover, the biggest portion (over 46.1 percent) of the sector's budget for FY 2015/16 is earmarked to the NAADS. This increment is partly due to the procurement and distribution of planting inputs to farmers through the OWC, to foster food security and enhance farmers' incomes. MAAIF headquarters, which has the mandate to coordinate and provide extension services, is projected to receive nearly 30 percent of the sector's public budget.

Table 20 further shows how the share of public spending going towards institutions that are mandated to develop plant and livestock species, such as NARO and NAGRC&DB, is relatively low in comparison to the institutional mandate[94]. Even though the government allocation to agriculture-specific activities at the Ministries, Departments and Agencies (MDA) level have increased over the years, the analysis of food and nutrition output costs (both budgeted and actual), as in the annual budget performance reports, reveals that the cumulative allocation to FNS is still low.

External financing to agriculture (official development assistance) has been mainly attained through donor supported projects. ODA has been reducing and based on the MTEF, the situation is projected to remain. NARO's major source of funds is donor support, with emphasis on undertaking research that directly supports food security. In 2015/16 NARO received UGX 54 billion as donor support and this was projected to increase to UGX 67.74bn in 2016/17 (MoFPED, 2016).[95]

93 Here commitment refers to agriculture and rural development.

94 Even though NARO receives this funding from development partners for project related activities, this is not sustainable in the long run.

95 MoFPED (2016). Enhanced Productivity for Job Creation. Background to the Budget Fiscal Year 2016/17.

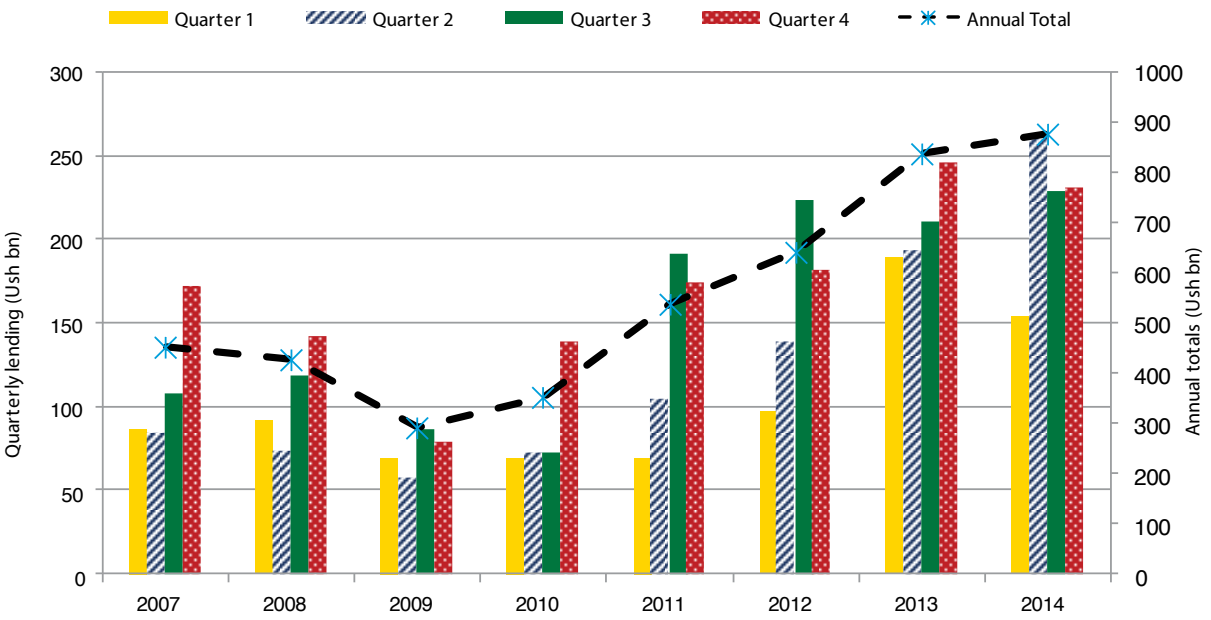
Table 20: Public expenditure in the agriculture sector (Uganda billion shillings)

	Percent allocation (%)											Total (Ushs bn)
	MAAIF	DDA	NAGRCDB	NARO	NAADS Secretariat	UCDO	UCDA	District Agricultural Extension	NAADS (Districts)	Production and Marketing Grant	KCCA Agricultural Grant	
2009/10 outturn												
Wage	1.23	0	0	0	0	0	0	0	0	0	0	2.52
Non-Wage recurrent	5.37	0	0	2.9	3.12	2.79	0.43	0	0	2.47	0	34.95
Domestic development	11.15	0	0	8.57	5.18	0	0	0	57.29	0	0	168.2
Total excl external financing	*17.75*	*0*	*0*	*11.47*	*8.31*	*2.79*	*0.43*	*0*	*57.29*	*2.47*	*0*	*204.64*
2010/11 outturn												
Wage	1.34	0	0	0	0	0	0	0	0	0	0	3.88
Non-Wage recurrent	6.65	0	0	8.75	2.21	1.97	0.3	0	0	0	3.51	67.68
Domestic development	9.83	0	0	3.42	16.24	0	0	0	45.78	0	0	217.79
Total excl external financing	*17.82*	*0*	*0*	*12.18*	*18.44*	*1.97*	*0.3*	*0*	*45.78*	*0*	*3.51*	*289.35*
2011/12 outturn												
Wage	1.32	0.32	0	6.82	0.71	0	0	1.11	0	0	0.01	30.33
Non-Wage recurrent	5.91	1.12	0	1.77	1.41	1.94	0.39	0	0	3.41	0.03	47.08
Domestic development	9.65	0	0	3.24	15.86	0	0	0	44.56	0	0.41	217.14
Total excl external financing	*16.88*	*1.45*	*0*	*11.83*	*17.98*	*1.94*	*0.39*	*1.11*	*44.56*	*3.41*	*0.46*	*294.55*
2012/13 Approved budget												
Wage	1.8	0.31	0	5.07	0.69	0	0	1.32	0	0	0.01	27.96
Non-Wage recurrent	4.86	1.01	0	3	1.35	0.46	0.96	0	0	4.98	0.03	50.62
Domestic development	11.65	0	0	3.14	15.37	0.72	0	0	43.19	0	0.4	226.34
Total excl external financing	*18.31*	*1.33*	*0*	*11.22*	*17.41*	*1.19*	*0.96*	*1.32*	*43.19*	*4.98*	*0.44*	*303.92*
2013/14 Approved budget												
Wage	1.87	0.5	0.44	6.02	0.67	0	0	1.65	8.54	0	0.01	62.09
Non-Wage recurrent	7.57	0.78	0.65	2.78	0.66	0.44	2.51	0	0	4.49	0.03	62.75
Domestic development	10.27	0.32	0	1.95	13.63	0.7	0	0	33.12	0	0.39	190.17
Total excl external financing	*19.71*	*1.6*	*1.1*	*10.75*	*14.96*	*1.14*	*2.51*	*1.65*	*41.66*	*4.49*	*0.43*	*315.02*
2014/15 Approved budget												
Wage	1.71	0.46	0.41	5.51	0.63	0	0	1.32	6.04	0	0.01	55.4
Non-Wage recurrent	7.17	0.72	0.6	2.55	1.19	0.4	2.3	0	0	4.11	0.02	65.6
Domestic development	9.66	0.29	0	2.65	44.61	0.64	0	0	6.67	0	0.35	223.44
Total excl external financing	*18.54*	*1.46*	*1*	*10.7*	*46.43*	*1.04*	*2.3*	*1.32*	*12.7*	*4.11*	*0.39*	*344.44*
2015/16 budget projection												
Wage	1.44	0.4	0.49	4.89	0.56	0	0	4.19	0	0	0.01	46.55
Non-Wage recurrent	10.91	0.64	0.58	2.26	1.05	0.36	7.19	0	0	3.64	0.02	103.46
Domestic development	11.66	0.26	0	2.35	44.48	1.01	0	0	0	0	1.6	238.23
Total excl external financing	*24.01*	*1.3*	*1.07*	*9.5*	*46.1*	*1.37*	*7.19*	*4.19*	*0*	*3.64*	*1.64*	*388.25*

Notes: Dairy Development Authority (DDA); NAGRCDB; Kampala Capital City Authority (KCCA); MAAIF; NARO; Uganda Coffee Development Authority (UCDA); Uganda Cotton Development Organisation (UCDO)
Source: Background to the Budget Reports, MoFPED

The private sector is making investments and expenditures in the food and agricultural sector, mainly through domestic borrowing. Cognizant of the fact that much of the borrowing may be informal, as shown in Figure 23, financial institutions and micro deposit-taking institutions (MDIs) registered increases in the total annual lending to agriculture, between 2007 and 2014 (Bank of Uganda, 2015). The quarterly financing reveals a larger share of agricultural financing occurring in the fourth quarter, which corresponds to the most food-secure periods of the year, when peak food harvests have been achieved. It can be argued that private sector financing has, to a large extent, not targeted the production of food crops but has rather facilitated marketing, which potentially depletes food reserves from resource-poor households during market booms.

Figure 23: Agricultural lending by regulated financial institutions and MDIs, 2007-2014 (UGX billions)



Source: Agricultural Finance Year Book, 2015

3.7.2 Agriculture orientation index for government expenditure

The FAO defines the Agriculture Orientation Index (AOI)[96] for government expenditures as the ratio of the agriculture share of government expenditures to the contribution of agriculture to the economy (measured as agricultural share of GDP).[97] Figure 24 shows Uganda's low levels of spending relative to the sector's contribution to the economy.[98] GoU gives more prominence to the non-agriculture sector, which implies under investment in agriculture. This situation is concerning given the low agricultural productivity for supporting FNS in a sustainable manner. This has led to high levels of inefficiency and low productivity, as well as very slow agricultural related income growth in the sector. The MTEF projections indicate that the AOI is unlikely to increase in the near future. Consequently, Uganda will, in the foreseeable future, continue to face challenges in financing calamities, such as crop and livestock loss from pests and diseases.

96 An AOI greater than 1 reflects a higher orientation towards the agriculture sector, which receives a higher share of government spending relative to its contribution to economic value-added. An AOI less than 1 reflects a lower orientation to agriculture, while an AOI equal to 1 reflects neutrality in a government's orientation to the agriculture sector.

97 Here agriculture refers to the agriculture, forestry and fishing sector.

98 Uganda's AOI is below 1, averaged at 0.15 over the last 15 years.

Figure 24: Uganda's Agriculture Orientation Index

Note: the AOI is based on calendar years and the figure for 2015 is based on provisional official statistics

Source: FAOSTAT, 2017

3.8 Correct and Prevent Trade Restrictions and Distortions

SDG2 target 2.bc:

Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with an equivalent effect, in accordance with the mandate of the Doha Development Round

Indicator:

- ➔ Producer estimate support
- ➔ Agricultural export subsidies

3.8.1 Producer estimate support

Producer estimate support refers to transfers to agricultural producers such as market price support, budgetary payments and cost of revenue foregone by government. In Uganda, support to farmers is done through programmes and initiatives such as the OWC, which provides planting materials. In budgetary terms, in 2016/17, OWC activities received a budgetary allocation of 38 percent of the public funds towards the agriculture sector. However, the provision of planting materials alone will not help smallholder farmers double their crop yields from the current low yields, by 2030.

3.8.2 Agricultural export subsidies

Regarding export subsidies, by the end of 2018, developed countries have agreed to eliminate their remaining scheduled export subsidy entitlements, while developing countries eliminate their export subsidy entitlements.[99] Agricultural export subsidies are defined as export subsidies budgetary outlays and quantities, as notified by the World Trade Organisation (WTO) Members. Uganda is a country that has been identified as a Least Developed Country (LDC), thus it is financially constrained and has no agricultural export subsidy programme. Where subsidies for agricultural crops/seeds are provided, they are not linked to fostering exports.

3.8.3 Public stockholding

Uganda has been an active LDC Group member in the WTO negotiations during the months preceding the 10th Ministerial Conference (MC10) in Nairobi in 2015. The key interests for Uganda and other LDCs were to promote the use of trade as a means of achieving food security through the elimination of export subsidies which are trade distorting, to reach an agreement on public stockholding for food security, and to adopt measures ensuring that international food aid does not adversely impact domestic markets.

Regarding public stockholding, WTO members agreed to continue engaging until a permanent solution is found. Public stockholding programmes are used by countries to purchase food at administered prices for food security purposes. Unlike Kenya and Tanzania, Uganda does not have a policy on stockholding yet. Uganda remains an open economy and regional partners import food from Uganda during their periods of surplus and some of these foods end up in reserves, which are later released during periods of shortages. This process affects food availability in Uganda and also distorts domestic prices. Currently, stockholding is assumed to be a private sector activity and GoU needs to rethink the role it can play along the value chain in order to promote food security. This is in regards to storage facilities, financing for processing and having a framework in place to regulate trade as other regional partners do. The establishment of a national food reserve system (public) is an important policy to increase people's resilience in the face of food insecurity.

99 Ministerial Decision of 19 December 2015: WT/MIN(15)/45 — WT/L/980.

3.9 Functionality of Food Commodity Markets

SDG2 target 2.5c:

Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, to help limit extreme food price volatility

Indicator:

➔ Indicators of food price anomalies

3.9.1 Indicator of food price anomalies

Households' adequate access to food is mostly determined by either their ability to produce sufficient food for own consumption or by the adequacy of their incomes to enable the purchase of enough food at the market.[100] Therefore, domestic food prices are an important determinant for access to food. Uganda has witnessed a surge in domestic prices in the recent past. Furthermore, food prices have been rising faster than other commodities. If the increases in food prices continue in the future, they are likely to affect the food security status of households, including those households who source food from own production. Figure 21 shows how the Ugandan economy registered two periods of dramatic food price increases, the first during 2009/10[101] and the second during 2011/12. The figure also shows that food prices stabilized during 2015/2016.

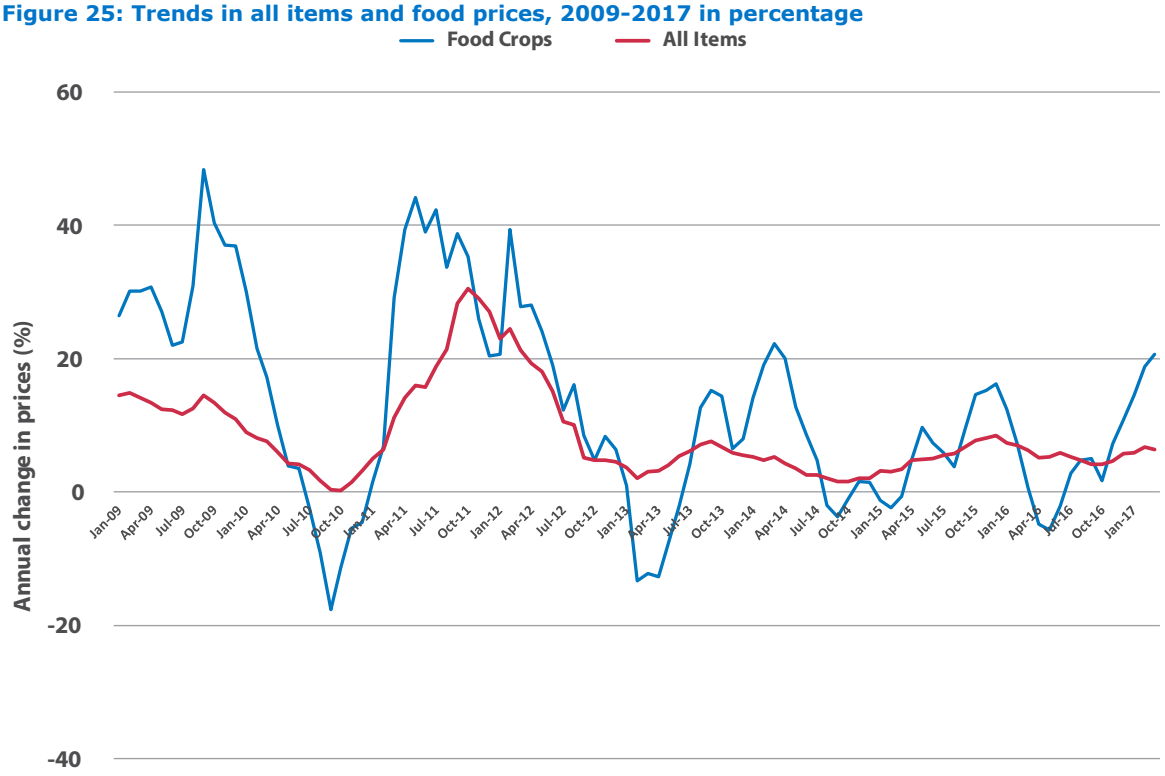
As previously discussed, poorer households spend a higher share of their income on food expenditure. Given such large shares of food expenditures in the household budgets of the poor, any changes in food prices are bound to have substantial negative consequences for overall household welfare.[102] Indeed, any significant price increase not only threatens the short-term welfare of these households but may also lead to adverse long-term consequences, such as increases in rates of child stunting.

100 For a complete definition of food insecurity refer to the definition at the beginning of the Review under the section "definition of terms".

