Rwanda 2015 | Comprehensive food security and vulnerability analysis

Data collected in April–May 2015

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Rwanda: Comprehensive Food Security Analysis 2015 (Data collected in April-May 2015)

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The 2015 Rwanda CFSVA is available at http://www.wfp.org/food-security, www.statistics.gov.rw

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Acronyms and abbreviations

BMI	Body Mass Index
CAADP	Comprehensive Africa Agriculture Development Programme
CARI	Consolidated Approach for Reporting Food Security Indicators
CFSVA	Comprehensive Food Security and Vulnerability Analysis
CI	Confidence Interval
CIP	Crop Intensification Programme
COMESA	Common Market for Eastern and Southern Africa
CPI	Consumer Price Index
CSI	Coping Strategy Index
CSB	Corn Soya Blend
DFID	United Kingdom Department for International Development
DHS	Demographic Health Survey
DPEM	District Plans to Eliminate Malnutrition
DRC	Democratic Republic of Congo
EAC	East African Community
EDPRS	Economic Development and Poverty Reduction Strategy
EICV 4	Fourth Integrated Household Living Conditions Survey
ENA	Emergency Nutrition Assessment
FCG	Food Consumption Group
FCS	Food Consumption Score
FAO	Food and Agricultural Organization of the United Nations
FEWS NET	Famine Early Warning Systems Network
FNSMS	Food and Nutrition Security Monitoring System
FS	Food Security
FSI	Food Security Index
FY	Fiscal Year
GDP	Gross Domestic Product
GSI	Grand Seasonal Index
H	Hour
ha	Hectare
HAZ	Height for age z-score (stunting)
HDDS	Household Dietary Diversity Score
HIV/AIDS	Human Immunodeficiency Virus Infection/Acquired Immune Deficiency Syndrome
HH	Household
IYCF	Infant and Young Child Feeding
Kcal	Kilocalorie
Km	Kilometer
Km2	Square kilometer
MDG	Millennium Development Goals
Min	Minute
MINAGRI	Ministry of Agriculture and Animal Resources
MINALOC	Ministry of Local Government
MIDIMAR	Ministry of Disaster Management and Refugee Affairs
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education
MIGEPROF	Ministry of Gender and Family Promotion
MINISANTE	Ministry of Health
mm	millimeter
MT	Metric Ton
MUAC	Mid-Upper Arm Circumference
NBR	National Bank of Rwanda
NGO	Non-Governmental Organization
NISR	National Institute of Statistics of Rwanda
ODK	Open Data Kit

PCA	Principal Component Analysis
RAB	Rwanda Agriculture Board
REMA	Rwanda Environment Management Authority
RRA	Rwanda Revenue Authority
RWF	Rwandan Franc
SD	Standard Deviation
SPAT	Strategic Plan for the Transformation of Agriculture in Rwanda
SPSS	Statistical Package for Social Sciences
SSA	Sub Saharan Africa
TC	Technical Committee
TLU	Tropical Livestock Unit
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USD	United States Dollar
VAM	Vulnerability Analysis and Mapping (WFP)
VUP	Vision 2020 Umurenge Program
WAZ	Weight for Age Z-score (underweight)
WB	World Bank
WDDS	Women's Dietary Diversity Score
WFP	United Nations World Food Programme
WHO	United Nations World Health Organization
WHZ	Weight for height z-score (wasting)
WI	Wealth Index
WRSI	Water Requirement Satisfaction Index
yr	Year
z-score	Standard score, normal score

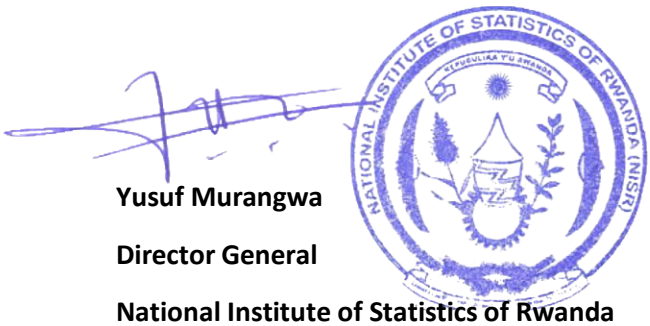
Currency Equivalents

Currency Unit	Rwandan Franc RWF
1 USD	715 RWF (Exchange rate as of April 2015)

Foreword

The objective of this Comprehensive Food Security and Vulnerability Analysis 2015 (CFSVA 2015) is to measure the extent and depth of food and nutrition insecurity in Rwanda, analyze trends over time and integrate the findings with those from the recent 'Third Integrated Household Living Conditions Survey' (EICV 4) and 'Rwanda Demographic Health Survey 2014' (DHS 2014). The key questions of the report are:

- Who are the people currently facing food insecurity and malnutrition?
- How many are they?
- Where do they live?
- **s**Why are they food insecure and/or malnourished?
- How can food assistance and other interventions make a difference in reducing food insecurity, malnutrition and supporting livelihoods?



Yusuf Murangwa

Director General

National Institute of Statistics of Rwanda

It is the fourth time that this type of survey has been conducted in Rwanda. The previous ones took place in 2006, 2009 and 2012 under the overall lead of the National Institute of Statistics of Rwanda. The results of this CFSVA confirm the findings of the EICV 4 and DHS 2014, namely that since 2006, Rwanda has taken great strides in terms of reducing poverty and malnutrition. Although stunting rates decreased during the past three years, it also confirms that food access, food consumption and chronic malnutrition are issues that still need to be tackled and that they go hand in hand with poverty.

We are convinced that by analysing the underlying causes of both food insecurity and chronic malnutrition in Rwanda, this report will guide readers, planners and decision makers towards tackling food insecurity and malnutrition in Rwanda.

