

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Chapter

Food and Nutrition Security in East Africa (Rwanda, Burundi and South Sudan): Status, Challenges and Prospects

Michael N.I. Lokuruka

Abstract

Despite receiving international technical assistance over many years, achieving food and nutrition security has remained elusive for many developing countries. Low technological capability, inefficient production systems, increasing populations and lately climate variability, affect food production, leading to stagnation or modest gains in food and nutrition security in many nations. For many African countries, food and nutrition security continues to improve, despite the slow pace. In the East African Community, political stability, ambitious economic planning, the quest for higher agricultural productivity, improving educational achievement, sanitation and health, are contributing to improving food and nutrition security. To support the process, Rwanda, established Vision 2020, while Burundi and South Sudan have yet to develop plans for a coherent development blueprint. The blue prints of the Member States bore Vision 2050 for the East African Community and Vision 2063 for the African Union. This chapter examines the status of food and nutrition security in Rwanda, Burundi and South Sudan. It gives country-specific recommendations for achieving it-including investment in agriculture and agribusiness, value addition of agricultural commodities, decelerating population growth, using adaptive research to solve farmer-problems, strengthening farmer-organizations and integrating variables that influence food and nutrition security achievement.

Keywords: Rwanda, Burundi, South Sudan, economic and social development, agriculture, food and nutrition security, status, challenges, prospects

1. Introduction

This Chapter examines the food security situation in Rwanda, Burundi and South Sudan. Each country is discussed in terms of economic growth, social and development indicators, and its outlook for food and nutrition security attainment. However, this chapter is best read with chapter 1 as the geography, environmental, weather and related issues are addressed in chapter 1 for the region as a whole, including the three countries discussed in this Chapter.

The thesis concludes with an examination of the encompassing strategies that are likely to improve the overall food and nutrition security situation of the EAC block, as a unit, rather than as Individual Member States.

2. RWANDA

2.1 Economy, agriculture and social development

Rwanda with a population of about 12 million people experienced an economic growth rate of about 8% for the decade 2000–2010 [1]. The political stability and impressive economic growth that the country has experienced since the end of the civil war, has encouraged growth in the country's population. Food production also continues to benefit from both the stable and growing economy and population increase, especially of skilled labour. However, the rapid growth rate in the human population is undesirable, especially for the rural, agrarian and poor households, who also tend to bear a proportionately higher number of children than their urban counterparts. Rwanda embarked on Vision 2020 immediately from 1997 as it aimed at transforming itself into a middle income country by 2020 based on a knowledge-based economy and service-oriented sectoral growth [2]. Clearly defined, "Vision 2020," seeks to transform the country from a low-income, agriculture-based economy to a knowledge-based, service-oriented economy with middle-income country status by 2020. The goal aims to achieve rapid development sustained by the high economic growth, leading to poverty reduction and reduced inequality. From 2001 to 2015, the growth in real GDP averaged about 8% per annum [3]. Substantial improvements in living standards, a two-thirds drop in child mortality and near universal primary school enrollment are the result of stability, good economic planning and strong economic growth [4]. Despite the impressive achievements, Rwanda is a small, land-locked country in Sub-Saharan Africa that is part of the EAC, but can also pass for a country in Central Africa. It has the highest population density in Sub-Saharan Africa and is one of the poorest countries in the World, with about 47% of its population living on less than US \$1.25/day [5]. Agriculture accounts for 29.5% of GDP, 45.9% of employment, 63% of foreign exchange earnings, and meets about 90% of the country's food needs [5]. The majority of Rwandan farmers practice subsistence farming on small, hilly plots that are characterized by very low productivity. Up to half of the country's arable land is severely degraded, due to overuse and soil erosion, and, has low soil fertility. The country's agriculture relies on the application of insignificant amounts of pesticides, fertilizers and improved seeds [5]. Despite the above, Rwanda ranks the 123rd out of 157 countries in progress to meet the SDGs [6]. According to the most recent Rwanda Demographic Household Survey of 2015, the infant mortality rate is 32 per 1000 live births, with an under-5 mortality rate of 50 infants per 1000 live births [7].

The country launched the Crop Intensification Programme and Policy in 2007 in its quest for increasing food production, leading to improved output of beans, potatoes and cassava [8]. The Maputo Declaration of 2003 [9], in which African countries were advised to spend a minimum of 10% of their GDP on agriculture and food production, led Rwanda to adopt the Crop Intensification Programme, with the above results. Although it did not meet the 10% requirement, all indications are that it is on its way to achieve it.

2.2 Food and nutrition security

Despite the impressive achievement and commitment from the Government of Rwanda (GoR), food and nutrition insecurity still lingers in the general population. There are differences between the various poverty and nutrition indicators among the Provinces and in the Districts. The food and nutrition security indicators show that about 48.7 and 22.1% of the rural and urban populations, respectively, are

still food and nutrition insecure [10]. The poor rural households can typically be described to be living in crowded homes, relying on low income agriculture and poorly paid casual labour. They farm small plots of less than 0.5 hectares on steep slopes of infertile soils. Most of the children in the rural household are stunted and come from lowly educated or illiterate households. In rural Rwanda's poorest District of Nyamagabe, 73% of the population lives below the international poverty line of US\$1.90/day. The Gini coefficient for the country was 0.45 and 0.49 in 2002/2003 and 2010/2011 FY, respectively [11].