101 The increase in food prices during 2009/10 was partly attributed to the floods in eastern Uganda and conditions of drought in other parts of the economy (MoFPED, 2010).

102 Okidi and Nsubuga, 2010.

Figure 25: Trends in all items and food prices, 2009-2017 in percentage



Source: UBoS, 2017

4. National Response And Readiness for Realising SDG2

This section presents an assessment of the current national responses for the attainment of FNS outcomes. The legal and policy framework and the relevant planning frameworks and programmes are presented, highlighting the strength and gaps that need to be addressed. In addition, the section presents the current institutional framework and mechanisms available for the promotion of SDG2 targets, examining their strength and weaknesses. Figure 26 lists the critical legal/regulatory and policy frameworks that are relevant for promoting FNS.

Figure 26: Key Legal/regulatory and policy frameworks for FNS

The Constitution of the Republic of Uganda

Vision 2040 National Development Plans

Uganda Nutrition Action Plan

AGRICULTURE

Legal/regulatory frameworks:

- Food safety
- Animal Breeding Act 2001
- National Biotechnology and Biosafety Bill (in draft form)
- Dairy Industry Act
- Public Private Partnership Act

Policies:

- National Agriculture Policy (2013)
- Agricultural Extension Policy (2016)
- National Fertilizer Policy (2016)
- National Seed Policy (in draft form)
- National Animal Breeding Policy
- National Policy on Plant Genetic Resources for Food and Agriculture (in draft form)

Plans and Strategies:

- Agricultural sector Strategic Plan (2016-2021)
- Food and Nutrition Guidelines

HEALTH

Legal/regulatory frameworks:

- Public Health Act (1935)
- Food and Drug Act (1959)

Policies:

- National Health Policy
- National Anemia Policy (2002)
- Community Health Extension Worker Policy and Strategy

Plans and Strategies:

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

SOCIAL DEVELOPMENT

Legal/regulatory frameworks:

Policies:

- Gender Policy (2007)
- National Culture Policy (2007)
- National OVC policy (2007)
- National Adult Literacy Policy (2015)
- National Social Protection Policy (2015)
- National Youth Policy (yy)
- National Community Development Policy (2015)
- National Integrated Early Childhood Development Policy (2016)

Plans and Strategies:

- Social Sector Development Plan
- Male Involvement Strategy (2015)

OTHERS

Legal/regulatory frameworks:

- The Land Act (1998) and Amendment (2004 and 2010)
- Local Government Act
- Public Finance Management Act (2015)
- Education Act (2008)
- National Environment Impact Assessment Act (1998)

Policies:

- National Climate Change Policy (2015)
- National Industrial Policy (2008)
- National Trade Policy (2007)
- National Sugar Policy (2010)
- National Grain Trade Policy (2015)
- National Policy for Disaster Preparedness and Management
- National Standards and Quality Policy (2012)

Plans and Strategies:

- National Export strategy National Advocacy and Communication Strategy 2015
- National Standards and Quality Policy Implementation Plan (in draft form)

4.1 Legal Frameworks

In this sub section, the Review discusses the overarching legal framework and the sector specific legal frameworks in support of FNS. All legal and policy frameworks regarding FNS are guided by the **1995 constitution of the Republic of Uganda**. The constitution articulates the government's role in ensuring adequate food and nutrition to the population. Specifically, Article 14 (XIV) states that *'The State shall endeavour to fulfil the fundamental rights of all Ugandans including ensuring food security*`. In addition, Article 22 (XXII) affirms that *'the State shall encourage food production and storage, establish food reserves and encourage and promote proper nutrition through education and appropriate health measures*`. Article 157 of the constitution further calls for the creation and operationalisation of a contingency fund for response to emergencies and shocks. The **Public Finance Management Act (2015)** requires government to appropriate at least 0.5 percent of the total approved budget as a contingency for responses to natural disasters.

At the sectoral level, there are specific regulatory frameworks that support FNS. In Health, there are the **Public Health Act Cap 281** (1935) and the **Food and Drug Act Cap 278** (1959). These Acts account for adequate sanitation, protection of food items , control of pollution in water and food supplied, as well as matters relating to the prevention of adulteration of food and drugs.

The **Education Act (2008)** highlights that the responsibility of providing food, clothing, shelter, medical care and transport rests with parents and guardians. Consequently, in Uganda, apart from ensuring nutritional education in schools, the government does not provide institutionalised school meals. To address the nourishment of learners, a Cabinet directive specifying modes of ensuring the availability of meals in schools has been issued. In 2015, the MoES prepared the **Guidelines for Feeding and Nutrition Interventions,** which gave primary responsibility for providing school meals to parents, through either cash or in kind contributions for feeding at school. Schools are encouraged to establish school food committees as subsidiaries of the finance committees within the school governing bodies. Food committees in schools determine what form of resources parents contribute, choose the basket of food to be consumed, depending on seasonal variations in the food supply, and undertake the storage of food. In general, the education sector stresses education for all by increasing access, quality and effectiveness of service delivery in schools rather than nutrition, with the latter being relegated to parents. However, the current law is weak in its enforcement and, in fact, many parents continue not to provide food to their school children.

In agriculture, land is identified as the single most important factor for agricultural production and its security enhances FNS. The **1998 Land Act** was a constitutional provisions related to this. The main tenets of the Act include: the recognition of the rights of *bona-fide* occupants, the establishment of new institutions of land administration, the establishment of a land fund, and the setting up of a nominal fee for ground rent. The land fund—operated by the Uganda Land Commission—was supposed to support *bona-fide* occupants of land from buyout from landlords. It was expected that regularisation of land rights of *bona-fide* occupants would increase investments in land, including the expansion of food production. To a certain extent, the **Land Amendment Act (2004)** did offer protection by restricting the transfer of family land. In particular, spouses were given the right to live and derive sustenance from family land and were required to offer spousal consent on transactions involving family land. The outcomes of this amendment are apparent when it comes to a household's decision to sell a land parcel.[103] The **Land Amendment Act (2010)** provided that *bona-fide* residents could be evicted only upon failure to pay ground rent. On the other hand, operation of the land fund has been hampered by both budgetary constraints and design issues. After 15 years the Land Act (1998) came into force, the land fund has not yet been established. Instead, the GoU implemented a project in 2012/13 to purchase land from absentee landlords in the Kibaale district, and only UGX 31.1 billion (approximately USD 17.5 million) was allocated for this purpose. Furthermore, for purchased in Kibaale, *bona-fide* occupants were not supported in increasing agricultural productivity on the newly acquired land because doing so was not part of the mandate of the land fund.

103 As demonstrated in section 3.4.2.

The **National Environment Act** Cap 153 (1995) and regulations (1998) require that an environmental impact assessment be undertaken when engaging in agriculture, including assessments in large-scale agriculture projects, in use of new pesticides, in the introduction of new crops and animals, and in the use of fertilisers. However, given the scale of operation of most Ugandan farmers and the limited use of inputs in production systems, compliance to environmental impact is limited and impacts the sustainability of production systems and affects FNS outcomes.

The **External Trade Act (Cap. 88)** makes provisions for the regulation of external trade and gives the Minister of Trade powers to restrict export or importation of certain goods, including food. It also incorporates the External Trade (Importation Licence) (No. 2) Order, 2002. Despite the numerous food crises faced in Uganda since 2009, the country has not exercised the use of export bans to restrict cross-border food trade. On the other hand, neighbouring countries such as Kenya and Tanzania routinely use similar legislation to control cross border food trade. The exception to the rule by Uganda is due to the full liberalisation policy adopted since the early 1990s.

4.2 Policy environment – policies, strategies and national plans

4.2.1 Vision 2040

Uganda's Vision 2040 goal aims to ensure '*a transformed Ugandan society from a peasant to a modern and prosperous country within 30 years with a per capita income averaging USD 9,500 by 2040.'* As part of the strategies for the socio-economic transformation of Uganda, the Vision proposes to improve the nutritional status of its citizens, particularly young children (through the development and implementation of a school meals policy) and women of reproductive age (particularly through maternal interventions during pregnancy). This combination is anticipated to reduce maternal and child deaths and to improve both intellectual and physical economic productivity. The Vision 2040 is being implemented through 5-year National Development Plans (NDPs), and, presently, Uganda is implementing its second NDP II.

While the Vision particularly emphasises the development of commercial agriculture, the SDG2 focuses more on subsistence smallholder farmers, which reflect the majority of the Ugandan population.

4.2.2 National Development Plans

The Vision 2040 is implemented through five-year national development plans. While the integration of cross-cutting issues such as gender, environment, and nutrition was limited in NDP I, these shortcomings were addressed in NDP II through sector specific programmes. Good health and nutrition are identified as cornerstones to socio-economic transformation, particularly for vulnerable groups such as children and women. The NDP II prioritises increasing access to basic needs for the population, such as food, education, health care, and water and sanitation services. It also emphasises facilitating the availability and access to agricultural inputs, increasing access to water for production through irrigation and for water supply in cattle corridors, and improving meteorological services as avenues for enhancing agricultural production and productivity.

Efforts have also been made to establish district disaster management committees in disaster-prone regions. The NPD II also acknowledges the challenge posed by climate change (through prolonged droughts, floods and changes in ecosystems) in the attainment of the Vision 2040.

Some of the steps being taken to address this enormous challenge include creating an enabling policy environment[104] that harnesses climate variability and change by establishing Nationally Appropriate Mitigation Actions (NAMAs) and National Adaptation Programmes of Action (NAPAs). To date, these practices are in place and are being implemented by the Ministry of Water and Environment through the Directorate of Climate Change. However, a major hindrance to their implementation is the lack of evidence on what priority actions to start with and, certainly, on the lack of funding to actualise the actions established.

104 Uganda also developed a National Climate Change Policy, in line with international obligations, with the aim of guiding all climate change interventions in the country.

4.2.2 Uganda Food and Nutrition Policy

The Uganda Food and Nutrition Policy (UFNP) of 2003 provides the agenda for the government to deliver on its international, regional and national commitments to reduce and eliminate malnutrition. The UFNP's overall objective is to promote the nutritional status of the people of Uganda through multi-sectoral and coordinated interventions that focus on food security, improved nutrition and increased incomes. The specific objectives of the policy are: (i) to ensure the availability, accessibility, and affordability of food in quantities and qualities sufficient to sustainably satisfy the dietary needs of individuals; (ii) to promote good nutrition for the entire population; (iii) to incorporate food and nutrition issues in the national, district, sub-county and sectoral development plans; (iv) to ensure that nutrition education and training are incorporated in formal and informal training to improve the knowledge and attitudes for the behavioural change of communities in food and nutrition-related matters; (v) to ensure food and income security at the household, sub-county, district and national levels for improving the nutrition and socio-economic status of the population; (vi) to monitor the food and nutrition situation in the country; (vii) to create an effective mechanism for multi-sectoral coordination and advocacy for food and nutrition; (viii) to promote the formulation and/or review of appropriate policies, laws and standards for food security and nutrition; (ix) to ensure a healthy environment and good sanitation in the entire food chain system; (x) to safeguard the health of personnel associated with agricultural chemicals, food processing inputs and products, consumers and any other third parties likely to be affected; (xi) to promote gender-sensitive technologies and programmes; (xii) to achieve the maximum production with the minimum effort; and (xiii) to promote technologies that are user-friendly for people with disability.

A key proposal under the UFNP was the establishment of the Food and Nutrition Council (FNC), which is a governing body for overseeing FNS in Uganda. This body was never established. The nonexistence of the FNC as a central coordination authority might be the most important factor that is challenging the implementation of the UFNP, particularly at the apex of the institutional arrangement. The policy is also long overdue for revision to take into account the emerging issues included in SDG2.

4.2.2 Uganda Nutrition Action Plan (UNAP) 2011-2016

To operationalize the UFNP, Uganda adopted the UNAP, which targeted addressing malnutrition in children by focusing on the 1000 days window of opportunity from conception to a child's second birth day. The UNAP then identified nutrition-enhancing interventions based on five strategic objectives that it intended to achieve in the short term. These included: (i) improving access to and the utilisation of maternal, infant and young child nutrition-related services; ii) enhancing the consumption of diverse diets; iii) protecting households from the impact of shocks and other vulnerabilities that affect their nutrition status; iv) strengthening policy, legal and institutional frameworks and the capacity to effectively plan, implement, monitor and evaluate nutrition programmes; and, finally, (v) creating awareness of and maintaining interest in and the commitment to improve and support nutrition programmes in the country.

The implementation of the UNAP has coincided with a reduction in stunting rates.[105] This is partly attributed to programmes that are being undertaken through the MoH and programs that are being directly implemented by non-state actors to address the objectives of the UNAP.[106] According to key informants, the UNAP multi-sectoral model has made Uganda a case study for other countries to learn from, however, it was acknowledged that challenges remain in coordination among the eight (8) sector ministries, and in limited financing for the proposed interventions. Furthermore, there is limited appreciation within sectors on how to mainstream nutrition issues within sectoral plans and programmes. While UNAP has been granted a one year extension by OPM, there is a need to evaluate its effectiveness so far in order to inform subsequent programming for FNS.

Aspects of FNS must be addressed through various relevant policies. Given that agriculture and health are central to SDG2, together with aspects of education and social development, the next sub-section focuses on reviewing the priority sector policies and programmes being implemented therein to foster FNS, as articulated in the UFNP and the UNAP. The Review also highlights policy gaps.

105 See section 3.2.
106 See these in sub-section 4.3.2.

4.3 Sector-Specific Policies and Programmes

4.3.1 Agricultural policies

4.3.1.1 National Agriculture Policy

A key objective of the National Agriculture Policy (NAP) of 2013 is to '*ensure household and national food and nutrition security for all Ugandans'*. To achieve this objective, the NAP targets the promotion of agricultural enterprises that generate regular incomes to support food purchases. In addition, it encourages the production and consumption of nutritious foods, including indigenous foods, and calls for an enterprise mix to meet household food and income needs. Furthermore, it targets the provision of appropriate storage facilities to improve post-harvest management. It also aims to develop regional markets for locally produced food products. The NAP calls for local government ordinances to ensure that households adopt appropriate food production practices. Finally, it calls for the establishment of a national strategic food reserve system.

MAAIF has a short term strategy in place for the operationalisation of the NAP. The current strategy - the 2015-2020 Agricultural Sector Strategy Plan (ASSP) - has adopted 12 priorities for targeting food security (bananas, beans, maize, rice, cassava, fruits, vegetables and dairy) and incomes (coffee, tea, beef and fish). While these policies are clear, implementation remains weak thus affecting the attainment of FNS outcomes. In addition, as per the provisions in the NAP, MAAIF has developed sub-sector policies. These sub-sector policies that directly support FNS are discussed in the next sub-section.

4.3.1.2 Agricultural sub-sector policies

In 2016, the Cabinet passed a comprehensive **National Fertiliser Policy (2016)** to drive improvement in soil nutrient levels. The policy targets to reduce annual nutrient loss by 30 kgs per hectare and increase annual fertiliser application up to at least 50 kgs per hectare by 2020. The above targets are to be met through various strategies addressing: (i) the capacity of farmers to engage in fertiliser use; (ii) the capacity of suppliers to deliver quality, timely and affordable fertilisers; (iii) the regulatory and institutional capacity to ensure the environmentally safe supply of fertilisers; and (iv) the dissemination of fertiliser related knowledge.

In addition, the **National Extension Policy (2016)** promotes access to appropriate information, knowledge and seed technologies. These policies complement each other in increasing the availability of critical production inputs and in promoting the appropriate use of appropriate technology to enhance yields, thus delivering FNS and increasing incomes of both farm households and value chain actors. The importance of indigenous knowledge in the agricultural sector is observed by sustaining indigenous farming systems such as agroforestry, intercropping, pest management, soil fertility and conservation management, and post-harvest technologies.

4.3.2 Health policies

The MoH remains the focal sector for ensuring that nutrition is mainstreamed in other sector plans and programmes. The **National Health Policy (NHP) 2010**, was informed by the NDP I and the constitution. The focus of the NHP was on health promotion, disease prevention, and the early diagnosis and treatment of diseases. The policy specifically prioritizes the effective delivery of the Uganda National Minimum Health Care Package (UNMHCP), the more efficient use of available health resources, the strengthening of public and private partnerships for health, and the strengthening of health systems. Consequently, nutrition was included in the UNMHCP[107] alongside environmental health.[108] Inherently, food hygiene and safety were considered vital for the achievement of the UNMHCP. During the time the NHP was being implemented and in line with global agendas, emphasis was placed on attempts to achieve universal access to a minimum health care package as well as equitable and sustainable financing mechanisms.

107 Uganda has always directed the nutritional component of health interventions through the Uganda National Minimum Health Care Package. The emphasis of interventions has been on children as well as pregnant and lactating mothers.

108 The environmental health element focused on increasing access to safe water and managing the disposal of household waste as principal determinants of poor sanitation and food contamination.