Acknowledgements

This Comprehensive Food Security and Vulnerability Analysis 2015 (CFSVA 2015) is a joint initiative between the Rwandan National Institute of Statistics (NISR) and the Ministry of Agriculture and Animal Resources (MINAGRI) and World Food Programme (WFP).

The survey was coordinated by the CFSVA technical committee composed of NISR, MINAGRI and WFP in partnership with the Ministry of Local Government (MINALOC), Ministry of Disaster Management and Refugee Affairs (MIDIMAR), and Ministry of Health (MoH).

It was possible, thanks to funding from the Swiss Agency for Development and Cooperation (SDC), UK's Department for International Development (DFID) and the World Food Programme (WFP). The MINAGRI contributed both in cash and in kind to the training, supervision and transport of enumerators and team leaders.

We would, hereby, like to acknowledge the hard work of the data collectors and generosity of the 7500 household heads who devoted their time and sat down with enumerators to answer all the survey questions.

Lastly, we appreciate the contribution of the CFSVA 2015 technical committee which participated in and validated each step of the survey, and who proofread and approved the report at the final stage of its production.

Innocent Musabyimana

Permanent Secretary

Ministry of Agriculture and Animal Resources

Key findings

Rwanda has seen continued economic growth coupled with progress in social development in a number of areas, and is among the countries that have reached most of the Millennium Development Goals. Food security and nutrition are recognized as important for the overall development of the country, and have been highlighted among the long-term foundational issues in the national Economic Development and Poverty Reduction Strategy (EDPRS2).

The key findings of the 2015 CFSVA are:

Food availability	Food is generally available in markets and well-developed infrastructure allows food to move across the country and between countries in the region. Cereals are imported from neighbouring countries, while pulses, roots and tubers are more commonly exported.
Household food security	The CFSVA found that 80 percent of all households are food secure, i.e., they are able to meet essential food and non-food needs without engaging in atypical coping strategies, have an acceptable diet and use a low share of their budget to cover food needs. This corresponds to about 1,963,975 households being food secure. Among these, 979,045 households are considered marginally food secure, meaning they are at high risk of becoming food insecure. In total, 473,847 households are food insecure: out of these, 63,696 are severely food insecure.
Nutrient value of food consumed	The consumption of food items rich in nutrients such as protein and iron is low among some population groups: 45 percent of severely food insecure households had not consumed any protein-rich food in the week before the survey.
Geographical location of food insecure households	The level of food insecurity is particularly high in the western and northern parts of the country, especially in the livelihood zones of Western Congo Nile Crest Tea Zone (49%), Lake Kivu Coffee Zone (37%) and the Northern Highland Beans and Wheat Zone (32%). At provincial level, the Western Province is most concerning, with over 35% of its households considered food insecure. Although the Western Province holds 22% of the country's households, 42% of all severely food insecure households in Rwanda are found there. Kigali is the most food secure province, with only 3% of its households considered food insecure, followed by the Eastern Province where only 14% of its households are food insecure. At the district level, Rutsiro (57%), Nyamagabe (42%), Nyabihu (39%), Nyaruguru (37%), Rusizi (36%), Karongi (35%) and Nyamasheke (35%) have the highest percentages of households classified as food insecure.