In part due to low agricultural productivity, over a third of the Rwandan population normally experiences food insecurity and under-nutrition, despite Rwanda's impressive economic growth. Nationally, 38% of children under-5 years are stunted and 2% suffer from acute malnutrition. Stunting in children increases with the child's age up until 23 months and rises from 18% in children of 6–8 months of age and peaks at 49% in children who are 18–23 months old. The nutritional status of children varies by Province, with stunting being highest in the Western Province at 45% but is lowest in the city of Kigali at 23%. Rural children have a 41% stunting rate compared to 24% in urban children. A mother's level of education and wealth quartile have been shown to vary inversely with the prevalence of stunting; the prevalence of stunting is lowest in children in poor households at 21% but is higher in children living in the poorest households at 49%. The prevalence of stunting is lowest in children whose mothers have a secondary education or higher (19%) but is higher in those children whose mothers have no education (47%) [7].

By the age of 19, about 21% of adolescent girls had begun childbearing in Rwanda in 2014–2015, which was a slight increase from 20% in 2010 and this seems to contribute to malnutrition in children born to such young mothers [7, 12]. Adolescent girls who are likely to be malnourished run the risk of a having a low birth-weight baby, who will likely become malnourished, and, be at increased risk of illness and death than babies born to older mothers. It has also been established that the risk of stunting is 33% higher among first-born children of girls under 18 years of age in Sub-Saharan Africa, such that early motherhood appears to be a key driver of malnutrition [13]. Rwanda similar to other rising economies is also experiencing the double burden of malnutrition, with 21% of women and 8% of children under-5 years suffering from overweight and obesity [7]. Eighty percent of all households are food secure, with 4% considered marginally food secure and 0.5–0.6% severely food insecure. In the livelihood zones of Western Congo Nile Crest Tea Zone, Lake Kivu Coffee Zone and the Northern Highland Beans and Wheat Zone, the poverty indices are 49, 37 and 32%, respectively [5]. Therefore the level of food insecurity is particularly high in the western and northern parts of the country. Among Provinces, Western Province has over 35% of its households considered as food insecure. Forty-two percent of all severely food-insecure households in Rwanda are found in the Western Province, despite having 22% of the country's households. The National Institute of Statistics of Rwanda avers that Rutsiro, Nyamagabe, Nyabihu, Nyaruguru, Rusizi Karongi and Nyamasheke Districts have 57%, 42%, 39%, 37%, 36%, 35%, and 35% households that are classified as food insecure, respectively [14]. Under-nutrition, especially stunting in children, is attributed not only to food insecurity and poverty, but also to inadequate feeding, particularly poor complementary feeding practices. Estimates show that only 19% of Rwandan children of 6–23 months age receive a minimum acceptable diet [7].

2.3 Prospects

Rwanda is faced with the challenge of an increasing population, which in turn impacts negatively on the per capita food production, availability and consumption.

The increasing population requires land to build homes on, while road and rail infrastructure, industries, institutions and other social amenities also require land. The fixed amount of land available for these competing needs means that the arable land sizes will keep reducing and the chances of hunger, malnutrition and under-nourishment may increase due to reduced food production. Rwanda's "Feed the Future" Multi-Year Strategy identified market linkages, infrastructure, nutrition, innovation, and policy as focal points for support and intervention, making it multi-sectoral in order to make the strategy effective. Rwanda engaged development partners in order to revise the national food and nutrition policy and linked it with its 2013–2018 strategic plan, and the Comprehensive Africa Agriculture Development Programme [15]. This approach should bear fruit in a few years ahead. Climate variability has impacted on the country's agriculture, similar to the situation in the other member states of the EAC, with the potential for a rise in food and nutrition insecurity, both in the short and long-term. But the proportion of the food and nutrition insecure population in Rwanda will still be lower than in food-deficient countries like Burundi and Kenya.

2.4 Recommendations

The country should:

- Identify multi-sectoral approaches and coordination efforts as key ingredients to accelerate progress in nutrition and food security programmes. The GoR having created a national early childhood development (ECD) program to have a family-focused approach to address child stunting in Rwanda, it is envisioned that the coordination secretariat and the ECD program will complement each other and accelerate Rwanda's food security and nutrition agenda
- Develop a new policy, focussed on integrated nutrition interventions that involve multi-sectoral management to prevent of all forms of malnutrition among women and children and make it effective
- Develop a strategy that focuses on enabling improvements for private-sector-led growth in the agriculture sector and on building capacity within value chains to improve the competitiveness of farmers and commodities
- Discourage through social education, early child bearing as it contributes to malnutrition, with serious consequences for maternal health, baby development and growth
- Concentrate its food security improvement interventions in Western Province as more than 42% of all severely food insecure households in Rwanda are found there

3. Burundi

3.1 Economy, agriculture and social development

Burundi is a land locked State in Central Africa and is one of the most densely populated countries on the continent, with 470 inhabitants per square kilometre. Its economy is heavily reliant on agriculture, which, despite the paucity of arable land, employs 80% of the population. Poverty is mainly rural and overwhelmingly affects

small-holder farmers. Burundi is the second most densely populated country in Africa and the 5th poorest country in the world [16]. It has a population of about 11 million people with a birth rate of 6 children per woman of child-bearing age. The high population growth rate contributes significantly to its high poverty index and low scores on all food and nutrition indicators. The IMF has classified Burundi as having the highest level of poverty and worst health indicators in the EAC [17]. The country experienced unprecedented food and nutrition insecurity between 1993 and 2005 due to the breakout of the civil war [18], and again from 2015 to 2018 due to the political instability resulting from the extension of the term of the Presidency beyond the legislated two terms of 5 years each [19].