Health Sector Strategic Plans (HSSPs) have supported the implementation of nutrition interventions.[109] Currently, the MoH is implementing the fourth HSSP (HSSP IV), **2015/16-2019/20**. The **HSSP III (2010/11-2014/15)** recognised the need to integrate infant and young child nutrition interventions into maternal, infant and young child services to ensure growth and development. In addition, the HSSP III set specific targets to scale up the micronutrient supplementation of vitamin A, iron and folic acid. In addition, urbanisation and unhealthy nutrition lifestyles were identified as aspects that have led to an increase in non-communicable diseases (NCDs) such as hypertension, cardiovascular diseases, and diabetes. As the prevention and control of malnutrition have also been listed as priority goals, in line with the implementation of the NDP II, the MoH has prioritised the strengthening of community mobilisation and communication for good nutrition for all age groups, as well as the expansion of micronutrient supplementation.

Indeed, the HSSP III notes that 75 percent of the disease burden could be prevented by scaling up the delivery of nutrition services, which, among others, is a strategy for preventing diseases and promoting the health of Ugandans (MoH, 2010). This incorporates a tripartite approach including a nutritional needs assessment tackling micronutrient deficiencies by using supplements (iron for women; vitamin A for pregnant, lactating mothers and children under six), food fortification (iodised salt), and the inclusion of nutrition education in antenatal and other health programmes.

4.3.3 Education policies

As stipulated in the 1995 constitution, education is one of the underlying factors for improving long-term nutritional outcomes. In line with NDP II and the Education for All (EFA) objectives, the provision of school meals remains a requirement for improving and strengthening the quality of education (Korugyendo and Benson, 2012). The **Girl Child Education Strategy (2015)** regards improved nutrition as one of the societal dividends that emerges as a result of educating girls. The commitment to the implementation of these policies is still an issue of concern for all stakeholders. This is mainly attributed to limited consensus on responsibility for feeding school children, as well as limited sensitization of parents and guardians on the importance of children's nutrition.

4.3.4 Social development policies

The social development sector recognises the role of nutrition for development. The Uganda **National Gender Policy (NGP) (2007)** recognises that the use of rudimentary technology affects women labour allocation and negatively affects food security. The policy provides for: (i) developing and implementing interventions that respond to diverse livelihood needs of women and men; (ii) developing and promoting labour and time saving technologies for poor women and men; and (iii) developing incentive frameworks to improve the earning potential of poor women and men for improved productivity and output. On the other hand, The **National Integrated Early Childhood Development (NIECD) Policy (2016)** advocates for 'supporting nutritious food production and uptake, nutrition care within the household, and community mobilisation to promote the adoption of healthy behaviours and increased public awareness of the centrality of improved nutrition to community and national development to reduce prevalence of malnutrition among infants and young children, expectant and lactating mothers'. The **National Integrated Early Childhood Development (NIECD) Policy (2016)** stresses the importance of good nutrition alongside health care and stimulation for holistic development. The **Social Protection Policy (2015)** also recognises the provision of social assistance and social security to vulnerable populations.

In identifying the different necessities of society, the social development sector ranks vulnerable groups such as children, women, orphans and older persons as being more prone to deprivation from food as well as other social services. Consequently, **the Social Development Sector Strategic Investment Plan (2010/11-2015/16)** focused on different social groups as a basis for interventions. For example, social assistance for chronically vulnerable groups is promoted through informal schemes from

109 The first HSSP identified malnutrition as one of the preventable but leading causes of high mortality and morbidity among children. The successor HSSP II (2005/6-2009/10) further recognized that child nutritional health is affected by the nutrition status of mothers and therefore targeted a reduction in the malnutrition of both mothers and young children.

which individuals draw social capital, food-for-work schemes in food-insecure regions and feeding programmes for orphans in schools. **The Social Sector Development Plan (2015/16-2019/20)** builds on the earlier plan by prioritizing social protection (for example, the Social Assistance Grants for Empowerment (SAGE), which target the elderly) and improvement in food and nutritional security for women, children and older persons.

Other initiatives in the social development sector are the **Male Involvement Strategy (2015)**, which calls for the involvement of men to be part of healthy feeding and good sanitation.

4.3.5 Trade sector policies

The **National Trade Policy (NTP) 2007** aims *to transform Uganda into a dynamic and competitive economy in which the trade sector stimulates the productive sectors; and to trade the country out of poverty, into wealth and prosperity*. In the NTP, the Government prioritises: a) Enhancing the competitiveness of Uganda's products and services in the domestic, regional and international markets; b) Facilitating the smooth flow of trade, while ensuring that trade conforms to national and international laws and regulations. Some of the strategies outlined in the policy include strengthening the MITC, affiliated institutions, and the District Commercial Offices. However, the trade liberalisation policy adopted since the early 1990s continues to affect smallholder farmers and consumers by exposing them to international competition, food and inputs price instability, and shifting effective demand from the domestic market to foreign markets, which negatively impacts FNS outcomes.

For livestock products, the **1993 Diary Master Plan** (DMP) liberalised the dairy sector to attract private investment in milk processing. The DMP also allowed concurrent informal and formal milk marketing. The plan resulted in the **Dairy Industry Act** (Cap. 85) which was set up to provide the structure and functions of the DDA, the promotion and control of the production, processing and marketing of milk and dairy products, and to facilitate the development of the dairy industry through standardisation, marketing, and use of preservatives.

The **National Standards and Quality Policy (2012)** was developed when it was recognised that, in order to expand regional and international trade, there is need to adopt and implement the internationally recognised and accepted Standards, Conformity Assessment and Accreditation (SMCA) practices. The policy vision is *'to have an effective and efficient national quality infrastructure that delivers goods and services that are internationally competitive'* with a mission *'to develop an SMCA infrastructure that supports the production and consumption of quality goods and services'.* The strategic objectives include: i) Rationalise, harmonise and strengthen the standards Regulatory Framework; ii) Establish a framework to enhance coordination and collaboration among regulatory and standards development agencies; iii) Develop and improve the national quality infrastructure; iv) Strengthen human resource capacity in the national quality infrastructure; v) Enhance SMCA awareness and dialogue to improve compliance; vi) Support MSMEs to conform to national standards and comply to technical regulations; and vii) Support both the public and private sector entities to conform with set standards. Each of the policy objectives has specified policy actions.

4.3.6 Other policies supporting FNS

Given the nature of the natural resource it governs, land, the **National Land Policy 2013** is still contentious. In 2010, the GoU recognised land degradation as a major impediment to sustainable growth in agriculture. Since then, Uganda has adopted a multi-sectoral approach to land use management. This approach has been consolidated by the formulation of the U-SIF SLM. The multi-sectoral approach enables synergies from different stakeholders to be tapped into and helps avoid duplication of efforts.

Other national policies and strategies that influence FNS in terms of guaranteeing access to nutrient-dense, adequate and safe food for all are included in the **Uganda National Climate Change Policy (2015)**, the **Social Protection Policy (2015)**, and the **National Policy for Disaster Preparedness and Management (2013)**.

4.4 Programmes supporting FNS

Programmes implementing FNS are either global, regional, district specific or population specific. Some are supported directly by either the government or development partners, or by a combination of the two. Each programme is being led through a line ministry which fosters sustainability of the programme and government ownership. A snapshot of some of these programme follows.

4.4.1 Peace Recovery and Development Plan

The GoU initiated the PRDP as a targeted intervention to prompt socio-economic development and to bridge the gap between the northern region and other parts of the country following over 20 years of conflict. Since 2009, this has been implemented through a three-year cycle. It has been documented that food sufficiency has not improved in northern Uganda during the implementation of the PRDP (UNDP, 2015), which corroborates with this Review's findings. The third PRDP cycle marked a policy shift for the region from 'recovery to development'. PRDP III strives to achieve the twin goals of improving income and reducing vulnerability, and acknowledges the fact that northern Uganda is not homogenous. PRDP III recognises that some regions, e.g. Karamoja, have experienced more than 40 years of food insecurity due to both poverty and conflict. In addition, the plan notes that the commercialisation of agriculture has compromised subsistence livelihoods and consequently exacerbated food insecurity in some parts of Uganda, which were already affected prior to the war. Overall, it is expected that during the implementation of PRDP III there will be more involvement of CSOs, the private sector and development partners in identifying and prioritizing the needs of the north, one of which is to address the deteriorating FNS situation.

4.4.2 Agricultural Livelihoods Recovery Programme and the Karamoja Livelihoods Programme

Within the PRDP, there are specific programmes that target the most lagging sub-regions (Acholi, Lango and Karamoja), with support from the European Union (EU). The goal of these projects is to ensure that the war-affected populations of northern Uganda and Karamoja engage in agriculture for food security. The EU provides a grant contribution between between UGX 2 - 34 million per project to construct, renovate or modernise storage and processing facilities, post-harvest handling and equipment, and pest and disease control (OPM, 2014).

4.4.3 Multi-sectoral Food Security and Nutrition project

As part of the implementation of the UNAP, Uganda is implementing the Multi-sectoral Food Security and Nutrition project (2015-2019). This is a World Bank supported USD 27 million project targeting the three sectors of health, agriculture and education. The project is implemented in 15 districts[110], which have been selected based on having the highest stunting and worse dietary diversity. A major target of this project is the expansion of the utilisation of community-based nutrition services. Specifically, the project will establish community demonstration gardens at primary schools. Implementation is guided by locally developed plans, such as the Primary School Nutrition Action Plan. The use of village health teams (VHTs) is an important part in the delivery of health services within the project.

4.4.4 Operation Wealth Creation

The OWC is an initiative that was started to fill the gap in efficiency of input provision that was being undertaken by NAADS. Due to resource constraints, the OWC prioritized three products, namely, coffee, tea, and citrus fruits. Specifically, resources are allocated in the ratio of 70/30 towards cash/food security, and 70 percent goes to the three commercial products that have been identified due to their export market potential. The food security crops targeted are maize and beans. In addition to providing inputs for the above products (inputs are procured by the NAADS and distributed by the OWC), the OWC has also focused on addressing post-harvest losses and general food storage. The programme is targeting household food storage facilities for

110 The project districts are classified as Phase 1 and 2 (based on high stunting and low dietary diversity). There are five districts in Phase 1, Bushenyi, Nebbi, Ntungamo, Maracha, and Namutumba. Ten districts will be selected in Year 2 from the remaining 15 that have qualified on the basis of combined high stunting and low diet diversity. These districts are: Isingiro, Yumbe, Arua, Bugiri, Iganga, Kyegegwa, Kiryandongo, Kamwenge, Masindi, Kyenjojo, Kabarole, Kabale, Hoima, Kibaale, and Kasese.

the poorest subsistence farmers. In addition, the NAADS, working in conjunction with the WFP, has established 10 additional satellite collection points (SCPs) that support farmers to store grains and pulses. Although the impacts on FNS are not directly predictable, it is anticipated that commercialisation may increase income for producers.

4.4.5 School meals programme

The WFP has previously supported the school meals programme (SMP) and girls take-home ratios in northern Uganda and Karamoja to both attract and retain students in school, as well as to address hunger and malnutrition.[111] With the end of the civil conflict, the WFP moved from relief to recovery and development interventions. Presently, given the severe constraints faced by the Karamajong in producing or accessing adequate dietary rations, SMP are implemented only in Karamoja. As one may observe, the heavy focus on the Karamoja sub-region in many of the programme responses, mainly by development partners, partly explains the sub-region's improving indicators in nutrition status, as is indicated in Map 1.

4.4.6 Scaling Up Nutrition

In March 2011, Uganda joined **Scaling Up Nutrition (SUN)**, a global movement that unites national leaders, CSOs, bilateral and multilateral organisations, donors, businesses and researchers in a collective effort to improve nutrition. The OPM is the convening body for SUN and coordinates UNAP's implementation, while USAID is the SUN donor convener in Uganda. Box 9 summaries USAID interventions on FNS in Uganda, in direct support to UNAP implementation.

111 Evaluations point to large impacts of the SMP in northern Uganda. For instance, Alderman *et al*. (2012) show that the SMP had significant impacts on school enrolment and attendance, as well as on grade repetition. Other impacts were observed in regards to the nutrition status of siblings as well as cognitive development and learning achievement for children attending school (Aderma *et al*., 2009).

Box 9: USAID programmes in supporting FNS in Uganda

Feed the Future Project of USAID has implemented three interrelated projects since 2012 which end in 2017. These are:

- ***Community Connector (CC)**, which began in January 2012 in nine districts and will phase up to 15 districts. CC implements activities from UNAP and works with District Nutrition Coordination Committees and Village Health Teams in improving the nutritional status of women and young children and the livelihoods of vulnerable populations.*
- ***Production for Improved Nutrition (PIN)**, which is designed to source quality ingredients from indigenous farmers and build the capacity of local industries to manufacture and distribute therapeutic and supplementary foods.*
- ***The Northern Uganda Health Integration for Enhanced Services (NU-HITES) Project**, which aims to increase the use of quality health services and to strengthen systems for the delivery of quality health services in northern Uganda, with the overall aim of improving the health and nutrition status of the population in Northern Uganda, through a district-based integrated package of quality health services that include nutrition.*

Other USAID Nutrition-related engagements

1. *Under **PEPFAR**, USAID's investment in the provision of therapeutic and supplemental feeding to malnourished people living with AIDS has been expanded under the **Production for Improved Nutrition** project, which now covers 104 health facilities. PEPFAR's support for nutrition is also being executed by the SPRING and FANTA III projects, which are both implementing the NACS program in HIV and antenatal clinics for adults, children and pregnant woman.*
2. *Additional PEPFAR support is provided through the **Sustainable Responses for Improving the Lives of Vulnerable Children and their Households (SCORE)** project, which aims to decrease the vulnerability of critically vulnerable children and their households.*
3. *A **Food For Peace Title II** program is active in Uganda, and is designed to reduce food insecurity among chronically food-insecure households in the Acholi and Karamoja regions, which contributes to the program goal of ensuring that vulnerable households in targeted areas build and sustain food security. The Title II programs complement the GOU's Karamoja Integrated Development Plan and Karamoja Action Plan for Food Security.*
4. ***STRIDES**, the Mission maternal and child health (MCH) flagship project, aims to increase the use of quality reproductive health/family planning and child survival services at the facility and community levels, in 15 selected districts in Uganda. Through integrated MCH service delivery, nutrition interventions are implemented through facility- and community-level programs.*
5. *The USAID' **Food and Nutrition Technical Assistance (FANTA)** project, which was designed to support the implementation of the UNAP, achieved many successes. It supported the development of the National Nutrition Planning guidelines; strengthened capacity of local government to implement UNAP through building the capacities of the Multisectoral district Nutrition coordination committees (DNCC) and developing the District Multisectoral Nutrition Action Plans in 10 selected districts; it supported the Social Protection sector to develop the capacities of Community Development Officers (CDOs) to mobilize for Food and Nutrition Security; it supported the Health sector in implementing Integrated Nutrition Assessment Counselling and Support (NACS) in health facilities, strengthened the capturing of Nutrition data in the Health Management information system (HMIS), and strengthened the Agriculture sector to build capacity in the integration of Nutrition in Agriculture enterprise mixes.*

Source: USAID (2014) Uganda: Nutrition Profile

Food and Nutrition Technical Assistance (FANTA) III: The FANTA III project supports the GOU's national nutrition priorities in the following areas:

(i) Collaborating with stakeholders to develop and implement a national nutrition advocacy strategy;

(ii) Developing nutrition assessment, counselling and support (NACS) training materials;

(iii) Providing training to nutrition service providers;

(iv) Strengthening the health system's implementation of nutrition services;

(v) Managing and implementing the Uganda Nutrition Fellowship to develop skilled nutrition practitioners;

(vii) Developing nutrition programming to address Uganda's social development goals and agricultural challenges and opportunities; and

(viii) Collaborating with the Uganda Partnership for HIV-Free Survival to accelerate adoption of the 2010 World Health Organization guidelines on prevention of mother-to-child transmission and on HIV and infant feeding.

Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING): The SPRING project's vision is to reduce undernutrition, including anaemia, and to prevent stunting. The project will revive, refocus and strengthen nutrition treatment and prevention capacity at the facility level, especially through integrated management of acute malnutrition and NACS. Additionally, building on the achievements of the **Global Alliance for Improved Nutrition** program, which has just ended and helped expand the fortification of cooking oil in the country to over 90 percent of the market, SPRING will provide technical assistance to support and implement national-level activities and policies related to food fortification and other micronutrient initiatives.

4.4.7 Public-private partnership on food fortification

With the stewardship of a food fortification working group, the MoH has initiated public-private partnerships to intervene in FNS, in areas of food fortification. This effort has been reinforced by the Uganda National Bureau of Standards (UNBS), which provides the necessary standards and marketing regulations for fortified foods. Some private sector initiatives in food fortification include: (i) the Production for Improved Nutrition Project, a public-private partnership between RECO Industries Limited and USAID/Uganda that delivers ready-to-use therapeutic foods, (ii) maize flour fortification with Vitamins A and B and iron by Maganjo Grain Millers; and (iii) manufacturing Vitamin A-fortified cooking oil by BIDCO and Mukwano Industries. However, as evidence from the UNPS data reveals (see section 3.3.6.2), awareness of fortified foods is still very low among the population, particularly in the northern and western regions. Other interventions include the use of food and food supplements for prevention, the use of therapeutic foods for treatment, and facility management of severe acute malnutrition.