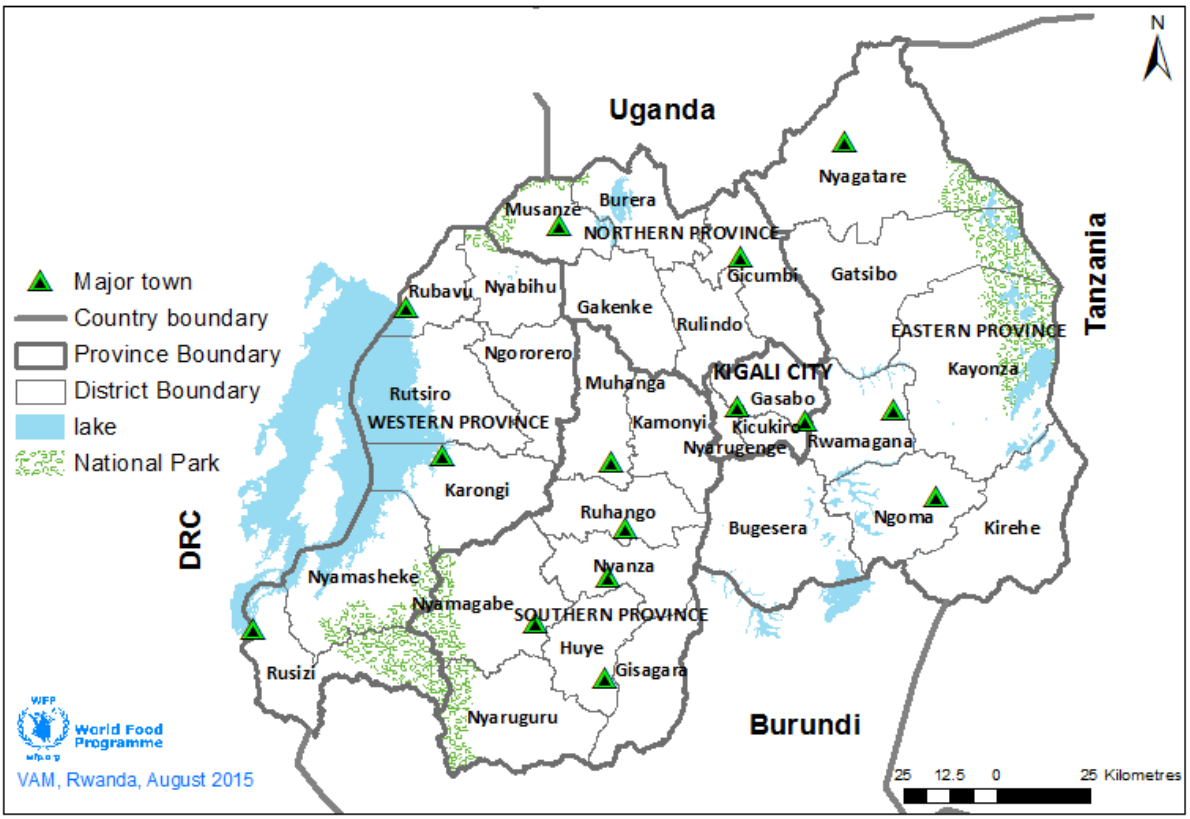
Profile of the food insecure	Food insecure households are typically rural households with few adult household members. They are dependent on daily agricultural labour, agriculture or external support for their livelihoods. Low-income agriculture is the most common livelihood type in Rwanda, underlining the importance of agricultural production for household food security. When compared to food secure households, food insecure households have less livestock, less agricultural land, grow fewer crops, are less likely to have a vegetable garden, have lower food stocks and consume more of their own production at home.
Profile of the food secure	Food secure households are more likely to reside in urban areas and be engaged in skilled labour or salaried work or run their own businesses. Farming households that are food secure more often own larger plots of land, grow more crops and have the possibility of selling more of their production.
Gender aspects on food security	Households headed by women are more likely to be food insecure than those headed by men. 27 percent of all households in Rwanda are headed by women. Female heads of household are often widows and tend to be less educated than their male counterparts. Women are more often engaged in agricultural production and agricultural labour, while it is more common for men to work as unskilled labourers (non-agricultural), skilled labourers, in salaried work or in their own business. This means female headed households typically engage in the lowest paid work.
Food access issues	Half of all households have reported food access problems, most often seasonal difficulty in accessing food. In addition to seasonal and chronic difficulties in accessing food, 27 percent of all households had experienced one or more shocks that affected their ability to access food. Poorer households owning fewer assets and with more unstable sources of income are more likely to have experienced food shortages and shocks. The most commonly reported shocks are weather related, such as drought, irregular rains or prolonged dry spells. At the time of the survey, 24 percent of households were still recovering from one or more shocks.
Food prices	Market dependence for food is high, with purchases accounting for 70 percent of food consumed. In general, the prices for main commodities (such as beans and maize) increase towards the end of the year before the season A harvest. Another smaller price increase takes place in April/May before the season B harvest. At the time of the survey, in April, bean prices were more than 10 percent higher than the five-year average, while maize prices showed a variable trend with prices higher or lower than the five year average depending on the location of the market.
Malnutrition	The nutritional status of children under five years has improved since the 2012 CFSVA, with lower percentages of wasted, stunted and underweight children. Stunting, which is an indicator of chronic malnutrition and is a key nutritional issue in Rwanda, has decreased from 43 percent in 2012 to 37 percent in 2015. The prevalence of wasting is now 1.7 percent and underweight 8 percent.

Geographical location of the malnourished	The highest rates of stunting tend to be found in the most food insecure livelihood zones. The two zones with the highest rates of stunting are the Western Congo-Nile Crest Tea Zone (53%) and the Northern Highland Beans and Wheat Zone (51%). At the provincial level, stunting rates are highest in the West (46%) in contrast with the 2012 CFSVA when the highest stunting rates were found in the Northern Province, which now has a stunting rate of 39 percent. The stunting rate is lowest in Kigali at 25 percent.
Factors associated with malnutrition	The smaller the baby at birth, the more likely the child is to be stunted, underlining the importance of the nutritional status and health of the mother. Stunted mothers more often have stunted children. The mother's level of education also influences the nutritional status of the child. Children who suffered from diarrhoea in the two weeks before the survey are also more likely to be stunted; cases of diarrhoea in the preceding fortnight are likely proxies for repeated episodes of the disease, which can impact children's stunting levels. Diarrhoea can be an outcome of poor water and sanitation conditions. Stunted children are more likely to be found in poor, rural and food insecure households. In addition, children in villages further away from health facilities have higher rates of stunting.
Child diets	In general, children's diets are poor with only 15 percent of children between 6 and 23 months meeting the requirements for a minimum acceptable diet based on dietary diversity and meal frequency.
Women's nutritional status	The majority of women have a normal BMI, although an increasing percentage are overweight, especially in urban areas. In total, 2 percent of women are overweight and 5 percent are wasted.
Assistance	Overall, 22 percent of all households have received some kind of assistance. The most common types of assistance are medical services and financial assistance through either Vision 2020 Umurenge Programme (VUP) or other types of loans or credit schemes. The households targeted for assistance are mostly the poorest households in Ubudehe category one and two, although some category three and four households also mentioned receiving assistance.

1. Background

Rwanda is a landlocked, mountainous country with a total surface area of 26,339 km^2, bordering Uganda, Tanzania, Burundi and DRC. One of the main development challenges Rwanda currently faces is population growth and density. The annual population growth rate of 2.6 percent (recorded between the 2002 national population and housing census and the 2012 census) is among the highest in Africa. The estimated population in April 2015 was 11,262,564 people, based on National Institute of Statistics population projections. Population density is the highest in the East African region, and has increased from 321 per square kilometre in 2002 to 416 per square kilometre in 2012.[1] The urban population is growing even faster than the rural population: between 2012 and 2015, the urban population increased from 1.7 million to an estimated 2.1 million. The main destinations for people migrating internally within the country are Kigali and the Eastern Province.