Most of the Burundian population lives in abject poverty, especially in rural areas. The level of food insecurity is almost twice as high as the average for sub-Saharan African countries, as was shown by 1.8 million people needing humanitarian assistance in 2018 according to the Humanitarian Response Plan [20]. Agriculture contributes 40% of the country's GDP and is the main source of employment for 80% of the country's population, despite not being able to generate adequate income.

Less than 5% of the country's population has access to electricity. While access to safe drinking water and sanitation remains very low, only about 52.1% of rural households and 2% of rural households have access to electricity [21]. Between 2010 and 2017, Burundi experienced a remarkable decline in fertility, which fell from 6.4 to 5.5 children per woman on average, thus slowing its population growth.

The economy is recovering slowly, with growth reaching about 1.6% in 2018 compared to 0.5% in 2017, after two consecutive years of recession in 2015 (-3.9%) and 2016 (-0.6%) [22]. The economy faces a fragile recovery that remains below the 4.2% recorded from 2004 to 2014 and many challenges including: a lack of budgetary resources to finance public investments, a persistent shortage of foreign exchange with falling international reserves, a vulnerable financial sector and increasing fiscal and current deficits.

In order to prevent and control the spread of Ebola, Burundi has set up screening and treatment centres at various points along its border with the neighbouring Democratic Republic of Congo (DRC), with assistance from the World Bank. Despite recording fewer COVID-19 cases and deaths than other EAC Member States except South Sudan by the 27th April, 2020, it is likely to go into deep recession due to its fragile economy and the high dependence on other member States of the EAC trading bloc for its imports and exports.

3.2 Food and nutrition security

Malnutrition in childhood and pregnancy has many adverse consequences for child survival and long-term well-being. Malnutrition also has far-reaching consequences for human capital, economic productivity, and overall national development. According to the findings of the 2016–2017 Demographic and Health Survey, the country has a chronic malnutrition rate of 56%, one of the highest in the World. Malnutrition affects over 1 million children under 5 years of age [23]. The expected increase in the population to 15.3 million by 2030 and its doubling to 23.5 million by 2050, spells disaster for Burundi [22]. Furthermore, eighty-eight percent of the country's population resides in rural areas and 45% of the country's population is under 15 years of age [24]. While the level of poverty in Sub-Saharan Africa has reduced overall, the level of poverty in Burundi has stagnated. As of 2016, 78% of the population lived on less than US\$1.90 a day [24, 25]. Ninety percent of the population depends on agriculture and poverty disproportionately affects rural farmers [24]. Currently, Burundi ranks 132nd out of 157 countries in terms

of progress toward meeting the SDGs [25]. According to the most recent data, the maternal mortality ratio is 712 per 100,000 live births, 27% of female deaths are related to pregnancy or childbearing, and one in 13 children will die before reaching 5 years of age. Burundi's nutrition and food security situation has been adversely affected by the ongoing conflict and political instability, in addition to the recurrent natural disasters and epidemics. Burundi ranked last on the Global Hunger Index (GHI) in 2014 [26]. Approximately 2.6 million people were projected to be food insecure as of October 2017 and recent Famine Early Warning Systems Network (FEWS NET) 2018 estimates did not show any improvement [27]. The food security situation remained stressed through May 2018, with some poor households reaching crisis level of food insecurity [27]. Burundi's child stunting prevalence of 56% is among the highest in the world, with levels among the under-5s having dropped by only 2 percentage points between 2010 and 2017. Also between 2010 and 2017, underweight and wasting prevalence remained virtually unchanged. Rural areas have a much higher prevalence of stunting than urban areas, at 59 and 28%, respectively. Following this pattern, Bujumbura Mairie, the most urban of the Provinces, has the lowest prevalence of stunting at 24%. In the rest of the country, which is highly rural, stunting prevalence varies from 49% in Bururi to 66% in Muyinga [23]. It has been established that stunting levels are linked to maternal education and wealth levels, as 40% of children whose mothers have secondary education or higher are stunted, while the prevalence rises to 61% of children whose mothers had no formal education. According to the wealth status of the mother, 31% of children in the highest wealth quartile are stunted, while in the lowest wealth quartile, 69% are stunted. In Burundi, the level of stunting increases with age, such that 36% of children 6–8 months old are stunted. The prevalence of stunting steadily increases in children and peaks at 66% among children aged 36–47 months. The high prevalence of stunting among children 36–47 months old may be a result of the early cessation of exclusive breastfeeding and inadequate complementary feeding of children 6–23 months of age [23]. The prevalence of exclusive breastfeeding drops dramatically among children 4–5 months old, such that 64% of these children are exclusively breastfed, while among those aged 1 day–3 months, the prevalence of exclusive breastfeeding is 93% [23]. The change to complementary feeding puts children at risk of exposure to disease-causing agents that are transmitted through unsafe water and unhygienic food handling practices, which can lead to an increase in recurring infections and exacerbate malnutrition. In Burundi childbearing begins early, such that by the age of 19, twenty nine percent of adolescent girls had begun childbearing in 2016–2017, which is a slight decrease from 31 percent in 2010 [23, 28]. In Sub-Saharan Africa, the risk of stunting is 33% higher among first-born children of mothers under 18 years. Early child-bearing has been shown to be a key causative factor of malnutrition [28], because, relative to older mothers, adolescent girls are more likely to be malnourished and have a low birth-weight baby who is more likely to become malnourished, and be at increased risk of illness and death, than those born to older mothers [28]. The prevalence of anaemia among women of reproductive age and adolescent girls increased dramatically from 45 and 19%, in 2010 and 2016–2017, to 61% and 39%, in 2010 and 2016–2017, respectively. This further increases the risk of low birth weight that also contributes to child stunting. While 75% of the country's population has access to an improved water source, 95% do not treat their drinking water, thus posing a challenge to improvements in WASH. Only 34% of Burundians have access to an improved toilet, with 56% using non-slab or open latrines. These practices, coupled with flooding, increase the risk of disease. Burundi has suffered from recurrent cholera and malaria outbreaks, which can exacerbate ill-health and malnutrition. As of October 2017, there were more than 6.6 million cases of malaria in the country [26]. While recurrent