4.4.8 HIV prevention

Other health-related interventions include HIV prevention to accelerate adoption of the 2010 WHO guidelines on the prevention of mother-to-child transmission and infant feeding. The socio-economic and FNS status of the households of vulnerable children has been improved. In addition, the capacity of vulnerable women and children and their households to access, acquire or provide critical health services has been enhanced.

4.4.9 Exclusive breast feeding

The government has been hailed for efforts in promoting maternal nutrition and care through approaches such as promoting exclusive breastfeeding for the first six months of life, timely, adequate, safe and appropriate complementary feeding and micronutrient intake between 6 and 24 months, and the fortification of common staple foods, which have contributed to reductions in malnutrition.

4.4.10Child Days Plus

In May 2004, the MoH introduced the Child Health Days (CHD) strategy to increase the coverage of population-oriented schedulable services for child health, including vitamin A supplementation, immunisation, the de-worming of children from 1 to 14 years of age,

and maternal neonatal tetanus immunisation of girls and women of child-bearing age, 15 to 49 years. The CHD were implemented in all districts during April and October of each year. In 2011, the child days intervention was further enhanced into '**child days plus**' to provide early infant HIV/AIDS diagnosis for children aged 6 weeks to 18 months, the promotion of healthy behaviours such as breastfeeding, sleeping under an insecticide-treated bed net, and good hygiene and sanitation practices. The enhanced '**child days plus'**, however, were only implemented in 50 selected districts, mainly in the northern, eastern, and western regions. As indicated in section 3, on average, 30 percent of children aged 6-24 months sourced vitamin A from the CHD plus programme.

This has been complemented by UN agencies, such as the WFP, providing mothers and children in Karamoja health nutritional supplements, conditional on their attendance in antenatal clinics. Other UN agencies such as the FAO, have focused on providing training and the establishment of farmer field schools in conflict-affected areas as a means of boosting household agricultural productivity. The substantial programme responses made in health to ensure good nutrition at every stage of child development have yielded tremendous results, as observed in the improvement in anthropometric indicators (particularly stunting rates) at the national level and the regional level, particularly in northern Uganda. However, actors must focus on eastern regions as much as northern regions because changes in agricultural patterns are likely to change the trend in nutrition status of many households therein.

4.5 Institutional Arrangements and Capacities

With the inception of the 2003 UFNP, the MAAIF and the MoH have been formally mandated to ensure adequate food and nutrition, respectively, for the people of Uganda. In addition, the government recognised the combined role of appropriate diets, clean water, adequate sanitation and wide knowledge of good health and nutritional care practices as fundamental to ensuring the right food quantity and quality at the national level. A multi-sectoral approach requiring participation from several MDAs, such as the MAAIF, the MoH, the MTIC, the MoFPED, the MoES, the MoLG, the MoGLSD and the OPM, together with development partners, CSOs and the private sector, is encouraged. Regarding coordination arrangements, the overall coordination mandate of national policies for FNS and the UNAP is the Directorate of Policy Implementation and Coordination in the OPM, the cabinet, and the Parliamentary Committee for Children. The nutrition multi-sectoral technical committee, which is composed of experts from government agencies, development partners, the private sector, academia and CSOs, is responsible for providing technical support to the OPM. Other coordinating institutions include the Nutrition Development Partners Committee and the Nutrition Coordination Forum.

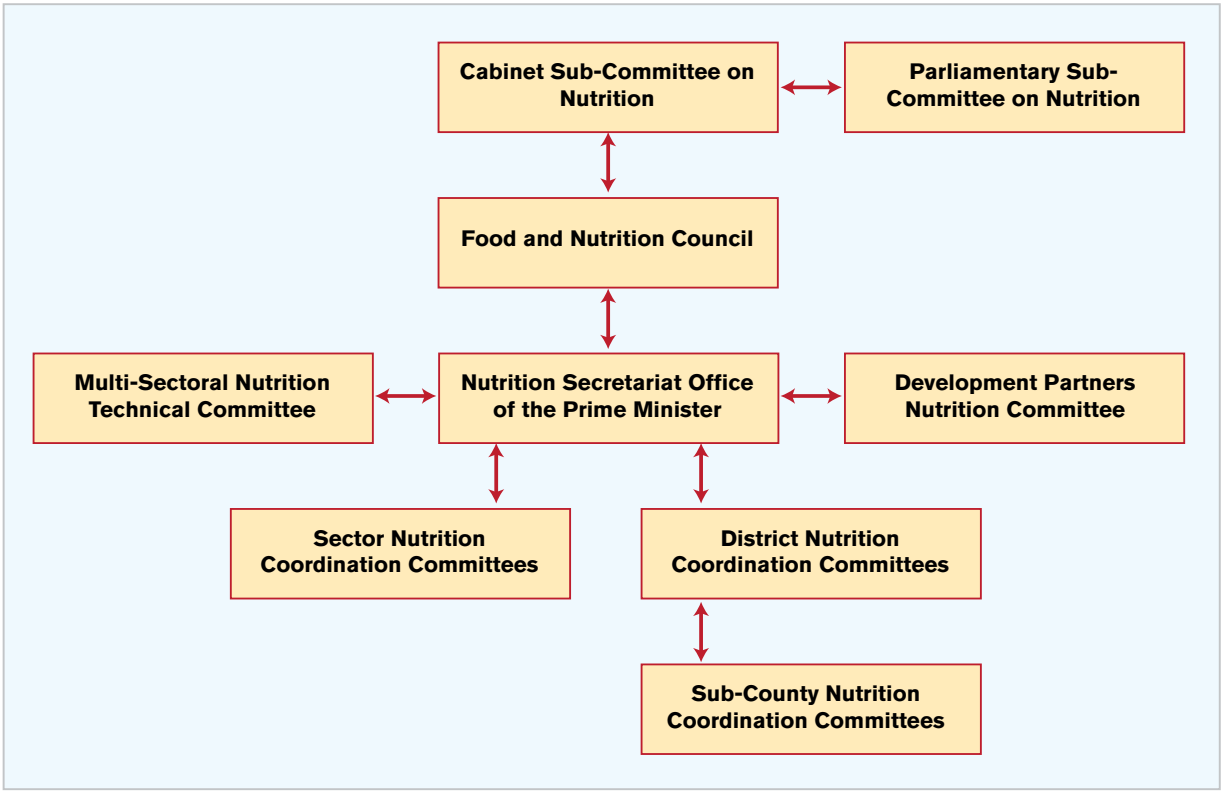
4.5.1 Office of the Prime Minister

The role of the OPM in coordinating the UNAP emanates from a cabinet directive which was precipitated by failure in coordination between the MoH and the MAAIF during the implementation of the UFNP 2003 and its strategy and implementation plan (2005). In addition to coordination gaps, nutrition was being approached from a curative rather than a preventive angle. The OPM's entry point into the UNAP is through Objective 5, on 'creating an enabling legal environment and building strong institutional structures and mechanisms and capacity at all levels'. To date, the OPM has played a significant role in integrating the efforts of the different MDAs and other stakeholders.

During the stakeholder consultations the following were noted as part of the major institutional achievements:

- The establishment of District Nutrition Committees to coordinate at the grassroots level as well as the establishment of technical committees and sector committees within the key MDAs.
- Cooperation with development partners (FANTA, Community connector and SPRING) to facilitate the functionality of the various nutrition committees, particularly the District Nutrition Committees (DNCs).
- The development of the 2015 National Advocacy and Communication Strategy for the Uganda Nutrition Action Plan (2015-2019), with specific roles for the core MDAs and messages for mothers, policy makers, and implementers, among others.

Figure 27: Institutional coordination arrangement



Source: NPA (2015) - National Nutrition Guidelines for Uganda

Through the multi-sectoral committee, actors have attempted to redirect the implementation of nutritional interventions to the areas where they are needed most (based on health, food and care). These include: antenatal care (ANC), in which iron and folic acid are provided as supplements; regular de-worming in schools (every 3 months); child health days, e.g., immunisation for children under 5 years of age; and incorporating nutrition in sector initiatives, e.g., the inclusion of mangoes, avocado and orange seedlings in the OWC package. The multi-sectoral committee (with support from the FAO and Regional Capacity Building Partners (RECABIP) has undertaken a mapping and capacity assessment of all stakeholders involved in nutrition in Uganda, which would support the monitoring and evaluation of Uganda's FNS progress, as well as the strategic alignment of nutrition interventions based on identified gaps. The OPM has also organised annual nutrition forums to check the commitment on nutrition planning, coordination and implementation.

Given the multidimensional nature of FNS, it cannot be placed in one sector, hence, the coordination role needed from the OPM to ensure that FNS is addressed by all eight major sector players. The multi-sectoral approach notwithstanding, holding MDAs accountable for the yield and tracking achievements in FNS has been difficult. For example, as one of the ministries constitutionally responsible for FNS in Uganda, the MAAIF has in some cases not highlighted anything regarding FNS in its annual progress reports. The implementation of nutritional programmes is characterised by poor coordination among the different actors. Consequently, due to the poor monitoring and governance, the availability of data for the evaluation of progress in key nutritional indicators has also been inadequate, inaccurate or in some cases altogether missing.

Although the use of nutrition committees is encouraged at all levels, over time, what has emerged is that food security concerns are not emphasised strongly enough in some district

coordination committees. Coordination at the local levels must be strengthened by making it imperative for districts to design action plans, advocacy and communication strategies, extension hand books, and district nutrition planning and agricultural enterprise guidelines, and to ensure the production and availability of ready-to-use therapeutic foods (RUTFs) at health centres.

4.5.2 Ministry of Gender, Labour and Social Development

As one of the sectors implementing the UNAP, the mandate of the MoGLSD is to create demand for the uptake of nutrition services and to enable people to appreciate the importance of FNS. This is accomplished through capacity building and the dissemination of FNS information. Using an integrated approach that encompasses food security, nutrition and ECD, the Ministry has designed FNS guides for mobilisers to empower communities. These training packages cover aspects of planning, the roles of stakeholders and procedures for engaging communities in discussing FNS, as well as to diagnose and make referrals when children are acutely malnourished. Although these materials have mainly been in text, visual aids are now being developed to incorporate the needs of people who are unable to read and write.

Three principal channels are used for community outreach. These include:

- Parish Development Committees: these are constituted within each parish. Characteristically, they have a stake in community programmes, a political structure, and a gender-responsive selection criterion (equal representation of both sexes). The MoGLSD sees the ability to reach two people in every parish with FNS messages as a major accomplishment for the dissemination of FNS information. The role of these committees in uptake and enhancing FNS knowledge has been vital.
- Functional Adult Literacy (FAL) classes: these include peer educators for targeted vulnerable groups such as women, youth and persons living with disabilities (PLWDs). FAL learners obtain knowledge and information through classes, with educational packages that incorporate key messages for nutrition and food security.
- Community-based informal groups: these are independent and voluntary groups formed to address critical development gaps in their respective localities. As a requirement for recognition, they register with the Ministry of Local Government (MoLG) structures in local government units.

In partnership with USAID and UNICEF, the Ministry has adopted a two-tier approach to undertake FNS empowerment training packages. First, community development officers (CDOs) and their respective supervisors (at the sub-county and district levels) undergo master classes. Second, the CDOs and sub-county chiefs/town clerks and chief administrative officers who are competent train community members. The master class also empowers CDOs, Chief Accounting Officers (CAOs) and town clerks to support FNS within their respective local government nutrition committees. At the sectoral level, the MoGLSD has designed a monitoring tool to capture and track data on the three themes (food security, nutrition and ECD). To enhance planning and programming and to support budgeting, the Ministry has also formed a coordination committee with members drawn from different departments, e.g., culture, gender, community development, youth and children, among others.

4.6 Financing Modalities and Gaps in Ensuring Food and Nutrition Security

There is no specific budget line within the line ministries and agencies that indicates the amount to be allocated on FNS alone.[112] In part, food and nutrition are taken as end result activities that are ensured when multidimensional programme activities are funded to foster high production and productivity and good health. Thus, it is important to understand the state and non-state commitment to the key sectors of agriculture, health, and water and sanitation.[113]

112 The Vision projects that every UGX 1,000 invested in agriculture can yield a six-fold increase in productivity and lead to a significant reduction in child stunting, improve maternal health, and enhance micronutrient intake.

113 The discussion on agriculture sector financing is discussed in depth in section 3.6.3 and 3.6.4, and does not need to be repeated here. A discussion of financing by sector is discussed below.

4.6.1 Health sector financing

The MoH—the sector in which the bulk of nutritional interventions are undertaken—allocated approximately UGX 100 million, or less than 1 percent of the health budget, to nutrition interventions.[114] Table 21 shows how the National Medical Stores (NMS) receives the highest share of the health sector's public budget. It can be postulated that drug administration through NMS includes administration of nutrient related drugs to expectant mothers during antenatal visits, and immunisation for children.

Nonetheless, attempts have been made by some development partners to ensure that some resources are allocated for nutrition interventions, through the national budget. In terms of budget support programmes to health through the MTEF, ODA has originated mainly from Sweden (UGX 1.3 billi0n) and Belgium (UGX 9.4 billion). Similarly to other donors such as UNICEF, USAID supports the sector by financing specific programmes such as SPRING and FANTA, which support UNAP implementation. The budgets for the latter two programmes are not publicly declared.

Table 21: Public financing for specific components of the health sector (UGX Billions)

	2012/13	2013/14	2014/15	2015/16
Vote	Outturns	Outturns	Outturns	Approved (excl. donor)
014 Ministry of Health	50.6	46.8	49.5	101.0
107 Uganda Aids Commission	5.2	5.3	6.8	7.6
114 Uganda Cancer Institute	5.2	6.5	11.1	13.1
115 Uganda Heart Institute	2.4	4.8	8.5	11.6
116 National Medical Stores	210.4	219.4	217.7	218.6
134 Health Service Commission	3.5	3.5	4.3	4.4
151 Uganda blood transfuzion service	3.6	4.0	7.0	8.7
161 Mulago Hospital Complex	36.2	36.5	47.2	41.8
162 Butabika Hospital	11.9	8.3	8.6	9.3
163-176 Regional Referral Hospital	60.1	75.9	66.5	83.2
Other				
Health sector monitoring and quality assurance		0.8	1.0	1.4
Health research		2.4	3.0	5.0
Value of medicines and health supplies distributed ro local governments, general and regional referral hospitals	111.0			

Source: MoFPED, 2016

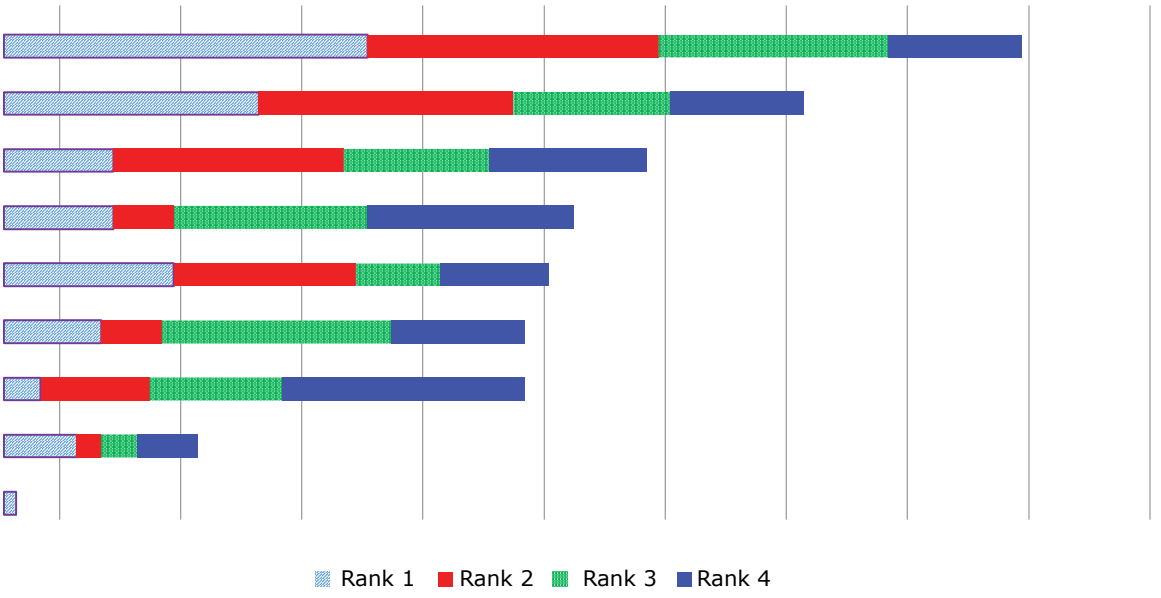
114 Public financing in the health sector has concentrated on the construction and rehabilitation of hospitals and health centres, such as the construction of a specialized maternal, neonatal and women's Hospital at Mulago.