Map 1: Administrative map including district and province boundaries



Source: NISR spatial database

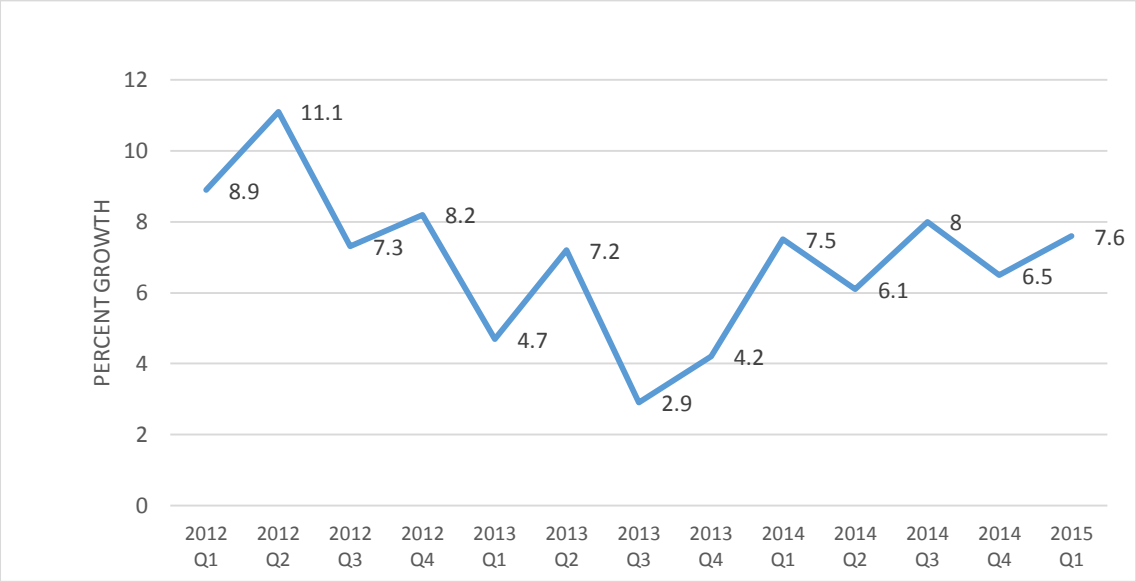
[1] National Institute of Statistics Rwanda. 2012 Population and Housing Census. Kigali: November 2012.

1.1 Macro-economic context

Rwanda is part of the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA), memberships which have facilitated and improved trade with neighbouring countries. Rwanda has a developed road network with all major towns well connected as well as good connections by road with neighbouring countries, which is important for the import and export business with neighbouring countries. As the Government of Rwanda recognizes the importance of transport opportunities for a growing economy, almost a tenth of Rwanda's budget is allocated to transport and infrastructure. [2]

Over the last two decades Rwanda has seen impressive economic growth and in the past decade average real growth exceeded eight percent, one of the highest growth rates in the world. Since the last CFSVA was carried out in 2012, Rwanda has seen continued growth in GDP[3], with a somewhat lower growth rate of 4.75 percent in 2013 before recovering to 7 percent in 2014.

Figure 1: GDP quarterly growth rate 2012-2015



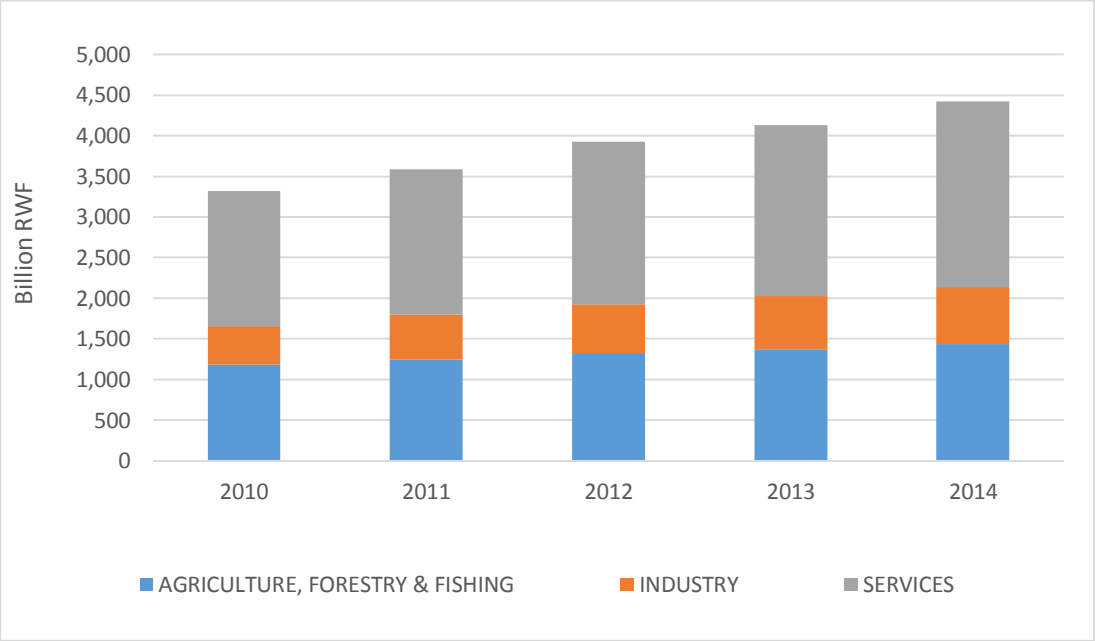
Source: National Institute of Statistics Rwanda

The World Bank is projecting continued economic growth in 2015 and 2016, with growth rates of 7.5 percent in 2015 and 7.7 percent foreseen in 2016. The projection is based on a stable macro-economic framework and the implementation of priority policies including in the areas of agricultural productivity, export capacity, domestic resource mobilisation, and expenditure prioritisation. The risks to continued economic growth are: reduced government investment, regional instability affecting tourism, decline in commodity prices of Rwanda's main export commodities including coffee, tea and minerals, and decreased agricultural production caused by unfavourable weather conditions.[4]

[2] Rwanda Development Board website (infrastructure): http://www.rdb.rw/rdb/infrastructure.html
[3] National institute of Statistics Rwanda. Annual GDP data.
[4] World Bank. Rwanda Economic Update February 2015. Managing Uncertainty for Growth and Poverty Reduction with a Special Focus on Agricultural Sector Risk Assessment.