infection contributes to high levels of chronic malnutrition, it also impacts on acute malnutrition. A half of Burundi's 18 Provinces have malnutrition levels of 5–9%, which is categorized as acute. In the Provinces, the wasting rates are 74, 74 and 81% in Kirundo, Kayanza, and Karusi, respectively. Malaria, diarrhea, and poor diet quality all contribute to acute malnutrition in the country [29].

3.3 Prospects

Approximately 80% of the country's 11 million people live below the poverty line of US \$1.25/day [25]. The general drivers of food and nutrition insecurity for the country include an unplanned increasing population, improper use and sometimes, non-use of the available land for food production and when the two factors are combined, falling food production results.

Political stability is a prerequisite to long-term economic development of the country and therefore improvements in food production and long-term and sustained fall in food and nutrition insecurity. Infrastructure improvements, market access to the EAC markets, especially for its livestock, may assist in opening up the country to regional trade and contribute to cash inflows from the partner states of the EAC. However, its situation remains bleak in the face of political instability in the short term, low economic growth potential and unwillingness to fully integrate into the EAC. The stagnating rate of reduction in stunting and wasting will linger on for quite some time into the future, more so due to the significant population increase, despite any potential economic growth. Any improvements in food and nutrition security will still be low as the arable land will compete for land for housing, infrastructure, industry and institutions.

Depending on the extent of infection of the population by the COVID-19 pandemic and the level of control and management by government, the expected disruption to the already fragile Burundian economy is bound to have disastrous consequences on food security, nutrition and health indices.

3.4 Recommendations

The Government should endeavour to:

- Reduce unplanned population increases
- Reduce the malarial, diarrhea, and poor diet influence as they impact malnutrition
- Improve access to safe water while improving food handling and hygiene practices
- Continue with the education of communities on the negative influence of early childbearing on child health, nutritional status and child growth and development
- Target rural farmers as poverty disproportionately affects them
- Discourage the early cessation of exclusive breastfeeding through appropriate maternal education, and by improving the adequacy of complementary feeding of children 6–23 months of age
- Work on reducing underweight and wasting prevalence in the rural areas

- Join International peace building efforts to stop the ongoing conflict especially with the rebels operating from the DRC and for the restoration of political stability
- Partner with the international community to realize political stability as a prerequisite to economic growth, international trade and integration into the EAC

4. Republic of South Sudan

4.1 Political, economic and social situation

South Sudan has a population of about 12 million people [30]. It has suffered ethnic violence and has been in a civil war since 2013, only two years after gaining its independence from Sudan.

Its weather is tropical and is characterized by a rainy season of high humidity and large amounts of rainfall, followed by a drier season. July tends to be the coolest month with average temperatures falling between 20 and 30°C, while March is the warmest month with average temperatures ranging from 23 to 37°C. Much of the annual rainfall comes between May and October, though rainy season sometimes commences in April and extends to November [30], thus making May the wettest month. The country's weather is "influenced by the annual shift of the Inter-Tropical Zone and the shift to southerly and southwesterly winds" leading to slightly lower environmental temperatures, higher humidity and heavy cloud cover [30].

South Sudan has a predominantly rural and subsistence economy. The region has been negatively affected by war since 1956, resulting in low infrastructure development, and major properties' destruction and displacements of populations. More than 2 million people are reported to have died, and, more than 4 million are internally displaced persons, or have become refugees as a result of the civil war [30]. It is estimated that there are more than 1.5 million persons out of the country. Improved education is needed to pave the way for greater economic opportunities and reduce South Sudan's reliance on oil and gas. South Sudan's recovering education system still faces many challenges, which are exacerbated by famine and the ongoing violence [31], in addition to the poor infrastructure, lack of qualified teaching and administrative staff and amenities in schools, etc.

4.2 Food and nutrition security

South Sudan has a cyclical food security situation that is typical of a tropical country with a rainy and a dry season. The ongoing conflict has also altered the natural dynamics and has made the implementation of the usual coping strategies difficult. Food shortages disappear or reduce substantially, depending on the State, after the rainy season and during harvest. In the following dry season, food shortages are evident requiring some assistance to fill the food security gaps.

Since the ongoing conflict started in 2013, the food and nutrition security situation has remained at the most compromised level. The combination of conflict, economic crisis and lack of adequate levels of agricultural production has eroded vulnerable households' ability to cope. This situation is evident as described in the chapters that follow despite the efforts of international humanitarian agencies to try to manage the situation and bring it under control. The efforts between 2015 and 2019 are described below.