In addition to a meagre budget, there is limited appreciation for the costs and devastating impacts of malnutrition among key decision makers, particularly MPs. In 2012, UNICEF sampled 150 MPs to establish the most important issues affecting children in Uganda. The MPs were asked to rank the top four most important sectors and the issues within the different sectors. Although the health sector was ranked the most important (98 percent) followed by the education sector (94 percent), within the health sector, there was considerably less appreciation for nutrition issues. Figure 28 shows how MPs ranked different issues within the health sector, and it is evident that, overall, nutrition is not ranked among the top four issues. MPs considered hospitals and health centre infrastructure (84 percent), maternal and new-born health (66 percent), immunisation (53 percent), and medical staff salaries (47 percent) to be more important than nutrition (45 percent). Consequently, it is important that MPs know more about the adverse impacts of malnutrition as well as the policy challenges faced in addressing this important issue.

4.6.2 Financing for water, sanitation, and the environment

Access to safe water and sanitation is critical for maintaining hygiene at the household level, and it impacts health and, ultimately, labour productivity. Adequate safe water and sanitation are therefore a major determinant of the health status of the entire population. At the MoWE, there have been substantial increments in the urban water and sanitation budget line, amounting to a more than ten-fold increase from 2012/13 to 2015/16. The reason for this is, in part, the pragmatic approach to urban water connectivity that the MoWE has embarked on. At the local government level, there have also been observable expenditure increases for rural water supply and sanitation projects (Table 22). Regarding the fostering of water for production, the financing of this indicator has remained relatively stable but has slightly increased to UGX 30.6 billion in 2015/16. Ventures by the government to support this activity and to increase access to the provision of water for production have centred on financing the construction of six valley dams in the Karamoja sub-region and 46 valley tanks in Rakai, Isingiro, Lyantonde, Mubende, Kiboga, Kamuli, Kumi, Apac and Kitgum, (MoFPED-Budget Speech, 2016). To date, the effectiveness of these ventures has not been ascertained.

Figure 28: MPs' prioritisation of issues within the health sector



Source: Children's Issues in Parliament, UNICEF 2012

The need for early warning climate systems cannot be overemphasised, however, as Table 22 shows, climate and climate change financing have substantially declined from 2013/14 (UGX 13 billion) to 2015/16 (UGX 6.8 billion).

Table 22: MTEF for the water and environment sector, (Uganda Shillings billion)

Indicator	2010/ 2011	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 16
Ministry of Water and Environment						
Rural water supply and sanitation	23.0	27.4	30.2	30.6	34.5	34.7
Urban water supply and sanitation	30.7	37.5	37.0	152.5	239.9	375.8
Water for production	23.4	32.6	34.2	20.1	27.3	30.6
Water resources management	26.7	36.3	31.7	38.1	23.4	15.7
Natural resources management	25.4	20.0	33.0	29.4	24.7	11.9
Weather, climate and climate change	9.2	12.7	12.2	13.0	8.4	6.8
Policy, planning and support services	6.6	9.8	11.6	16.2	8.4	8.8
Sub-total	145.0	176.2	189.8	299.9	366.6	484.3
National Environment Management Authority						
Environmental management	5.9	7.0	8.4	8.4	9.6	11.2
Sub-total	5.9	7.0	8.4	8.4	9.6	11.2
National Forestry Authority						
Forestry management	15.6	11.0	12.6	25.7	19.2	19.7
Sub-total	15.6	11.0	12.6	25.7	19.2	19.7
Local Governments						
Rural water supply and sanitation	55.4	69.5	83.4	64.3	90.1	128.0
Urban water supply and sanitation	2.3	3.0	3.9	1.5	2.6	2.6
Natural resources management	0.8	1.0	1.4	3.1	3.1	5.0
Sub-total	58.5	73.5	88.7	68.9	95.9	135.6
TOTAL	225.0	267.6	299.5	407.9	505.8	650.8

Source: MTEF, MoFPED, 2016.

4.6.3 Financing for social development sector

Funding for the social development sector mostly lies in capacity-building activities, such as training CDOs and district nutritionists in local government structures, and encouraging community group formations to identify local persons as leaders in the transfer of nutrition knowledge in villages.

Generally speaking, the entire financing structure for the different sectors related to FNS does not relate expenditures to quality and output standards, regardless of the source of funding. The stagnant performance in food security indicators (measured in terms of caloric intake) is a reflection of the limitations in well aligned prioritisations and in the uncoordinated nature of food security interventions across sectors. In addition, given that nutrition is a multidimensional issue, synergies between the three major sectors are vital for improving the nutritional indicator scores at the national, regional and global levels.

Aligning agricultural budget expenditures with FNS goals still remains a challenge. This is mainly due to competing priorities for the same narrow budget in which FNS issues are viewed as being minor by the different respective sectors. The limited placement of specific FNS programmes in the national budget implies financing for FNS activities cannot be directly traced, even in the sector-specific monitoring and evaluation frameworks. As a result of this limitation, most UNAP interventions have not been implemented, especially those relating to the nutritional status of children, and this is due to inadequacies in financing, particularly from the government. For example, most nutrition interventions are embedded in larger sectoral budgets. Since no clear budget exists for nutrition, and given the multi-sectoral nature of nutrition interventions, programme-based budgeting for nutrition could be an option worth considering. The government does not offer adequate funding for FNS, and even when a DSIP is budgeted for implementation, targeted funding is not provided, which highlights the resourcing constraints for FNS.

4.7 Gaps in Legal and Policy Responses

4.7.1 Legal gaps

Throughout its existence, the NAADS mandate has shifted on to input distribution, which means that fewer farmers have accessed to extension services and that, the link between NARO (research and development), MAAIF and farmers has been broken. This situation is reflected in the poor performance of agricultural production and productivity and the stagnating food security situation at the household and national levels (food deficit depth). Due to low productivity, food reserves at the national level have never been established, which is partly due to limited prioritisation within the government for having national food reserves. The challenges of fiscal mismanagement, uncoordinated interventions and limited human resources at the grass-root level have also exacerbated the poor performance of the NAADS programme (Okoboi *et al.,* 2012).

Another challenge that aggravates FNS gaps is the lack of a discernible food safety policy and the scattering of food safety regulations within several ministries. Although the UNBS has contributed to regulating the safety of locally produced foods, most of the supplements that flood the market are imported. Alongside the imported supplements, there are a growing number of herbalists in the country, most of whom are unregistered and unregulated. The nutritional value and safety of nutritional herbs, which are readily available and highly consumed, remain largely unknown. With respect to livestock products, Uganda has applied quarantines in the event of outbreaks of livestock diseases such as foot and mouth disease. However, although the movement of animals is restricted, continued slaughter for consumption in local markets may affect food safety. There is a need to expedite the passing of the **National Biotechnology and Bio-Safety Bill,** which envisions a bright future for community inclusion in biotechnology and safety issues.

4.7.2 Gaps in policy response

During the implementation of the MDGs, food and nutrition issues, did not attract the required attention, especially in terms of funding. A plausible explanation for this is the assumption that enhancing household incomes would translate into improved FNS. The GoU initiated different social protection interventions, with support from development partners, to address the structural and uneven development in the country, such as the Northern Uganda Social Action Fund (NUSAF) and Social Assistance Grants for Empowerment (SAGE), however, there were only a few interventions targeting FNS. Other programmes, such as the Plan for Modernisation of Agriculture (PMA), emphasised the commercialisation of agriculture by prioritising growth in agricultural incomes. This plan was based on the assumption that households would meet their food needs from realised cash income. The only exception to this was UNAP, which proposed a number of interventions anchored in a multi-sectoral approach to address malnutrition.

Apart from the MAAIF and the MoH, nutrition is poorly incorporated into the priorities and programmes of most government agencies, and the commitment to champion FNS is subdued by sector mandates that are actually considered core. Nonetheless, efforts to increase production and productivity, which are noted in almost all agricultural and related policy documents, are low and do not match the results from research field trials.[115]

115 See section 3.4.6.

While efforts have been made to improve the enabling environment in the agricultural sector, implementation remains weak. Agriculture is characterised by *ad hoc* and frequently uncoordinated interventions, which are worsened by the institutional weakness[116] within the sector. In 2016, the World Bank argued that agricultural production is being driven by fortune rather than by policies.

This situation can partly be attributed to the ineffective diffusion of technologies from research stations to farmers. Low productivity coupled with a high population growth rate increases the likelihood that food insecurity and malnutrition will occur. In addition, nutrition education is inadequate. This is partly explained by the limited technical personnel for addressing constraints in FNS. Although efforts have been made to train and recruit additional nutritionists under the SUN movement, the number is still too low to adequately cover the country's personnel needs.

Regarding the OWC, prioritizing cash crop production in the short run compromises food production in terms of resource allocation, and the conversion of income into food may not be guaranteed. The OWC is facing challenges similar to the NAADS on aspects concerning the quality of planting materials provided and the time of delivery, which is often too late or too early - impacts on survival rates. In addition, the extent to which the implementation of the OWC intervention (initiative) is guided by its research arm, the NARO, is not clear. Furthermore, although the overarching objective of the OWC programme is to reach 'poor' farmers, the programme has no basis for establishing the criteria on who is and who is not a poor farmer. Without the basis for establishing the need, the appropriate distribution of planting materials has been affected.

The Review noted rather weak synergies between NARO and its R&D program with NAADS, which makes it difficult to ensure that NARO research on improved varieties is being translated into the inputs that the NAADS is providing to farmers, together with extension knowledge.

The inability by concerned parties to develop the identified missing policies and guidelines in specific policies remains an issue, with the prime example being the school feeding policy.

4.7.3 Inadequate resource towards FNS

The resources (including finance and human resources) intended to support the effective implementation of the FNS programs remain inadequate. Regarding finance, funding is thinly spread in terms of programmes and across geography. Even within programmes, funding seems to be skewed towards wages, with limited funds earmarked towards development expenditures.

4.7.4 Ineffective institutions to delivery FNS

Based on the critical review of the existing policies above, it is evident that existing policies towards FNS are sufficient to enable Uganda to achieve SDG2. However, implementation remains weak, and when implementation is taking place, the practice is actually different from what is articulated in the policies. The continuous creation of *parallel* institutions to try to fill the policy implementation gaps has exacerbated the situation, especially in the key sectors of agriculture and health. For instance, there are studies that have called for institutional reforms in the agricultural sector, which have received limited response from the concerned parties.

116 See Bategeka *et al*. (2013), institutional constraints.

5. Conclusions and Policy Recommendations

5.1 Conclusions

5.1.1 Transient causes of food and nutrition insecurity

Weather related factors, such as climate variability (e.g. drought), are cited as the major causes of inadequate food availability in Uganda, which in turn result in high food prices, especially for those individuals who depend on the market. Subsequently, Ugandans remain highly vulnerable to food insecurity, with nearly 8 in every 10 households having experienced transient food insecurity. Although Ugandan households are using a variety of methods to address climatic changes that affect food availability, the overall resilience to shocks and climate variability is generally weak. In addition, mitigation measures adopted to address food shortages are *ad-hoc* and oftentimes unsustainable. For instance, the reduction in meals consumed compromises the future food security status, while distressed livestock sales severely affect household asset holdings, reducing resilience to shocks. Unlike Kenya and Ethiopia, Uganda does not have a policy on pastoralists.

The regional geo-politics have resulted into a refugee problem for Uganda and it is predicted this will continue as long as there are conflicts in neighbouring countries (especially in South Sudan). Uganda is praised for its 'good' refugee policy, however, the influx of refugees in the recent past, during times when most parts of the country are hit by famine, has received negative public sentiments. Government is called upon to ensure that Ugandans dying of hunger should be given first priority against refugees.

5.1.2 Structural causes of food and nutrition insecurity

The Review notes mixed progress on the land question in Uganda. There are important provisions in the current legal frameworks, which have also been operationalized, such as spouse consent to sell land or use land as collateral in the bank to access formal credit. However, despite some of these positive developments, the current land tenure system, growing land inequalities, fragmented land markets, and low formal land titling, continue to negatively impact households' decisions to invest in SLM practises to boost their agricultural production and productivity, and support FNS. This situation is also exacerbated by weak support in farmer production decisions from extension workers and district leadership. An example that illustrates the issue of the expansion of cash crop production are sugar cane and rice, which are achieved at the cost of families' own food productions. This situation, coupled with increasing land fragmentation, appears to have compromised food security in Eastern Uganda.

Low use of productivity enhancing technologies.

Although a large share of the agricultural budget has been devoted to agricultural technology dissemination (through the NAADS programme), in the past 10 years, overall adoption rates for agricultural technologies remain low. Less than 10 percent of farmers are using improved seeds or applying fertilizers/ pesticides. Even among farmers who initially adopt improved agricultural technologies, dropout rates are high. For instance, the use of improved seeds declined from 18 percent in 2009/10 to 8 percent in 2013/14. This is the situation despite the widespread evidence that returns to agricultural technology adoption are high in Uganda.

Gender question.

Gender inequalities in relation to control of agricultural resources in Uganda remain and they affect women's potential to invest in food crop production. Agricultural production at the household level in Uganda is still undertaken using traditional methods and gender norms

still dictate which member of the household undertakes particular agricultural activities.

The dominance of male ownership and control of agricultural land affects women's involvement in both food and cash crop production. Land parcels owned by women mainly cultivate food crops, while cash crops take on increased prominence for parcels owned by men. Due to limited access to cash incomes, women do not invest in sustainable land management practices. The unequal control of household resources adversely impacts the productivity potential of a household. Women invest less in cash crop production due to the limited control of outputs from cash crop production. Increased agricultural incomes from crop sales have also been associated with an increased likelihood of the head taking on an additional spouse. As such, women react to the potential threat of the occurrence of polygamy by reducing their own investment in agricultural production.

Legal/regulatory and policy frameworks.

The existing legal, regulatory and policy frameworks are adequate for tackling the gaps in FNS. However, effective implementation and inadequate funding remain the major challenges. Despite UNAP's multi-sectoral approach to FNS, effective coordination remains a challenge, especially at lower levels of implementation. This challenge is exacerbated by *ad-hoc* and delayed response mechanisms. Furthermore, some sectors need to better achieve their roles and responsibilities as articulated in FNS. For instance, the weak regulations for food standards and nutrition supplements need to be addressed by the trade sector in order for stronger enforcement of standards to be achieved. The capacity to develop the proposed sub sector policies (such as the school feeding policy) and guidelines and the timely passing of supportive bills by parliament remain a challenge.

Under the current financing framework, government funding for FNS activities is not distinguished from other activities. This makes it difficult to identify and track specific FNS funding within sectoral budgets. The same applies to the FNS related projects funded by development partners. When it is possible to track FNS funding, it appears inadequate, particularly for the budget vote functions related to R&D, genetic resources, and agricultural extension. The low appropriation has partly affected the implementation of proposed programmes under UNAP. For instance, expenditures on R&D, which are critical for generation of drought resistant varieties to ensure climate resilience, are generally very low. On the other hand, although the government allocates a significant share of the agricultural budget to advisory services, wages account for a substantial portion of this particular vote function. Furthermore, as a result of inadequate public funding, there are numerous small scale and uncoordinated interventions being implemented by non-state actors. This limits the possibilities of mainstreaming these interventions into government programmes for sustainability, and limits opportunities of scaling up good practices.

5.1.3 Critical institutions to support FNS at lower levels

The review examined the functionality of some critical institutions that worked well in the past and boosted FNS. Such institutions include, storage facilities at household, kingdom and national levels; school farms/gardens; farmer institutions at the community level e.g. cooperatives; and district farmer institutions. On the other hand, there is the effectiveness of the existing public health institutions in enforcing hygiene and sanitation measures, especially at lower levels. The non-existence of community cooking demonstrations has left households to opt for more *dangerous* cooking methods.

Food storage facilities at all levels.

Historically, households were required to have food storage facilities partly to safeguard against future food shortages. These are no longer existent and when they do exist, food safety concerns are not addressed while food is in stores is comprised. The situation is made worse by the low value addition.

Uganda also lacks strategic food reserves at a national level. The 1995 Constitution calls for the establishment of national food reserves, however, at present, Uganda has no emergency food reserves. The few available food reserves (e.g., those operated by The Uganda Grain Council and those established with support from WFP in specific districts) are small and they are mostly grain silos owned by private

entities. Unlike its neighbours, such as Kenya and Tanzania, Uganda has very limited policy options to address sudden food shortages. The adopted policy stance of liberalizing economic activities also frustrates the establishment of food reserves and the adoption of other measures to address severe food shortages, such as the restricted export of foods during crises. In fact, differently from Kenya and Tanzania, Uganda is unable to cushion its citizens from excessive food price volatility. Therefore, Uganda's current trade policies do not envisage or account for the likely impacts of experiencing a food crisis, as was witnessed in 2016.

School farms/gardens.

The end of enforcing schools to have school gardens/farms has not only contributed to low skills development in agriculture starting from an early age, but it has also contributed to children going hungry while at school. However, there are efforts by MoES to revamp the school farms/gardens, with priority given to schools with more than 20 acres of land. There are also scattered interventions by non-state actors to support these efforts, e.g. SNV in partnership with the Embassy of the Kingdom of the Netherlands and UNICEF focusing on about 750 primary schools in selected districts.