Rwanda's economic structure is dominated by agriculture and the service sector. The industry sector is fairly small. In 2014, 33 percent of GDP came from the agricultural sector, 14 percent from industry and 47 percent from the service sector.[5] In line with the goals of Rwanda's overall policy document Vision 2020, the target by that year is to increase the contribution to GDP of services to 57 percent and industry to 19 percent, and to decrease agriculture's contribution to 24 percent.

Figure 2: Contribution to national GDP by sector (at constant 2011 prices)



Source: National Institute of Statistics Rwanda

1.2 Social and development context

In step with economic growth in the past decade, there has been a reduction in poverty and great strides have been made towards achieving the MDGs and increasing women's empowerment. This suggests that economic growth has benefitted the population.

Rwanda stands out as being one country that has achieved most of its MDG goals.[6] The areas where more effort is needed to reach the goals are: moving women and youth into off-farm employment, reducing under five and infant mortality rates, increasing the number of antenatal care visits, increasing the use of anti-retroviral drugs in children and intensifying the fight against HIV/AIDS. According to the 2013 MDG report, the goals related to poverty are likely to be achieved, namely to reduce the percentage of the population below the poverty line to 30 percent and to decrease the population in extreme poverty to 20 percent.

When it comes to malnutrition, Rwanda has achieved the targets for underweight and wasting. However, stunting remains a concern, with the prevalence of 37.9 percent (2015 DHS report) considerably higher than the MDG target of 24.5 percent by 2015.

[5] National Institute of Statistics Rwanda. GDP data, sector contribution to GDP.
[6] Millennium Development Goals Rwanda, final progress report: 2013.

1.3 Poverty levels

The most recent integrated household living conditions survey (EICV 4) to provide official poverty figures was carried out in 2013/2014. The EICV 4 estimated the poverty level at 39.1 percent nationally, a 5.8 percentage point reduction in poverty compared with EICV 3 (2010/2011). The next EICV will be carried out during 2016/17 and will provide updated poverty figures.[7]

According to the 2015 World Bank update, poverty reduction will be sustained through continued growth in agriculture and an extensive social protection system that supports the poorest and most vulnerable in the population.[8]

1.4 Income equality

The Gini coefficient is a measure of inequality in income distribution, where 0 represents a perfectly equal distribution and 1 represents a perfectly unequal distribution of income. In 2013/14, the Gini coefficient in Rwanda was 0.45, a reduction from 0.49 three years earlier. This reduction indicates a more equal distribution of income.[9]

1.5 Gender

Rwanda has made progress in gender empowerment and now has a high representation of women in parliament and an enrolment rate of girls to boys in primary school of 1.02. Some of the achievements towards greater gender equality in Rwanda are: a revision of discriminatory laws and enactment of gender sensitive laws, the high level of women's participation in various decision-making bodies, an increased number of women in peacekeeping operations and peacebuilding initiatives, a reduction in maternal mortality rates and more equal enrolment and retention rates between boys and girls in primary school. However, some challenges still remain, including: a higher proportion of households headed by women are found to be poor, a higher proportion of women are employed in subsistence farming than men and women are more likely to carry out unpaid work such as household chores, keeping their income levels low.[10]

1.6 Government development polices

1.6.1 VISION 2020

Vision 2020 is the overarching policy document underpinning all other policy documents in Rwanda. The aim of the vision is to transform Rwanda into a middle-income country by the year 2020. In order to achieve this, the main contributing factors have been identified as macro-economic stability and wealth creation, as well as the structural economic transformation of the economy from a subsistence agriculture economy to a knowledge-based society.[11]

[7] National Institute of Statistics of Rwanda (NISR), Rwanda Poverty Profile Report, 2013/14, August 2015

[8] World Bank. Rwanda Economic Update February 2015. Managing Uncertainty for Growth and Poverty Reduction with a Special Focus on Agricultural Sector Risk Assessment.

[9] National Institute of Statistics of Rwanda (NISR), Rwanda Poverty Profile Report, 2013/14, August 2015

[10] Gender monitoring office annual report 2013-2014

[11] Government of Rwanda. Rwanda Vision 2020. Revised 2012.

1.6.2 ECONOMIC DEVELOPMENT AND POVERTY REDUCTION STRATEGIES (EDPRS 1 AND 2)

Rwanda's Economic Development and Poverty Reduction Strategy (EDPRS) is currently in the second phase. Vision 2020 and the EDPRS 2 aim to transform Rwanda from a subsistence-based agricultural economy to a knowledge-based economy, with the overall objective of achieving increased rural incomes for the population.[12]

During the first EDPRS (2008-2012), Rwanda achieved sustained economic growth and a reduction in income inequality. Achievements between 2008 and 2012 included an increase in smallholder productivity through land consolidation, provision of inputs, improved extension services and strengthening of farmer cooperatives, as well as expanded provision of financial services to reach the most vulnerable people. These changes are is believed to have contributed to the country's positive development, although causal relationships are difficult to measure.

The thematic areas prioritized in the EDPRS 2 (2013-2018) are:

1. Economic transformation: directing the economy towards the service and industrial sectors to accelerate economic growth and turn Rwanda into a middle income country
2. Rural development focusing on poverty reduction: bring overall poverty levels below 30 percent by 2018
3. Promote productivity and youth employment with the aim of creating 200,000 jobs annually
4. Accountable governance with better public service delivery and increased citizen participation and satisfaction.