By September 2015, approximately 3.9 million people—nearly one in every three Sudanese, were severely food insecure and 3.6 million were considered to be ‘stressed’ [31]. An estimated 30,000 people were facing catastrophic food insecurity (IPC Level 5) in Unity State, leading to destitution, starvation, and death for some [32]. At the height of the lean season in July 2016, some 4.8 million people—more than one in every four people in South Sudan—were estimated to be severely food insecure. This number rose to about five million in 2017. More than one million children under age 5 were estimated to be acutely malnourished, including more than 273,600 who were severely malnourished in 2016 [33]. As of January 2017, 3.8 million were estimated to be in IPC 3-IPC 5, meaning that they were anywhere between crisis and catastrophe status of food insecurity. This was such that a month later, the number of people in need of humanitarian assistance (IPC 3 and above) had increased to almost 5 million, out of which 100,000 were facing famine conditions. As a result, famine was declared in Leer and Mayendit Counties of Greater Unity State, Koch County and parts of Panyijiar County [34]. By mid-2017, an estimated 50% of the country’s population was declared to be severely food insecure compared to 45% of the population a few months earlier. This was apparently the greatest number of people ever to experience severe food insecurity (IPC 3–5) in South Sudan from 2013. Immediate and sustained multi-sectoral humanitarian assistance was delivered to the affected population in the rest of the year. However, some 45,000 people in Leer, Koch, Mayendit in former Unity State and Ayod County in former Jonglei were reported to be in IPC 5 status of food insecurity as a result of the continued armed conflict, food shortages associated with seasonality and humanitarian assistance delivery constraints. In the Greater Jonglei State, food security rapidly deteriorated in the same period, predominantly in the counties of Ayod, Canal/Pigi, Duk, Nyirol and Uror, which faced Emergency (IPC 4) acute food insecurity, with Ayod having an estimated 20,000 people experiencing Humanitarian Catastrophe (IPC 5) through to July 2017 [35]. Due to the catastrophic nature of the situation between July and Dec 2017 [36], WFP resumed the integrated rapid response mechanism and deployed teams in Bilkey, Nyandit, Kurwai, Jaibor, Chuil, Buot and Ulang, providing life-saving food and nutrition assistance to over 96,600 people, including over 17,000 children under the age of five. For the period of January–September 2018, an estimated 48% of the population faced Crisis Level (IPC 3) or worse acute food insecurity, despite the harvest and the continued large-scale assistance that was being provided [37, 38]. By September 2018, 59% of the total population was estimated to be variously facing crisis to catastrophe levels of food insecurity. However, as is normal in the post-harvest period October–December of 2018, the number of people in need of humanitarian assistance reduced (to about 43% of the total population), although over 20,000 still experienced catastrophe conditions and extreme food gaps. In early 2019, 49% of the total population faced acute food insecurity, with over 36,000 people in catastrophic conditions (IPC 5) [39].

In the period January –December 2019, and with the availability of humanitarian food assistance, the situation that was experienced in 2018 over the same period was evident, with over 57% of the population facing acute food insecurity, while over 45,000 people were estimated to be in catastrophe phase of food insecurity [41]. The situation in South Sudan may be similar in 2020 or worse than it was in 2019 due to the uncertainties and the high cost of containment of the COVID-19 pandemic.

The situation described above for South Sudan is both depressing and concerning and points to the need for the International Community to do all in its power to bring the civil war to an end, so that some level of normalcy returns to the country. From the above estimates, some 45–60% of citizens of South Sudan can access food

and are able to recover their food security situation after harvest in any year, while 50–60% faces food insecurity of various levels in the dry season, but with less than 1% in catastrophe status (IPC 5).

4.3 Prospects

The food security and nutrition situation in South Sudan has been deteriorating in recent years due to the outbreak of conflicts, below par food production, disruption of markets and trade, hyper-inflation, diseases and natural disasters such as floods and drought in parts of the country. With the ongoing macroeconomic crisis including the rapid depreciation of the South Sudanese Pound, hyper-inflation and the surge in food prices, urban food insecurity remains a grave concern. To illustrate the point, an assessment was conducted in Juba urban areas (including Kator, Juba town, and Munuki) in September 2017, to understand the food security and nutrition status of the urban population, comprising some 1371 households. The survey provided representative estimates of key food security and nutrition indicators for the Juba urban population as well as each of the three blocks within the greater Juba urban area.

The key findings of the assessment were [40]:

- Overall, food insecurity affected 76% of the households surveyed. Among them 21% were severely food insecure and 55% being moderately food insecure. This showed a significant deterioration of the situation from September 2016, when 51% of the population was food insecure.
- Fifty one percent of the households were reported to experience poor food consumption, with 28% on the borderline and only 21% having what would be regarded an acceptable level of food consumption.
- Nearly three-fourth of the households were in a moderate to severe hunger scale (59% moderate and 14% severe).
- Overall, the prevalence of Global Acute Malnutrition was 10.1% (classified as serious by the WHO), a figure that is similar to that seen in the assessments done in 2015 (12.2%) and 2016 (11.2%).
- Nearly 46% of respondents reported spending an amount of 65–75% or greater of their total household expenditure on food, thus indicating economic vulnerability and poor access to food.
- The Juba urban population accesses food mainly from the public markets, with about 93% of households reporting markets as their primary source for cereals and only 8% of the population reported cultivating, while a tiny 2% owned livestock.
- The percentage of households adopting crisis and emergency strategies to achieve food security was 23 and 35%, respectively
 - It was established that most households got their drinking water from unsafe sources such as rivers (69%) and surface reservoirs (31%)
- In terms of toilet use, 69, 16, 6 and 9% of households used open pit traditional latrine, water-seal latrine, flush toilet and open bush, respectively.

- Results indicate worsening household food consumption and nutrition for Juba residents thus driving households to apply severe coping strategies. This seems to be driven by currency depreciation (72%), high food prices (69%) and violence (50%).
- The food insecurity situation in the three blocks of greater Juba urban area was 67% in Juba town, and 84% and 79% in Kator and Munuki peri-urban areas, respectively.