The review further notes that development partners have come in to fill this void through the provision of emergency school meals in specific districts, however, this is not a response that is sustainable. Evidence has shown that there are some children who do not receive any meals while at school. Given the growing school age population, the school feeding responsibility cannot be taken over by the government at this time. The financial implication of a national school meals programme seems to be a major concern. Conservatively, the government has estimated an expense of USD 10 per child (translating into USD 53 million per annum) towards a school feeding programme and the World Bank has estimated one of USD 50 per child (translating to over USD 218 million per annum). The current policy stance towards school meals is that parents are supposed to ensure that children have sufficient food at school. However, there are no regulations compelling parents to meet this obligation.

5.1.4 Data revolution to support M&E and timely policy response

Uganda has relatively more access to data to track SDG2 targets compared to other SSA countries. This presents an opportunity for Uganda to monitor progress on SGD2. However, the Review highlights the following points: first, there are some gaps in data that are required to effectively track and monitor all SDG2 indicators, especially those relating to targets 2.4 and 2.5; second, almost all targets put emphasis on population specific vulnerabilities (e.g. life cycle, gender) to FNIS for the effective targeting of programmes, and while some of these vulnerabilities have been captured with the existing data and have shown differences in outcomes and experiences, more detailed data is needed to build a comprehensive understanding of what is causing the differences in outcomes and experiences, and to highlight the potential interventions to streamline positive outcomes; third, beyond data gaps, there is also a need to improve the quality and regularity of administrative data from MDAs, as well as the need for harmonisation of relevant data across stakeholders in terms of scope, collection methods, definition, and measurement. For instance, the method used by MAAIF to capture production is different from that used by UBoS. On the other hand, development partners increasingly rely on small scale datasets, focused on particular geographic areas, which cannot be generalised to the whole country.

5.2 Policy recommendations

5.2.1 Effective early warning systems

- The establishment of an effective early warning system to guide farmers on how to respond to potential climatic changes is recommended. The GoU, with support from development partners, should develop and facilitate an effective early warning dissemination process and build the capacities of citizens to evaluate risks as well as strategies for avoiding food insecurity.
- Building the capacities and equipping NECOC and UNMA in forecasting and providing real time assessment of crop quality based on weather predictions would facilitate the improvement of the warning systems.

5.2.2 Uprooting structural causes

Uprooting structural causes of food and nutrition insecurity requires appropriate policies that take into account other forms of market imperfections that may constrain the productive expansion of land (e.g. Inverse relationship between farm size and productivity). Priority should be on long term development policies over short-term interventions at all levels. These include:

a) Land reform. The Review recognises that land reform requires high political commitment. Some of the policies for successful land reform include:

- Operationalization of the land fund.
- Promoting equitable land ownership rights.
- Land consolidation should go hands in hands with mechanization whereas for smallholder farmers there is need to increase farmers' access to the means of production (labour and inputs).
- The target of the land reform should not be on large land holdings but also on idle or under-utilised land.
- Sensitization of ordinary citizenry and land holding elites on their rights and responsibilities.

Cognizant of the political and cultural importance of land, we recommend the country to embark on:

- **Certification.** Fast track systematic land ownership and equitable land rights to enhance land rights, increase investments in land, better soil conservation, improve land use efficiency and access to credit. Locally, the initiative being undertaken by Buganda kingdom to register and provide certificates to *bona-fide* land owners shows some progress towards certification.
- **Land tax.** Levying a reasonable tax on land would not only support generation of domestic revenue but also act as an incentive to promote use of land for productive activities. The land tax can be set depending on what the land is being used for with incentives for land under food production.
- Institute functioning and regulated land markets, thus harmonizing the interests of landlords and tenants.
- Create awareness about the importance of sustainable land management and productive use of land.
- Through legislation and administrative actions, place a ceiling on the land holding size, e.g. South Korea approach.

b) Strengthen and regulate food commodity markets. Under the current liberalised dispensation, Uganda should:

- Establish and maintain strategic food reserves. Strategically, management of the reserves should be regulated by the government and pegged to the food security situation. National food sufficiency should be emphasised by regulating cross-border trade dynamics and instituting subsidies in periods of food shortages.
- Initiate and link existing market information infrastructure to long-term objectives for securing FNS targets. Priority should be given to supply and produce food varieties that will enable the country to attain its FNS targets. This requires revisiting the entire commodity supply chain to ensure consistency in food supplied to various markets.

c) Increase effective funding modalities to support Research and Development.

In order to attain FNS in Uganda, there is an urgent need to translate the various plans and policies into concrete actions and to endorse them with the required budgets. To this end, the notion that agriculture and farming in general are private activities that do not necessitate direct government interventions, should be changed. The government should therefore reconsider its role in the agricultural sector and demonstrate a direct commitment to earmarking funding for different FNS interventions.

d) Institutional strengthening:

- Within the multi-sectoral approach, a better coordination between all key stakeholders, particularly the private sector, NGOs/ CSOs and lower administrative units,

requires strengthening in terms of active involvement, capacity and funding.

- The engagement of the private sector and CSOs (especially religious institutions and cultural leaders), not as mere implementers of decisions but as drivers of change at the grassroots level must be further pursued.

5.2.3 Promote transformative opportunities

- Enhance rural production and food value chains.
- The on-going efforts to revitalise farmer institutions at all levels, such as cooperatives, should be supported based on purpose.
- **Increase access to water for production.** Promote household-level water harvesting and fast-track the establishment of small-scale irrigation dams (targeting at most 500 hectares of land) as an opportunity to increase access to water for agricultural production. This will enhance agricultural production and productivity, particularly in drought-affected areas such as in the Karamoja sub-region.
- **Gene Banks.** Support the gene banks for animals, plant and seed in preserving indigenous breeds.
- **Tractor Hire Services.** Systematically activate across the country, the sub-county model – tractor hire services – to ease labour constraints at household levels.

5.2.4 Institutional capacity development for food and nutrition security

- **Strengthen local institution for FNS.** Rebuild the state capacity to regulate and enforce food production at the community level through the Parish Chief (e.g. Mutongole Chief). Local governments should develop ordinances and by-laws to ensure regulation on food production at a community level.
- **Social Protection.** Promote minimum income security at household levels to minimise food and nutrition insecurity.
- **Promote genetic conservation.** Strengthen NAGRIC, NARO and Directorate of fisheries to promote genetic conservation and improvements of livestock and fisheries, with the aim of revitalising district farm institutes and livestock ranches such as Aswa ranch.
- **Incentives.** Government should provide incentives and enforce sanctions to relevant institutions for effective implementation of FNS interventions.
- **Enact pending legislations.** Fast track the Food and Nutrition Bill into an Act of Parliament to strengthen coordination, financing and the institutional framework for supporting multi-sectoral food and nutrition interventions. Other pending yet relevant legislations that should also be fast tracked include the 2017 Food and Nutrition Authority Bill which will strengthen food safety and quality assurance, the 2012 National Biotechnology and Biosafety bill for ensuring the availability of drought and pest resistant plant species, the National Policy on Plant Genetic Resources for Food and Agriculture, the 2017 draft National Nutritional Policy, and the 2017 draft Food Security Action Plan.
- **Expedite the school meals policy.** The policy should draw synergies between education, health and agriculture sectors, rather than be exclusive. There are best practises in literature that Uganda could borrow from the Brazilian school meals programme, for example. Other examples in Sudan demonstrate how the private sector—especially dairy companies—can support school milk programmes.

5.2.5 Revitalise the role of non-state actors

- **Promote behaviour change and increase awareness on nutritious foods for all ages.** Build partnerships with religious and cultural institutions to support FNS by promoting the mind-set change of farmers and facilitating the dissemination of information and agricultural production at the grassroots level.
- Carry out behaviour change communication to address low nutrition standards and practices, and poor feeding practices of mothers and their children in communities and households.

5.2.6 Strengthen citizens' involvement and accountability for FNS outcomes

- Empower citizens to demand for accountability on desired FNS outcomes from government. This could be achieved through innovative people's platforms, such as *Barazas* and social media.

5.2.7 Close data gaps for effective M&E and timely policy response

- GoU, in partnership with development partners, should invest in data generation, expansion of coverage and management to track progress on various indicators under SDG2 targets, specifically targets 2.3, 2.4 and 2.5, for timely policy response. The required indicators for the analysis should address aspects of gender inequalities and dynamics that impact FNS targets.
- GoU and partners should support the design of appropriate instruments and finance the expanded scope of surveys to ensure that the necessary data is available to track the SDG2 targets.

5.2.8 Address food safety concerns

- Finalize pending legislations to guide and regulate food safety in Uganda.
- Uganda should adopt a framework and strategy for food safety and integrate it into a national public health strategy to aid food safety assurance and quality control.
- Institutionalize food safety and regulation by instituting a market and community health education committee to report to the district nutrition committees.
- Rejuvenate and operationalize health inspection in markets as interventions to ensure that minimum standards of hygiene are maintained.
- Enhance food and animals traceability to improve food safety (e.g. animal tagging).

Bibliography

Abass, A. B., Awoyale, W., Alenkhe, B., Malu, N., Asiru, B. W., Manyong, V., & Sanginga, N. (2016). Can food technology innovation change the status of a food security crop? A review of cassava transformation into "bread" in Africa. *Food Reviews International*, 1-16.

Adelman, S., *H. Alderman, D.O. Gilligan and J. Konde-Lule (2008)*. The Impact of Alternative Food for Education Programs on Child Nutrition in Northern Uganda. IFPRI, Washington D.C.

Ahmed M., 2012. Analysis of incentives and disincentives for rice in Uganda. Technical notes series, MAFAP, FAO, Rome.

Alderman, H., G.O. Gilligan and K. Lehrer (2012). "The Impact Food for Education Programs n School Participation in Northern Uganda." *Education Development and Cultural C*hange. 61(1): 187-218.

Appleton, S. and S. Ssewanyana (2003) "Poverty estimates from the Uganda National Household Survey II, 2002/03, mimeo, Economic Policy Research Centre.

Appleton, S., T. Emwanu, J. Kagugube and J. Muwonge (1999). Changes in poverty in Uganda, 1992-1997. Centre for the Study of African Economies.

Arimond, M., Wiesmann D, E. Becquey, A. Carriquiry, M.C. Daniels, M. Deitchler, N. Fanou-Fogny, M.L. Joseph, G. Kennedy, Y. Martin-Prevel and L.E. Torheim (2010). "Simple Food Group Diversity Indicators Predict Micronutrient Adequacy of Women's Diets in 5 Diverse, Resource-Poor Settings". *The Journal of Nutrition*, 140(11): 2059S-2069S.

Bahiigwa, B. A. G. (1999). Household food security in Uganda: An empirical analysis. Economic Policy Research Centre.

Barungi, M., M.M.Guloba and A. Adong (2016) "Uganda's Agricultural Extension Systems: How Appropriate is the Single Spine Structure?" Economic Policy Research Centre, Research Report No 16.

Bategeka, L., J. Kiiza and I. Kasirye (2013) "Institutional Constraints to Agriculture Development in Uganda" Economic Policy Research Centre, Research Series No 101.

Bird, K., K. Higgins and A. McKay (2011) Education and resilience in conflict- and insecurity-affected Northern Uganda" Chronic Poverty Research Centre No 215.

Bonabana-Wabbi, J., Kirinya, J., Kasenge, V., Semalulu, O.,and B Mugonola (2015). Smallholder farmers access to improved groundnut production and value addition technologies in Eastern Uganda. Journal of Agricultural Extension and Rural Development, 7(8), 247-256.

Brinkman, H. and C. S. Hendrix (2011). Food Insecurity and Violent Conflict: Causes, Consequences, and Addressing the Challenges. World Food Programme Occasional Paper #24.

Bowen H. D, Ali A. D, Deininger K., and M. Duponchel. (2015). Levelling the field for women farmers in Uganda. https://blogs.worldbank.org/voices/leveling-field-women-farmers-uganda.

Economic Policy Research Centre (2009) "The Poverty and Social Impact Analysis of the Uganda National Land Use Policy". Reported submitted to UNDP Uganda Country Office.

FAO, IFAD and WFP (2015). The State of Food Insecurity in the World 2015. Meeting the 2015 international hunger targets: taking stock of uneven progress. Rome, FAO.

FAO (2017). FAOSTAT. Available at: http://faostat3.fao.org/faostat-gateway/go/to/home/E

FAO (2004). Human energy requirements: Report of a Joint FAO/WHO/UNU Expert Consultation. Rome: Food and Agriculture Organisation, 2004.

FAO (2010). The State of Food Insecurity in the World: Addressing Food Insecurity in Protracted Crises. http://www.fao.org/docrep/013/i1683e/i1683e.pdf.

FAO, IFAD and WFP. (2013), "The State of Food Insecurity in the World 2013". The multiple dimensions of food security. FAO, Rome.

FEWS NET 2016. Uganda Food Security Outlook October 2015 to March 2016. http://reliefweb.int/report/uganda/uganda-food-security-outlook-october-2015-march-2016.

Gilligan, D. O., Kumar, N., McNiven, S. C., Meenakshi, J. V., and Quisumbing, A. R. (2014). Bargaining power and biofortification: The role of gender in adoption of orange sweet potato in Uganda.

Hotz. C., C. Loechl, A. Lubowa, J. K. Tumwine, G. Ndeezi, A. Nandutu Masawi, R. Baingana, A. Carriquiry, A. de Brauw, J. V. Meenakshi, and D. O. Gilligan (2012). "Introduction of ß-carotene–rich Orange Sweet Potato in Rural Uganda Resulted in Increased Vitamin A Intakes among Children and Women and Improved Vitamin A Status among Children. *Journal of Nutrition,* 142 (10): 1871–1880.

International Food Policy Research Institute (2016). *Global Nutrition Report 2016: From Promise to Impact: Ending Malnutrition by 2030*. Washington, DC.

International Food Policy Research Institute, Concern Worldwide, Welthungerhilfe and United Nations, (2016) Global Hunger Index: Getting to Zero Hunger Washington DC, Dublin/Bonn.

Joughin, J. (2014), "The political economy of seed reform in Uganda": promoting a regional seed trade market. Africa trade practice working paper series; no. 3. Washington, DC; World Bank Group.

Leliveld, A. H. M., Dietz, A. J., Foeken, D. W. J., Klaver, W., Akinyoade, A., Smits, H., and Wout, M. (2013). Agricultural dynamics and food security trends in Uganda, http://www.institutions-africa.org/filestream/20140114-agricultural-dynamics-and-food-security-trends-in-uganda.

MAAIF (2017). National Agricultural Extension Policy: Its Implementation and Challenges. Presentation made to Members of Parliament: 13th April 2017.

MAAIF (2016). National Fertiliser Policy. Regulatory Impact Assessment.

MAAIF (2013). Feasibility study for development of Infrastructure for water for Agricultural production in Uganda. Ministry of Agriculture, Animal Industry & Fisheries. Kampala.

MAAIF (2010). Agriculture for Food and Income Security. Agriculture Sector Development Strategy and Investment Plan: 2010/11-2014/15. Ministry of Agriculture, Animal Industry & Fisheries. Kampala.

Martiniello, G. (2015)

Mbowa, S., & Mwesigye, F. (2016). Investment opportunities and challenges in the potato value chain in Uganda (No. 253560).

MoFPED (2016). Background to the Budget 2016/17: Enhanced Productivity for Job Creation. MoFPED, Kampala.

Ministry of Health (2016) Annual Health Sector Performance Report: Financial Year 2015/16 (Kampala, Ministry of Health).

Ministry of Health (2015) Health Sector Development Plan 2015/16-2019/20 (Kampala, Ministry of Health).

Ministry of Health (2014) Annual Health Sector Performance Report: Financial Year 2013/14 (Kampala, Ministry of Health).

Ministry of Health (2012) Annual Health Sector Performance Report: Financial Year 2011/12 (Kampala, Ministry of Health).

Ministry of Water and Environment (2011). *A National Irrigation Master Plan for Uganda* (2010-2035),

Mulumba W., Zaake E., Male K. and C. Kiwuka. (2009). Neglected food crops in Africa- A case study from Uganda. In print (Uganda National Academy of Sciences).

National Planning Authority (2015). The second National Development Plan. Kampala.

Nkunzimana, T., Custodio, E. Thomas, A.C, Tefera, N., perez hoyos , A. and F. Kayitakire (2016). Global analysis of food and nutrition security situation in food crisis hotspots. FAO and WFP Joint Research Centre EUR 27879 EN

Nakano, Y., and K. Otsuka (2011). Determinants of household contributions to collective irrigation management: The case of the Doho Rice Scheme in Uganda. *Environment and Development Economics*, 16(05), 527-551.

Nkonya, E. (Ed.). (2004). Strategies for sustainable land management and poverty reduction in Uganda (Vol. 133). IFPRI, Washington D.C.

Okidi, J.A and V.M. Nsubuga (2010). "Inflation Differentials among Ugandan households: 1997-2007" Economic Policy Research Centre, Research Series #72.

Okumu, I. (2015) Contract Farming in the Ugandan Sugar Industry. 2015 Agricultural Finance Year Book Economic Policy Research Centre, Kampala.