Despite the success of the first EDPRS period, challenges remain regarding the second EDPRS (2013-2018). Although there has been a reduction in poverty rates, the figures are still high with 39.1 percent of the population being classified as poor.[13]

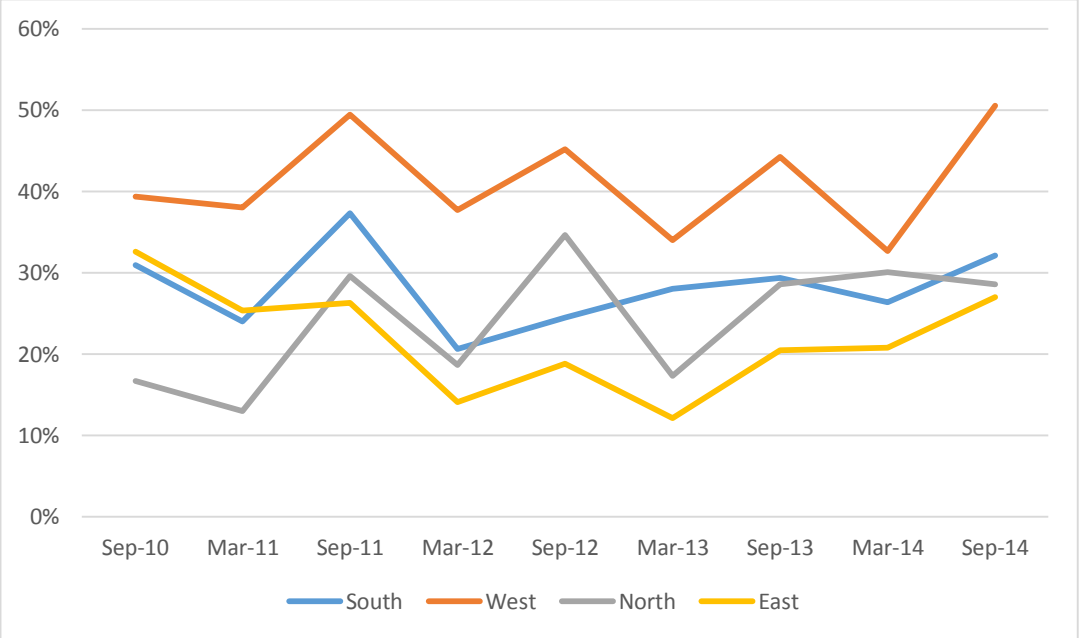
Recognising the food consumption scores reported in the 2012 CFSVA[14] and the high levels of stunting reported in the 2014/2015 DHS, the EDPRS2 recognises the importance of improved food security and reduced malnutrition and highlights them as key long-term strategic priorities. Proposed strategies to address these issues include community-based nutrition programmes and country-wide campaigns. In nutrition, the EDPRS focuses on reducing the rates of chronic malnutrition and addressing the factors behind these high levels, while in the areas of food security the EDPRS focuses on stabilising rural incomes.

[12] Government of Rwanda. Economic development and poverty reduction strategy 2013-2018
[13] National Institute of Statistics of Rwanda (NISR), Rwanda Poverty Profile Report, 2013/14, August 2015
[14] World Food Programme. Comprehensive Food Security and Vulnerability Analysis and Nutrition Survey 2012.

1.7 Food security trends

Since the 2012 CFSVA,[15] five rounds of Food and Nutrition Security Monitoring (FNSMS) have been conducted, which together show a clear seasonal trend with food insecurity reaching a peak level each year in September.

Figure 3: Percentage of households with poor/borderline food consumption 2010-2014 (FNSMS) by province



Source: FNSMS 2010-2014, CFSVA 2012

At the provincial level, food insecurity is most prevalent in the Western Province, followed by the Southern Province. In all rounds of FNSMS, more than 20 percent of households in both provinces had unacceptable diets, with the Western Province having a higher percentage of households with unacceptable diets. The Northern and Eastern Provinces did better, with less than 20 percent of households reporting unacceptable diets in both March 2012 and March 2013. However, the Northern Province showed the greatest variability in the percentage of households with unacceptable diets indicating dietary instability.

WFP has recently introduced the Consolidated Approach for Reporting Indicators of Food Security (CARI) as a new corporate indicator to interpret food security situation. The CARI addresses the multiple dimensions of food security with indicators that are consistent with internationally accepted food security concepts. The CARI combines the available food security indicators in a systematic and transparent way to analyse and establish the level of food insecurity within a population. The 2015 CFSVA for Rwanda uses this indicator.

[15] 79 percent of households had an acceptable diet as measured by the food consumption score, 17 percent had borderline food consumption and 4 percent poor food consumption, World Food Programme. Comprehensive Food Security and Vulnerability Analysis and Nutrition Survey 2012.

2. Rationale and objectives

The CFSVA is conducted in Rwanda every three years to provide a baseline with regards to the food security and nutrition situation of households and to track changes in food and nutrition security.

The 2015 CFSVA builds on the 2012 CFSVA and nutrition survey which formulated recommendations to improve food and nutrition security in Rwanda. These recommendations were taken into account by the government in the writing of the third Strategic Plan for the Transformation of Agriculture in Rwanda (SPAT III) as well as the EDPRS2 and other key government policy and strategy documents. The fourth CFSVA in Rwanda was conducted by MINAGRI, NISR, WFP and partners in 2015 in order to:

1. Answer the key food security and nutrition questions specified below
2. Train and build capacity of government partners to manage and conduct food security and nutrition assessments
3. Answer additional questions regarding poverty, food and nutrition security introduced by partners

KEY QUESTIONS

- Who are the food insecure, malnourished or vulnerable people?
- How many people are food insecure, malnourished or vulnerable?
- Where do they live?
- What have been the historical food security and nutrition trends and what is the outlook for the country?
- What are the underlying causes and threats of food insecurity and malnutrition?
- What are the implications for social protection, food security and nutrition interventions?