The situation in the greater Juba area should apply to most parts of the country as the conflict and other socio-political factors remain similar. Lack of extension services, certified seeds and other inputs compound food and nutrition security attainment in rural areas.

4.4 Recommendations

The Government of South Sudan (GoSS) and its partners should:

- Endeavour to stop the continuing economic crisis and hyperinflation amidst stagnant or falling income levels of market-dependent households.
- Integrate vulnerable households into programmes that aim to raise their food and nutrition security situation
- Reduce the adoption of disruptive and non-reversible coping mechanisms which result in detrimental effects on future household productivity and ability to stand up to shocks. Programmes targeting the most vulnerable households to build their resilience should be prioritized
- Deliver relief while further scaling up the social transfers to the poor and most vulnerable segments of the population
- Continue scaling up programmes for the treatment of malnutrition as well as the application of the common public health measures such as vaccination, deworming, supplementation and improvement of water and sanitation. Disease prevention is crucial for the improvement of the nutrition situation given that findings showed that incidence of diarrhoea was related to child malnutrition
- Endeavour to maintain the current peace and reconciliation so that the disruption of livelihoods stops, in a country that has probably the most promising future based on the considerable petroleum and gas deposits, rich agricultural soils, and, the highest forest cover in all of East Africa.

Due to lack of data on malnutrition in South Sudan, the estimates for 2020 give the stunting rate for the under-5s as 31.3%, while wasting for the same age group is 24.3% [41]. The percent of children 6–24 months of age that are breastfed is 45.6%, which is lower than the East African Region level of 59.7%. The data on birth weights, poverty level and under-nutrition is lacking. However, iron deficiency anemia in women is estimated as 34%. The above data was obtained by modeling by UNICEF/World Bank group [41].

In conclusion, the formation of a Government of National Unity by President Salva Kiir and his nemesis Dr. Riek Machar is critical as they work towards ending

the conflict, reducing the suffering of the general population, and, allowing peace to prevail for the country to plan its development path.

5. General conclusions and recommendations on improving food and nutrition security in the EAC

The EAC is continuing with the adoption of strategies and technologies that increase agricultural productivity in order to achieve higher yields of the staple crops, as the increasing human populations are likely to erode any gains made in food production. The focus is on rural areas where agriculture is often the only means of livelihood and where poverty is much higher than the urban areas. To achieve improved food production requires adequate water, either through rainfall or from underground sources, and in addition arable land, fertilizers and other inputs. In addition, the use of farm machinery and other technological solutions can result in higher efficiency rather than relying on the inefficient hoes and oxen for land preparation.

Modern practices that lead to a flourishing agriculture sector in any country are a result of continuous, application-oriented research and development. The key to success in this regard lies in the two-way flow of information between researchers and farmers. By using extension services, problems faced by farmers can be reported to researchers for possible solutions, and where solutions are available, they are transmitted to the field for trial and subsequent adoption, where they seem to work. The application in China and the United Arab Emirates of such strategic food security measures are lessons member states of the EAC can pick and implement.

Governments should also ensure that the food in their countries is available, accessible, and for people who do not produce enough food, having enough income to buy food in order to realize improved food and nutrition security.

Rained agriculture is no longer reliable in the face of climate variability. This calls for the use of irrigation and smart agricultural practices for reliable food production. It is imperative that member states of the EAC adopt efficient systems of irrigation. Better storage systems that maintain premium quality of produce, reduce losses and food wastage through the application of cost-effective and appropriate food preservation technologies, are necessary.

It is critical that financial institutions ensure that credit facilities and related support services are accessible to farmers. As banks may often not understand agriculture due to the risks associated with uncertainties in weather, etc., the formation of farmer-cooperatives can enable members to access credit with relative ease. In order to make agriculture more efficient, it is necessary to invest in technology. Agriculture should be conducted as a business. This requires better management of finances and record keeping as doing that will attract financial institutions that can lend to farmers. This is an important role that governments can take up, if they require better performance of the agriculture sector. Credit is important for the sector to transit from subsistence to commercial farming. The formation of farmer-cooperatives can help farmers to access credit easily, as Cooperatives act as guarantors to make sure that the money is paid back at the time agreed with the lending institutions. The trust that can be developed with banks can open the way for farmers to borrow money from banks, who may trust cooperatives more than individual farmers. As part of the efforts to improve food and nutrition security, Governments require to encourage stakeholders in the supply chain to focus on agriculture as a business and invest in it. The Vision 2063 of the African Union resonates with the Vision 2050 of the EAC on the attainment of food and nutrition security in the trading bloc.

In conclusion, Science, Technology and Innovation should benefit the agriculture sector through the use of improved and high yielding seed varieties, new ways of tackling climate change, and offering appropriate technologies if the sector has to contribute significantly to the growth of the regional economy and improve food and nutrition security in the member states. However, the breakout of the novel COVID-19 pandemic in early 2020 in the EAC is bound to result in slowed economic growth for most of the member states, depending on the severity of the infection in the Member State, the extent of interruption of economic activities and the application of economically disruptive measures for the containment purposes aimed at stemming the spread of the virus across the region. Also, the desert locust invasion in the region beginning June 2019 and which became severe in 2020, especially in the semi-arid and arid regions of Kenya, will undoubtedly reduce food production and lead to the worsening of food and nutrition security for the region, with Kenya, the southwestern part of South Sudan and probably Karamoja in Uganda likely to experience worrisome situations. However, as recovery efforts from the pandemic continue, Tanzania is predicted to record the highest economic growth in the region for FY 2019/2020 and 2020/2021, with Kenya being more resilient than either Uganda or Rwanda, despite recording the highest number of COVID-9 cases and bearing the heaviest brunt of the desert locust invasion. The generally good economic situation is buoyed by favourable weather and therefore a plentiful food supply, low oil/energy cost, and a generally low inflation rate. South Sudan, unfortunately, due to the continuing civil war and the pandemic will remain the weakest economy in the region for a few years to come.