Pender, J., Nkonya, E., Jagger, P., Sserunkuuma, D. & Ssali, H. (2004), "Strategies to increase agricultural productivity and reduce land degradation: evidence from Uganda". Agricultural Economics, Vol 31 pp: 181–195.

Reijntjes, C., B. Haverkort and A.W. Bayer (1992). Farming for the future: an introduction to low-external-input and sustainable agriculture. Macmillan.

Ruel, M. T (2003). Operationalizing Dietary Diversity: A Review of Measurement Issues and Research Priorities. The Journal of Nutrition, 133(11): 3911S-3926S.

Smith, L. and A. Subandoro (2007). Measuring food security using household expenditure surveys. IFPRI, Washington DC.

Ssewanyana, S and I. Kasirye (2013). "Poverty and Inequality Dynamics in Uganda: Insights from the Uganda National Panel Surveys 2005/6-2009/10", Economic Policy Research Centre, Occasional Paper No. 35.

Ssewanyana, S and I. Kasirye (2012). "Causes of Health Inequalities in Uganda: Evidence from the Demographic and Health Surveys". African Development Review Vol. 24. No.4:pp 327-341.

Ssewanyana, S and I. Kasirye (2010) "Food insecurity in Uganda: A dilemma to achieving the hunger millennium development goal". Economic Policy Research Centre, Research Series No. 70

Ssewanyana, S., M. Obwona, and I. Kasirye (2006) Understanding food insecurity in Uganda: A Special Study. Report prepared for USAID Uganda Country Office.

Swindale, A and P. Bilinsky (2006). Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide VERSION 2", https://www.fantaproject.org/sites/default/files/resources/HDDS_v2_Sep06_0.pdf.

Tirado, M. C., Crahay, P., Mahy, L., Zanev, C., Neira, M., Msangi, S., and Müller, A. (2013). Climate change and nutrition: creating a climate for nutrition security. *Food and Nutrition bulletin*, *34*(4), 533-547.

Todd, B., Lubega, P., Bayite, S. K, Tewodaj, M. & Nyachwo, J., (2012), "The Supply of Inorganic Fertilizers to Smallholder Farmers in Uganda-Evidence for Fertilizer Policy Development". International Food Policy Research Institute (IFPRI) Discussion Paper 01228.

World Bank. (2015). Managing Rapid Urbanization. Can Help Uganda Achieve Sustainable and Inclusive Growth http://www.worldbank.org/en/news/press-release/2015/03/03/managing-rapid-urbanization-can-help-uganda-achieve-sustainable-and-inclusive-growth

World Bank. (2015). *The growth challenge: Can Ugandan cities get to work?*. Washington, DC: World Bank Group. http://documents.worldbank.org/curated/en/2015/02/24091036/growth-challenge-can-ugandan-cities-work.

World Food Programme and National Planning Authority (2015). *The Cost Hunger in Uganda: Implications on National Development and Prosperity, Social and Economic of Child Undernutrition in Uganda*, http://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp263404.pdf?_ga=1.132621326.1204695860.1480921115

World Food Programme (2009) "Comprehensive Food Security & Vulnerability Analysis (CFSVA) Uganda. Mimeo.

WHO (1985), "Energy and protein requirements", WHO Technical Report Series 724, WHO : Geneva.

Uganda Bureau of Statistcs (UBOS) and ICF. (2017). *Uganda Demographic and Health Survey*

2016: Key Indicators Report. Kampala, Uganda: UBOS, and Rockville, Maryland, USA:

UBOS and ICF.

Uganda Bureau of Statistics (2016) *Statistical Abstract 2016,* Uganda Bureau of Statistics, Kampala.

Uganda Bureau of Statistics (2016) *National Population and Housing Census 2014: Main Report* Uganda Bureau of Statistics, Kampala.

Uganda Bureau of Statistics (2013) *Uganda National Panel Survey 2011/2012: Wave III Report,* Uganda Bureau of Statistics, Kampala.

Uganda Bureau of Statistics (UBOS) and ICF International Inc. (2012). *Uganda Demographic and Health Survey 2011.* Kampala, Uganda: UBOS and Calverton, Maryland: ICF International Inc.

UBoS and Macro International Inc. 2007.*Uganda Demographic and Health Survey 2006* Calverton, Maryland: UBOS and Macro International Inc.

Uganda IPC Technical Working Group (2017) *Report of the Integrated Food Security Phased Classification Analysis for Uganda: January 2017*.

UUNDP (2016) Human Development Report 2016: Human Development for Everyone (New York: United Nations Development Programme).

UNDP (2013). Millennium Development Goals report for Uganda. UNDP.

UNDP (2010) Uganda Strategic Investment Framework for Sustainable Land Management 2010 - 2020, UNDP Uganda Country Office.

UNHCR (2016) Uganda Refugees and Asylum Seekers in Country as 1 November 2016.

UNICEF (2012) Children's Issues in Parliament: A Baseline Study to Establish Ugandan Parliamentarians' Knowledge and Priorities on Children's Issues.

USAID (2010). Feed the future Uganda strategic review, https://www.feedthefuture.gov/sites/default/files/resource/files/UgandaFeedtheFutureStrategicReview.pdf,Winowiecki, L. C. Mwongera, P. Laderach, J. Twyman, K. Mashisia, W. Okolo, A. Eitzinger, B. Rodriguez, J. Muriel, E. Ampaire, P. Van Asten, and L. Ojok (2015). Social-ecological assessment of landscapes in Uganda. International Centre for Tropical Agriculture (CIAT).

Zhu, H., M. Filipski, J. Valli, E. Gonzalez, A. Gupta and J. E. Taylor (2016). Economic Impact of Refugee Settlements in Uganda". http://reliefweb.int/sites/reliefweb.int/files/resources/wfp288256.pdf,

Annexes

Annex 1: Historical roots of hunger and nutritional insecurity in Bunyoro and Karamoja

Case 1: Bunyoro-Kitara

Prior to the advent of colonialism in the late 19th century, drought, hunger and malnutrition were definitely not unheard of in Bunyoro-Kitara. However, Bunyoro-Kitara had developed home grown mechanisms for proactively addressing these problems, or mitigating their effects. The effect of colonialism was to fundamentally undermine local institutional innovations, thereby drastically degrading Bunyoro's food security and nutritional situation.

The goal of colonialism, it will be recalled, was to transform precolonial socio-political formations into either settler colonies or "protectorates". Colonies (such as Kenya and South Africa) were European homes away-from-home. By contrast, protectorates (such as Uganda or Zambia) were areas of imperial "pacification" and exploitation but not settlement. However, in both colonies and protectorates, the overriding goal was to create a reliable source of raw materials (such as cotton and mineral ores) to feed Britain's industrial revolution.

In pursuits of the underlying goal of colonialism, different socio-political formations in what came to be known as Uganda were subjected to varying degrees of distortion. Precolonial Bunyoro-Kitara had a pre-capitalist but vibrant economy. Local scientists had mastered the art of identifying rocks rich in iron ore, mining these rocks and smelting iron ore using innovative local furnaces. The molten material was then used by local artisans called black-smiths to produce spears and arrows for national defence and hoes for agricultural production. Unlike present-day Uganda which relies on imported agricultural tools, Bunyoro-Kitara produced locally its agricultural implements. The kingdom guaranteed food security through cattle rearing, cultivation of grains (particularly millet which was the staple food), and the production of organic fruits and vegetables (some of which were sourced from the forests and bushes). To augment the domestic sources of plant and animal protein, certain communities embarked on fishing as well as hunting of wild game, thanks to absence of restricted game reserves or national parks.

Colonialism degraded Bunyoro's food and nutritional status in several distinctive ways. First, was the adoption of the scotched-earth policy. Defined, in military circles, as a policy of unrestrained terror, the scotched-earth policy was essentially a policy of total war; total in that it involved attacking the armed fighters as well as the destruction of human beings, homesteads and granaries (that is, the infrastructure that was deemed to support Bunyoro's fighting forces). This ruthless policy was in response to the spirited anti-colonial resistance that was mounted by the people of Bunyoro and their charismatic Omukama (King) Chwa II Kabalega. For almost a decade (1891 – 1899), British Commissioners (such as Colvile) and military officers fought running battles with the abarusuura (army) of Bunyoro under the high command of General Kabalega. Frustrated by their failure to decisively "tame" or restrain Kabalega, the scotched earth policy was unleashed. Thousands of Banyoro were *intentionally* exterminated (in what modern-day scholars would call a genocide). Some of the people in the productive age-group were captured and taken as slaves; others were internally displaced. Thousands of cattle were looted; those that survived were injected with lethal chemicals (in the name of vaccination). Food granaries known as Ebitara (plural for Ekitara) were either looted or burnt. The crisis did not end with Kabalega's capture and forced exile to the Seychelles Island. It continued with politically induced famine, disease and poverty in the 1910s, 1920s and beyond (See Bazaara, 1984).

Second, with Omukama Kabalega out of the way, colonialism embarked on land grabbing. Bundongo and Bugoma forests (where the people sourced nutritious berries, vegetables and other delicacies) were unilaterally declared restricted areas. Bunyoro's hunting grounds were given colonial names such as "Murchison" and "Queen Elizabeth" and baptized colonial "National Parks" (which were, by colonial

decree, inaccessible to the local people). As a result of this historical land grabbing, livestock in present-day Bunyoro appears to have less acreage than wild game (Bunyoro Think Tank Workshop, March 2017).

Third, and in close relationship with the foregoing, seven lost counties of Bunyoro were grabbed and handed over to Buganda. These were Buyaga, Bugangaizi, Buhekura, Orugonjo (Singo), Bulemeezi, Mubende, and Buruuli. As a beneficiary of this land grabbing, Buganda was being rewarded for collaborating with British colonialists. While two of the lost counties (Buyaga and Bugangaizi) were returned to Bunyoro through the 1964 plebiscite, the rest are still in Buganda. A key problem in the lost counties is that a disconnection exists between land availability and land access. While land is available, it is not necessarily accessible. The native Banyoro live as squatters on titled *mailo*-land that is legally owned by absentee landlords. The question of land inequality/ limited access compromises investment decisions for food and income security. Permanent food crops (such as bananas) and long-term income sources for rural dwellers (such as tree growing) are disallowed, thereby compromising reliable livelihood strategies for the squatters.

Fourth, Bunyoro-Kitara (and later Buganda) experimented with the institution of the *Omutongole* chief prior to the advent of colonialism. Operating under a system of precolonial decentralized governance, the *Omutongole* (or village) chiefs were primarily responsible for village-level law and order maintenance. Theirs was an authoritarian but necessary role of executing local bye-laws. For example, the chiefs religiously if ruthlessly enforced household hygiene (via strict pit-latrine regulations). They also enforced household food security by requiring every household to have three *Ekitara* granaries – one for the household's day-to-day use, the second for household famine relief; and the third for the Kingdom state. The Kingdom would collect food from the third granary across the nation-state. Some of this would feed the royal officials and the standing army. The surplus was stored in Bunyoro's underground food silos (located in Bukerenge). The purpose of the national food silos was to feed the people and state of Bunyoro in the event of an extended drought, famine or invasion from hostile forces.

It must be admitted, fifthly, that certain precolonial institutions and norms were retained by the colonial administration. Under the colonial policy of indirect rule (in both Bunyoro and Buganda), the institution of *"Omutongole"* chief was retained. This institution continued in the post-independence period and was only watered down with the advent of populist (elected) local councils under the NRM administration (1986 – to-date). Under the LCs, the system of household food security granaries has literally died. Moreover, unlike precolonial Bunyoro-Kitara, Uganda has no national food silos – hence the widespread food and nutritional insecurity.

Case 2: The case of Karamoja

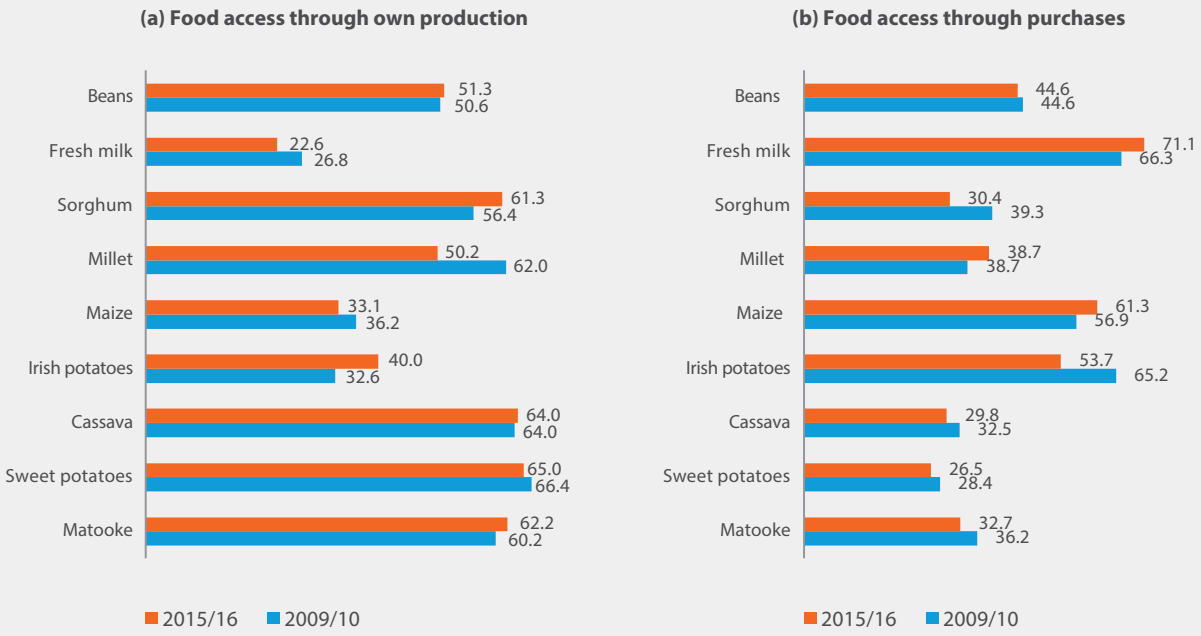
What happened in Bunyoro-Kitara was executed, to varying degrees, in Karamoja. The problem of droughts in Karamoja did not begin with the advent of colonialism. However, like Bunyoro-Kitara, Karamoja had developed proactive strategies for striking an acceptable balance between a harsh ecology and sustainable food security. Precolonial Karamoja met its nutritional requirements by simultaneously carrying out grain cultivation (especially of sorghum) in the wetter parts of the region, and nomadic pastoralism. A system of barter trade had also developed with the Karamajong exchanging their animal products with grain produced by neighbouring communities.

The advent of colonialism is associated with several negative initiatives. First, between 1920 and 1940, an estimated 1,500 to 2,000 square miles of land, from the Chemerongit Hills to the Kamyangareng River, were forcibly grabbed from Karamoja and transferred to Kenya, which was a European home-away-from home (unlike the mere protectorate of Uganda). In the same time period, the boundaries of Teso were expanded to cover today's Usuku County, which originally constituted Karamoja's extensive grazing grounds (particularly for grazing during the dry season). According to Mamdani, "The loss of this massive area through the creation of artificial colonial boundaries constituted a grave blow to the pastoral economy of the people of Karamoja" (p.68).