Based on the analysis, specific recommendations will be made for social protection, food security and nutrition interventions, including targeting criteria at the geographic and household levels.

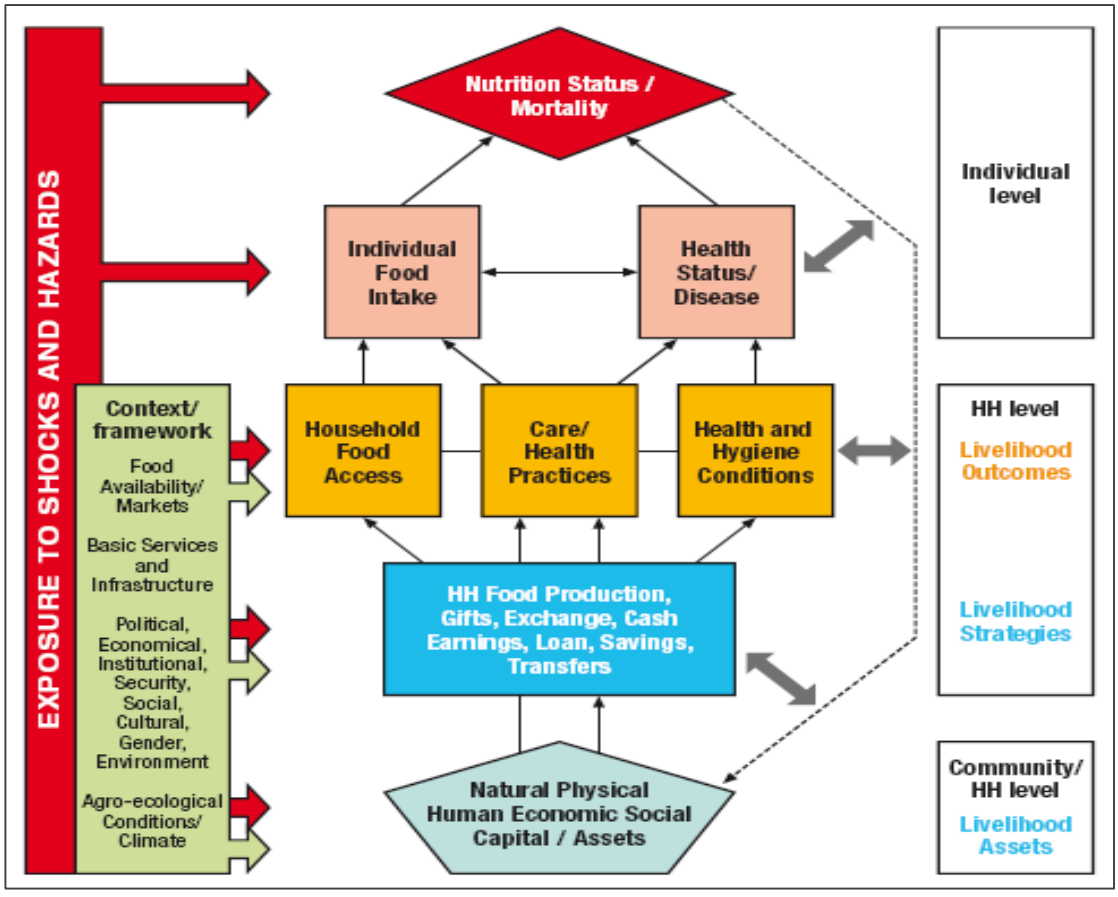
3. Methodology

3.1 The food security and nutritional conceptual framework

The 2015 CFSVA is based on the Food and Nutrition Security Conceptual Framework presented below. This framework informed the selection of indicators for analysis and the design of field assessment instruments, to ensure data collected cover all dimensions of food security and possible explanatory factors.

This report first describes the state of food security and nutrition in Rwanda in 2015 and then follows the logic of the Food and Nutrition Security Conceptual Framework to identify determinants of food insecurity and malnutrition. Lastly, after looking at existent tools and mechanisms in place to tackle poverty, food insecurity and malnutrition in Rwanda, recommendations are provided for development partners regarding food security and nutrition interventions as well as social safety nets, including geographic and household level targeting criteria.

Figure 4: Food Security and Nutrition conceptual framework



Source: CFSVA Guidelines 2009

3.2 Food security concepts

3.2.1 FOOD SECURITY

Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Food security is divided into three components: food availability, food access and food utilization.

Food availability is the quantity of food that is physically present in a country or area through all forms of domestic production, commercial imports and food aid.

Food access represents the households' ability to regularly acquire adequate amounts of food through a combination of their own stock and home production, purchases, barter, gifts, borrowing or food aid.

Food utilization refers to: a) households' use of the food to which they have access, b) intra-household food distribution, and c) individuals' ability to absorb nutrients – the conversion efficiency of food by the body.

3.2.2 NUTRITIONAL STATUS AND NUTRITIONAL SECURITY

Nutritional status is the balance between the intake of nutrients by an organism and their expenditure in the processes of growth, reproduction and health maintenance. Consequently, malnutrition is any condition caused by excess or deficient nutrient intake.

Nutritional security is achieved when a household has secure physical, economic and environmental access to a balanced diet and safe drinking water, a sanitary environment, adequate health services and knowledgeable care to ensure adequate nutritional status for an active and healthy life at all times for all its members.

3.3 Primary data collection

Primary data collection took place over six weeks from mid-April to the end of May 2015. Three instruments were used to collect primary data: a community questionnaire administered to the village leaders and other key informants in each of the sampled villages, a household questionnaire administered to sample households, and a questionnaire for women of reproductive age (15-49 years), including an anthropometric section for children under five years, and a section on infant and young child feeding practices intended only for children between six months and two years.