Acronyms

DRC	Democratic Republic of Congo
EAC	East African Community
ECD	Early Childhood Development Programme
FEWS NET	Famine Early Warning Systems Network
FY	Financial Year
GDP	Gross Domestic Product
GoR	Government of Rwanda
GoSS	Government of South Sudan
IMF	International Monetary Fund
IPC	Integrated Food Security Phase Classification
SDGs	Sustainable Development Goals
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
WASH	Water Sanitation and Hygiene
WHO	World Health Organization

IntechOpen

IntechOpen

Author details

Michael N.I. Lokuruka
Department of Food Science, Nutrition and Technology, Karatina University,
Box 1957-10101, Karatina, Kenya

*Address all correspondence to: mlokuruka@gmail.com; mlokuruka@karu.ac.ke

IntechOpen

© 2020 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. 

References

- [1] Malunda Dickson. 2012. Rwanda Study Case of Economic Transformation-Report for the African Centre for Economic Transformation (ACET). Institute of Policy Analysis and Research (IPAR), Rwanda, Kigali, March 2012.
- [2] Republic of Rwanda. Rwanda Vision 2020. 2000. Ministry of Finance and Economic Planning, Kigali, Rwanda.
- [3] USAID. 2017. "Country Profile: Rwanda." Available at: <https://feedthefuture.gov/country/rwanda>.
- [4] UNICEF. 2017. The State of the World's Children 2017. Available at: <https://www.unicef.org/sowc/html>. Accessed on 10th March, 2020.
- [5] World Bank. 2017. Rwanda poverty assessment. Found at: <http://documents.worldbank.org/curated/en/255161467998828941/pdf/100631-WP-P124629-PUBLIC-Box393238B-Rwanda-Poverty-Assessment-Final.pdf>. Accessed on 19th Apr 2020.
- [6] Sachs, J., Schmidt-Traub, G., Kroll, C., Durand-Delacre, D. and Teksoz, K. 2017. SDG Index and Dashboards Report 2017. New York, NY.
- [7] National Institute of Statistics of Rwanda (NISR), Ministry of Health-MOH-Rwanda and ICF International. 2015. Rwanda Demographic and Health Survey 2010. NISR, MoH and ICF International, Kigali, Rwanda.
- [8] Nicola Cantore. 2010. The Crop Intensification Program in Rwanda-a Sustainability Analysis. UNEP/UNDP/ODI, London. Found at: <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7094.pdf>. Accessed on 19th Apr 2020.
- [9] AUDA-NEPAD. 2019. AU 2003 Maputo Declaration on Agriculture and Food Security. Maputo, Mozambique found at: <https://www.nepad.org/caadp/publication/au-2003-maputo-declaration-agriculture-and-food-security>. Accessed on 19th Apr 2020.
- [10] FAO. 2018. Hunger and Food Security, Rwanda. FAOSTAT, Rome. Found at: <http://www.fao.org/faostat/en/#country/184>. Accessed on 19th Apr 2020.
- [11] World Bank. 2013. Gini Index (World Bank estimate) for Rwanda. Found at: <https://data.worldbank.org/indicator/SI.POV.GINI?locations=RW-BO-FI-DK-NO-SE&start=1997&end=2014>. Accessed on 19th Apr 2020.
- [12] NISR, MOH, and ICF. 2010. Rwanda Demographic and Health Survey 2010. 2010. NISR, MOH, and ICF International, Calverton, Maryland, USA.
- [13] Fink, G., Sudfeld, C.R., Danaei, G., Ezzati, M., and Fawzi, W.W. 2014. "Scaling-Up Access to Family Planning May Improve Linear Growth and Child Development in Low and Middle-Income Countries." PLoS ONE 9(7): e102391. Doi: 10.1371/journal.pone.0102391.
- [14] National Institute of Statistics of Rwanda-NISR-Rwanda, Ministry of Agriculture-MOA-Rwanda and World Food Programme. 2015. NISR, MOA, and WFP. "Rwanda 2015": Comprehensive food security and vulnerability analysis.
- [15] New Partnership for Africa's Development (NEPAD). 2009. "Signed Comprehensive Africa Agriculture Development Programme (CAADP) Compact." Available at: <http://www.nepad.org/sites/default/files/Nigeria-Signed-Compact.pdf>. Accessed on 17th Apr 2020.