Annex 2: How Ugandans access food and trends in food insecurity

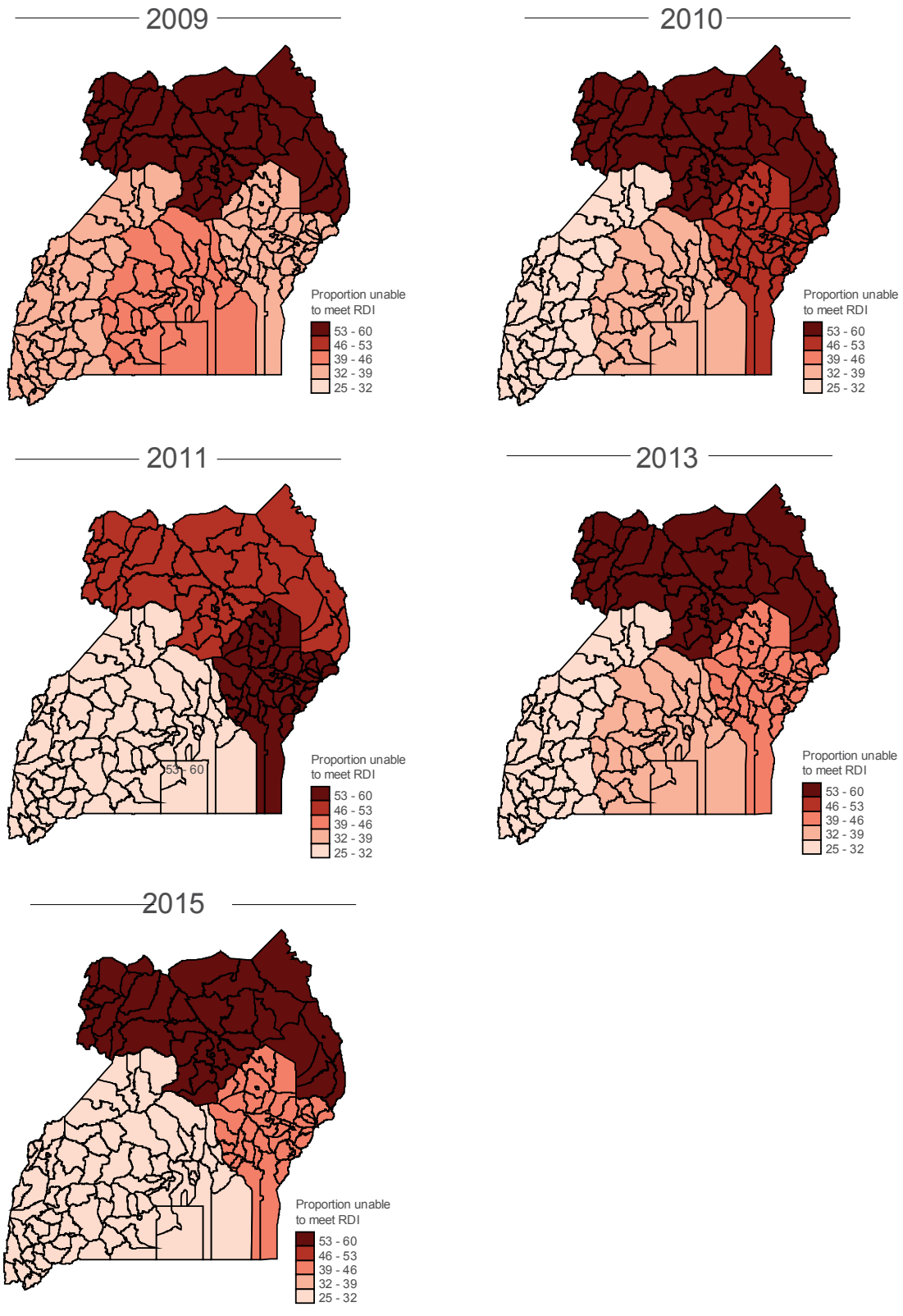
Box A1: How Ugandan households access food

The figure below shows shares of households that consumed a given food item out of the own production. A significant share of households accessed food through own production, which implies that agriculture remains critical for the food security of Ugandans. Sweet potatoes, cassava and matooke were the leading food staples accessed through own production, with at least six out of every ten households indicating they acquired these specific products through their own production.



Source: UNPS 2013/14 and 2015/16 data

Map A1: Trends in food insecurity 2009-2015



Source: UNPS 2009/10-2015/16

Table A 1: NARO institutions

National Agricultural Research Laboratories-Kawanda
National Crops Resources Research Institute
National Fisheries Resources Research Institute
National Forestry Resources Research Institute
National Livestock Resources Research Institute
National Semi Arid Agricultural Research Institute
National Coffee Research Institute
Abi Zonal Agricultural Research and Development Institute
Buginyanya Zonal Agricultural Research and Development Institute
Bulindi Zonal Agricultural Research and Development Institute
Kachwekano Zonal Agricultural Research and Development Institute
Mbarara Zonal Agricultural Research and Development Institute
Mukono Zonal Agricultural Research and Development Institute
Nabuin Agricultural Research and Development Institute
Ngetta Zonal Agricultural Research and Development Institute
Rwebitaba Zonal Agricultural Research and Development Institute

Annex 3: Statistical Tables

Table A 2: Share of caloric intake derived from own food production by selected foods and region in percentage

	2009/10				2010/11				2011/12				2013/14				2015/16			
Food	Central	Eastern	Northern	Western	Central	Eastern	Northern	Western	Central	Eastern	Northern	Western	Central	Eastern	Northern	Western	Central	Eastern	Northern	Western
Matooke	59.6	79.6	65.7	87.3	67.4	81.9	81.3	89.9	61.5	73.4	84.9	89.5	71.8	80.6	66.5	81.0	65.8	80.9	64.1	87.1
Sweet Potatoes	79.1	90.4	74.4	83.5	89.3	88.1	83.2	94.8	68.5	85.4	73.7	87.9	76.6	85.6	80.3	82.7	76.0	86.6	67.5	87.7
Cassava	69.6	72.2	68.1	58.6	50.1	72.3	70.5	77.5	57.7	74.3	59.2	81.0	64.8	63.5	75.2	66.1	68.9	76.3	67.2	61.9
Irish Potatoes	30.8	8.4	9.3	79.5	14.9	7.4	29.1	76.0	33.3	0.0	50.9	87.3	48.5	14.7	8.8	81.9	52.4	14.5	10.4	81.7
Rice	1.5	12.8	18.6	8.5	0.6	9.3	24.5	15.4	0.5	8.4	2.7	7.9	0.8	17.4	13.8	4.8	1.3	18.8	13.5	2.4
Maize	28.6	54.6	35.7	27.4	18.8	61.6	34.7	34.3	16.9	56.1	50.0	32.1	30.7	47.4	40.7	16.8	28.2	49.8	53.4	18.1
Millet	28.0	79.1	68.6	78.8	32.2	74.5	68.1	83.3	38.0	45.5	54.3	74.0	43.2	71.2	72.5	70.2	4.1	68.2	66.2	68.5
Sorghum	19.8	68.0	54.1	86.5	91.0	72.7	58.3	84.2	46.9	40.1	66.0	91.9	54.9	60.3	48.1	96.5	5.3	87.8	75.0	90.2
Chicken	23.0	65.0	80.6	46.0	38.7	66.0	81.6	83.6	28.9	66.8	76.2	55.7	39.9	71.2	89.7	67.9	35.1	71.3	79.1	57.1
Fresh Milk	20.2	56.3	50.1	47.1	29.4	59.3	44.5	61.5	18.3	56.3	57.5	35.0	41.9	50.5	62.0	42.9	32.5	51.8	59.3	45.2
Beans	48.5	45.9	45.9	70.4	41.9	54.3	43.2	74.3	50.0	53.8	56.7	71.5	56.8	60.6	50.3	72.7	49.1	58.4	45.7	72.3
Ground nuts	21.1	53.0	53.8	40.6	27.9	74.9	47.8	45.0	18.8	72.5	56.5	43.6	26.2	57.0	52.8	33.4	27.5	58.4	67.8	37.1

Source: UNPS 2009/10, 2010/11, 2011/12, 2013/14 and 2015/16 data.

Table A 3: Food insecurity experiences scores

Score	Adults >=15 years		Children <15 years	
	2013/14	2015/16	2013/14	2015/16
0	45.2	53.2	62.7	69.1
1	10.9	9.6	9.8	9.0
2	5.4	7.5	4.0	3.5
3	8.3	6.8	4.3	3.1
4	5.1	3.7	3.2	2.6
5	4.0	2.9	3.3	2.5
6	3.6	2.8	12.8	10.2
7	5.0	3.1		
8	12.6	10.4		
	100.0	100.0	100.0	100.0

Table A 4: Food insecurity experiences by scale items in percentage

			2013/14	2015/16		Dynamics	
Severity of food insecurity	Scale items	Domains of the food insecurity construct			Never	Transient	Always
Mild	Worried would run out of food	Uncertainty and worry about food	47.1	37.5	38.3	38.7	23.0
	Not able to eat healthy and nutritious food	Inadequate food quality	42.0	36.6	42.1	37.2	20.7
	Consumed fewer kinds of foods	Inadequate food quality	32.3	25.8	55.2	31.5	13.3
Moderate	Skipped a meal	Insufficient food quantity	22.3	18.0	67.7	24.2	8.0
	Ate less than thought	Insufficient food quantity	28.0	20.8	61.4	28.5	10.1
	HH ran out of food	Insufficient food quantity	31.6	25.4	56.0	31.0	13.0
Severe (hunger)	Felt hunger but did not eat	Insufficient food quantity	20.6	14.8	70.6	23.5	5.9
	Went without eating for a whole day	Insufficient food quantity	20.7	16.8	69.2	24.1	6.7
For children <15 years							
Mild	Not able to eat healthy and nutritious food	Inadequate food quality	32.5	28.0	53.0	36.1	10.9
	Consumed fewer kinds of foods	Inadequate food quality	24.0	19.1	70.4	24.5	5.1
Moderate	Skipped a meal	Insufficient food quantity	19.5	16.5	79.5	17.6	2.9
	Ate less than thought	Insufficient food quantity	25.8	20.0	66.9	27.3	5.8
Severe (hunger)	Felt hunger but did not eat	Insufficient food quantity	18.0	13.6	80.3	17.0	2.7
	Went without eating for a whole day	Insufficient food quantity	17.9	14.6	77.6	19.9	2.6

Notes: the columns under dynamics *include those who were persistently food insecure in both periods, for a given domain; those who were transient, that is, in and out of food insecurity status; and those who remained food secure for a given domain, in both years.*
b) Adopted from Ballard, T.J., Kepple, A.W. & Cafiero, C. 2013

Source: UNPS of 2013/14 and 2015/16 data

Table A 5: Facilities by location and activities

Farm centre	Location	Activities
Livestock Experimentation Station	Entebbe Municipality in Wakiso District.	-Provision of pure- and crossbred dairy and pig breeds to farmers -Production of commercial day-old chicks for sale to farmers.
Sanga Field Station	Mbarara District, Nyabushozi County	Provision of Mubende goats and Ankole cattle breeds.
Bulago Stock Farm		Dairy animals, sheep and goat production
Njeru Stock Farm	Mukono District in the Sub-county of Buikwe.	Animal genetics resource farm
Rubona Stock Farm	Kabarole District, Bunyangabu County, Kisomoro Sub-county	Multiplication of a variety of pure-bred exotic dairy cattle (Friesian, Jersey, Guernsey and Ayrshire) stocks for sale to dairy farmers. Introduction of high-performing meat goat breeds to produce well-bred and properly recorded stock for sale to farmers for breeding.
Kasolwe Stock Farm	Kamuli District, Bugabula County approximately 15 miles from Kamuli town along the Kamuli-Bukungu Road.	Nucleus progeny, testing and cross breeding of indigenous cattle for dairy and beef
Nshaara Ranch	Mbarara District in the county of Nyabushozi approximately 53 km from Mbarara town along the Mbarara-Masaka highway.	Nucleus progeny, testing and cross breeding of indigenous cattle for dairy and beef
Ruhengere Ranch		Ankole Longhorn Nucleus Breeding Scheme
Maruzi Ranch		E.A. Short- Horn Zebu; beef animals: Boran, Sahiwal Romagnola

Table A 7: Food shares in household consumption expenditures, 2009/10-2013/14 (percent)

	2009/2010	2010/11	2011/12	2013/14
Uganda	55.9	58.9	60.8	55.9
Rural	60.1	61.9	63.4	59.7
Urban	36.9	43.3	49.4	44.7
Central	44.7	48.7	51.2	48
Eastern	62	64.1	63.3	60.4
Northern	61.1	59.2	64.3	61.9
Western	61.5	65.1	64.9	57.1
Poorest 20%	63.6	62.1	67	63.9
Quintile 2	63	64.7	67.6	63.2
Quintile 3	61	63.7	65.8	61.2
Quintile 4	57.2	58.6	61.2	56.7
Richest 20%	40.4	48.7	49.2	42.8

Table A6: Species in the National Genebank

Species	Local Name/ Common name	Number of accessions	Species	Local Name/ Common name	Number of accessions
Cereals and legumes			Crop wild relatives		
Oryza sativa	Rice	318	Oryza punctata		6
Eleusine coracana	Finger millet	631	Oryza eichingeri		3
Sorghum bicolor	Sorghum	479	Eleusine africana		70
Zea mays	Maize	240	Solanum campylacanthum		17
Pennisetum glaucum	Pearl millet	178	Sorghum arundinacieum		1
Triticum aestivum	Wheat	3	Solanu anguivii		37
Phaseolus vulgaris	Beans	505	Solanum dasyphyllum		7
Oil crops			Solanum cynopopureum		7
Glycine max	Soya beans		Solanum aculeatissimum		1
Sesamum indica	Simsim	40	Vicia sativa		5
Vigna subterranea	Bambara nuts	6	Pennisetum unisetum		49
Arachis hypogea	Groundnuts	313	Eleusine indica		56
Helianthus annuus	Sunflower	3	Pennisetum mezianum		13
Pasture grasses and forages			Pennisetum ramosum		10
Centrocema		1	Pennisetum procerum		20
Chloris gayana		5	Pennisetum macrourum		9
Stylosanthes		1	Pennisetum trachyphyllum		1
Panicum		3	Pennisetum thunbergii		4
Indigenous vegetables			Eleusine jaegeri		4
Solanum nigrum		5	Eleusine kigeziensis		12
Solanum eathiopicum	Egg plants	6	Other crops		
Solanum anguivii	Katunkuma	37	Hyptis spicigera		11
Solanum esculentum	Ennina	6	Milletia Dura		1
Solanum lycoperscum	Tomatoes	9	*Chenopodium quinoa*	Quinoa	10

Amaranthus dubius	Green doodo	23	Acacia senegal		233
Species	**Local Name/ Common name**	**Number of accessions**	**Species**	**Local Name/ Common name**	**Number of accessions**
Amaranthus hybridus	Red doodo	4	Carissa edulis		2
Capsicum	Hot pepper	18	Physalis		2
Curcurbita maxima	Pumpkin	23	Artemisia affra		1
Abelmoschus esculentus	Okra	35	*Psum sativum*	Peas	32
Corchorus tridens			Luffa cylindrica		1
Vigna unguiculata	Cowpeas	39	Mondia whytei		1
Cajanus cajan	Pigeon peas	19	Passiflora edulis		3
Sesamum	Nino		Salvia hispanica		1
Salva hispanica			Tamarindus indica		1
Cucumber sativus		1			
Solanum scabrum		3			
Hibiscus asculentus		5			
Phaseolus lunatus	Lima beans	16			
Vigna radiata	Green grams	8			
Hyptis spicigera		11			
Dura		1			

Source: National Gene Bank, 2017

Annex 4: Technical Notes

The reference point for assessing food security status in Uganda is the Food and Agriculture Organisation (FAO, 2008) framework, which addresses the four dimensions of food security, namely: (i) physical availability of food; (ii) economic and physical access to food; (iii) food utilisation; and (iv) the stability of the above three dimensions over time. The above dimension will be considered in the context of agricultural development which addresses the sustainability of both current and future food systems.

Caloric intakes

Following previous research in Uganda, we adopt dietary intake in the form of caloric intakes as the main measure to establish the degree of food security in Uganda. Caloric intakes are derived based on nationally representative Uganda National Panel Surveys (UNPS), conducted by the Uganda Bureau of Statistics (UBoS). According to the caloric intake criterion, a person/household is classified as food secure if the actual daily dietary intake is more than the minimum daily recommended dietary intake. Following previous studies (e.g. Ssewanyana, and Kasirye, 2012 and Ssewanyana, 2003), the indicators were derived as follows:

Let n denote the n^{th}nutritional value, r_{jg} the recommended daily intake for the g^{th} age group by j^{th} sex; and h_{jg} the number of household members falling in the g^{th} age group by j^{th} sex. Accordingly, the total recommended daily intake for the i^{th} household by j^{th} sex, is expressed as in Eq. 1.

$$= \sum r_{jg}.h_{jg} \quad (1)$$

The share of the recommended daily intake for the members in the g^{th} age group in the i^{th} household is expressed as in Eq.2.

$$= \frac{r_{jg}.h_{jg}}{R_{ij}^{n}} \quad (2)$$

The weighted n^{th} recommended daily intake for the i^{th} household for the j^{th}sex is expressed as in Eq. 3.

$$N_{ij}^{n} = \prod_{g} (r_{jg}.h_{jg})^{S_{ijg}^{n}} \quad (3)$$

Therefore, the weighted recommended daily intake for the i^{th} household is expressed as in Eq. 4, where superscript p is the proportion of the total number of j^{th} sex in the total household size.

$$N_{i}^{n} = \prod_{g} N_{ij}^{p} \quad (4)$$

For all food items considered, food waste is considered and deducted from overall nutrient equivalent to remain with an estimate of the edible portion. From the UNPS surveys, households obtained their food from three main sources, either from purchases, own production or as gifts/transfers. All these food sources are aggregated for each food item and converted into their nutritional values using the *Uganda Nutri-Guide System and The Composition of Foods Commonly Eaten in East Africa* by West *et al.* (1988).

Let x_{ij} denote quantity of the j^{th} food item consumed by the i^{th} household; d_j^n the n^{th}nutritional value per unit derived from the consumption of the j^{th} food item; and A_i^n the actual n^{th} nutritional daily food intake by the i^{th} household is expressed as in Eq. 5.

(5) $$A_i^n = \frac{\sum_j d_j^n x_{ij}}{7}$$

Eq. 5 converts the actual food intake to a daily basis, since the data on consumption is collected over a period of 7 days. The weighted actual daily food intake of the n^{th} nutritional value for the i^{th} household is expressed as in Eq. 6.

(6) $$DA_i^n = \prod \left(\left(\frac{S_{ij}^n}{h_{ij}} \cdot \left(A_i^n \cdot p \right) \right)^{S_{ij}^n} \right)^p$$

Like the weighted recommended daily food intake, the weighted actual daily food intake will take into account the heterogeneous nature of a household composition, in terms of age and sex.

Notes

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