- [16] USAID. 2017. Food Assistance Fact Sheet–Burundi. Available at: <https://www.usaid.gov/burundi/food-assistance>. Accessed on 19th Apr 2020.
- [17] IMF. 2007. Burundi poverty reduction strategy paper; IMF Country report No. 07/46, IMF Publication services, Feb 2007. Washington, DC.
- [18] AU/UN Peacemaker. 2000. Arusha peace and reconciliation agreement for Burundi. 2000. UN peacemaker/AU. Found at: https://peacemaker.un.org/sites/peacemaker.un.org/files/BI_000828_Arusha%20Peace%20and%20Reconciliation%20Agreement%20for%20Burundi.pdf. Accessed on 20th Apr 2020.
- [19] Reconciliation%20Agreement%20for%20Burundi.pdf. Accessed on 20th Apr 2020.
- [20] World Bank. 2019. Burundi, access to electricity rural. Found at: <https://tradingeconomics.com/burundi/access-to-electricity-rural-percent-of-rural-population-wb-data.html>. Accessed on 20th Apr 2020.
- [21] Population Reference Bureau. 2017. “2017 World Population Data Sheet.” Available at: http://www.prb.org/pdf17/2017_World_Population.pdf. Accede on 6th Apr 2020.
- [22] ISTEERBU, Ministère de la Santé Publique et de la Lutte contre le Sida [Burundi] (MSPLS), and ICF International 2012. Enquête Démographique et de Santé Burundi 2010. ISTEERBU, MSPLS and ICF International.
- [23] World Bank. 2017. “Burundi Country Overview.” Available at: <https://www.worldbank.org/en/country/burundi/overview>. Accessed on 6th March 2020.
- [24] Sachs, J., Schmidt-Traub, G., Kroll, C., Durand-Delacre, D. and Teksoz, K. 2017. SDG Index and Dashboards Report 2017. New York: Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN).
- [25] Global Hunger Index (GHI). 2017. Global Hunger Index Results: Global, Regional, and National Trends–Burundi. Available at: <http://www.globalhungerindex.org/results-2017/>. Accessed on 10th Apr 2020.
- [26] FEWS NET. 2017. Burundi Remote Monitoring Update. Available at: https://reliefweb.int/sites/reliefweb.int/files/resources/Burundi_December%202017_%20RMU_%20Final_0.pdf. Accessed on 10th Apr 2020.
- [27] ISTEERBU and ICF International. Institut de Statistiques et d’Études Économiques du Burundi (ISTEERBU), Ministère de la Santé Publique et de la Lutte contre le Sida [Burundi] (MSPLS), and ICF International. 2012. Enquête Démographique et de Santé Burundi 2010. Bujumbura, Burundi: ISTEERBU, MSPLS, and ICF International.
- [28] Fink, G., Sudfeld, C.R., Danaei, G., Ezzati, M., Fawzi, W.W. 2014. “Scaling-Up Access to Family Planning May Improve Linear Growth and Child Development in Low and Middle-Income Countries.” PLoS ONE 9(7): e102391. Doi: 10.1371/journal.pone.0102391.
- [29] IPC. 2017. IPC Acute Malnutrition Analysis. Available at: https://reliefweb.int/sites/reliefweb.int/files/resources/IPC%20AMN%20Burundi%20communication%20brief%20Sept%202017%20VF%20%28002%29_0.pdf. Accessed on 8th Apr 2020.
- [30] CIA. 2020. Africa-South Sudan. Found at: https://www.cia.gov/library/publications/the-world-factbook/geos/print_od.html. Accessed on 20th Apr 2020.
- [31] USAID. 2020. Food assistance fact sheet–South Sudan. Found at: www.usaid.gov/our-work/food-assistance/fact-sheet-south-sudan.

usaid.gov/south-sudan/food-assistance. Accessed 15th April 2020.

[32] UNOCHA. 2016. South Sudan Food Security Situation, OCHA 5th Jan 2016. Found at: <https://www.unocha.org/south-sudan>. Accessed on 12th Apr 2020.

[33] UNOCHA. 2017. South Sudan Food Security Snapshot. OCHA, 13 Feb 2017. Found at: <https://www.unocha.org/south-sudan> <https://www.unocha.org/south-sudan>.

[34] IPC. 2017. Republic of South Sudan, IPC, 20 Feb 2017. Found at: http://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC_South_Sudan_Key%20Messages_Feb2017.pdf. Accessed on 15th Apr 2020.

[35] IPC. 2017. South Sudan: Acute malnutrition for May 2017 with projections up to July 2017. Found at: ipcinfo.org/ipc-country-analysis/details-map/en/c/1139097/

[36] FAO. 2017. IPC Map of South Sudan, FAO, 6 Nov 2017. Found at: www.fao.org/resilience/multimedia/maps/details/en/c/1055744/. Accessed on 10th Apr 2020.

[37] WFP. 2018. Emergency relief operations, WFP 8 Jan 2018. Found at: www.wfp.org/countries/south-sudan. Accessed on 10th March, 2020.

[38] FEWSNET. 2018. East Africa: South Sudan-Catastrophe persists in Akobo and Duk as inter-communal clashes escalate. FEWSNET 22 March 2018. Found at: www.fews.net/east-africa/south-sudan. Accessed on 15th March, 2020.

[39] IPC. 2018. South Sudan: Acute Malnutrition for September with projections up to December 2018. Found at: <http://www.ipcinfo.org/ipc-country-analysis/details-map/en/c/1151657/>. Accessed on 15th Apr 2020.

[40] IPC. 2019. South Sudan: Acute insecurity and malnutrition situation, Jan 2019 with projections up to July 2019. IPC Jan 2019, Found at: <http://www.ipcinfo.org/ipc-country-analysis/details-map/en/c/1151975/>. Accessed on 12th Apr 2020.

[41] UNICEF/World Bank. Global data bases/Infant and Young Child Feeding/ Joint child malnutrition estimates. WHO Global Health Observatory, 2020. Found at: <https://globalnutritionreport.org/resources/nutrition-profiles/africa/eastern-africa/south-sudan/>. Accessed on 16th October, 2020.