The instruments were first developed in English and subsequently translated into Kinyarwanda. Tablets programmed with the questionnaires under ODK[16] were used for the data collection. This made data collection more efficient and improved the accuracy of the data collected.

TIMING OF DATA COLLECTION AND SEASONALITY

Households' food security status is commonly influenced by seasonality, with a better situation around and after harvest and a worse situation during the lean season. Primary data collection for the 2015 Rwanda CFSVA took place in April/May 2015, just before the Season B harvest. While April is one of the months when households experience more difficulties, the situation generally starts to improve again in June.

- The percentage of households that source their beans from the market peaks in April and starts to decrease again in May.
- Prices for beans reach a smaller peak in April, while maize prices continue to increase until July.

[16] Open Data Kit (ODK) is a free and open-source set of tools which help organizations author, field, and manage mobile data collection solutions. ODK provides an out-of-the-box solution for users to:

1. Build a data collection form or survey;

All 30 districts in Rwanda were covered by teams of carefully selected enumerators. Steps taken to ensure that the results accurately represent the food security and nutrition situation in Rwanda were: training of enumerators, careful translation of the questionnaires and close supervision of the data collection process. The enumerators were also trained to facilitate interviewee recall and to collect accurate anthropometric data. Respondents were informed that participation was voluntary, no benefit would be affected by their decision to participate or not participate and that the interview was anonymous.

To facilitate comparison with existing studies, the 2015 CFSVA was designed to provide statistically representative and precise information at the district level. Urban and rural households were included as was the capital province Kigali. A two-stage cluster sample procedure was applied. In the first stage, 25 villages per district were randomly selected with probability proportional to population size. In the second stage, 10 households in each of the 25 villages in the 30 districts were selected for participation in the survey. A systematic random sampling technique was applied for this stage. In total, 749 community interviews were conducted, and 7,500 households were administered the household questionnaire. Within the sampled households, 6,768 women were interviewed and anthropometric measurements were taken for 4,058 children. The Infant and Young Child Feeding (IYCF) module was submitted to caretakers of all children between 6 and 23 months (1,379 children).

The sample design and the very low rate of non-response allowed the survey data to represent the food security situation at the time of the survey and the CFSVA can therefore be considered to be representative for Rwanda nationally as well as at province and district level.

3.3.1 FOOD SECURITY INDICATORS

WFP began a corporate project in 2012 to develop a standardized global approach for assessing and reporting household food insecurity in its country-level reports. The project was initiated in response to the wide diversity of methods that had been used previously. The newly established approach — *hereafter referred to as* the **Consolidated Approach for Reporting Indicators of Food Security (CARI)** — developed a **food security console** which supports the combining and reporting of food security indicators in a systematic and comprehensive way, using information typically collected in food security surveys and food security monitoring systems. As in other countries where CFSVAs are conducted, the 2015 Rwanda CFSVA introduces the CARI as the new standardized approach, which is expected to be used from now on.

The CARI console requires data sourced entirely from **a single household-level survey**. Central to the CARI approach is an explicit classification of households into four descriptive groups: **food secure, marginally food secure, moderately food insecure, and severely food insecure**. The classification provides a representative estimate of food insecurity within the target population, whether it is calculated at the national, district, region or livelihood level.

Consistent with the CARI methodology, the 2015 CFSVA classifies each surveyed household into one of the four food security categories based on the household's current status of food consumption and coping capacity. The **food consumption** score is used to classify the households into food consumption groups. Coping capacity domain employs indicators which measure households' **economic vulnerability** and **asset depletion,** namely food expenditure shares and livelihood coping strategies respectively.

2. Collect the data on a mobile device and send it to a server; and
3. Aggregate the collected data on a server and extract it in useful formats.

Each of the three indicators is converted into a four-point scale and for each indicator households are given a score from one to four. By taking the average of the scores from the two domains, current food consumption and coping capacity, these scores are combined into a summary indicator, called the Food Security Index (FSI) - which represents overall food security status.[17] Table 1 gives an overview of the indicators included in the CARI and the scores used.

Table 1: The CARI Food security console, summary table of indicators included in the CARI and scores

Domain		Indicator	Indicator score			
			Food secure 1	**Marginally food secure 2**	**Moderately food insecure 3**	**Severely food insecure 4**
Current status	Food consumption	Food consumption group	*Acceptable food consumption*		*Borderline food consumption*	*Poor food consumption*
Coping capacity	Economic vulnerability	Food expenditure share	*Low food expenditure share < 50%*	*Medium food expenditure share 50-65%*	*High food expenditure share 65-75%*	*Very high food expenditure share >75%*
	Asset depletion	Livelihood coping strategy categories	*No livelihood coping strategies used*	*Stress coping strategies used*	*Crisis coping strategies used*	*Emergency coping strategies used*

Table 2 below provides a description of the different food security categories. The overall prevalence of food insecurity in the population is calculated by summing up the rates of the two most severe categories ('moderately food insecure' and 'severely food insecure').

Table 2: Description of food security categories of the food security index

Food secure	Able to meet essential food and non-food needs without engaging in atypical coping strategies. These households have an acceptable food consumption and use a low share of their budget to cover food needs.	**Food secure**
Marginally food secure	The vast majority have an acceptable diet although a considerable number of households use a high share of their budget to cover food needs and sometimes engage in negative coping strategies in order to acquire enough food.	
Moderately food insecure	Significant food consumption gaps. These households use a high share of their budget to cover food needs and the majority of households have to use negative coping strategies in order to make a living, although only a few use the more serious coping strategies.	**Food insecure**
Severely food insecure	Poor food consumption and the majority of households are using a very high share of their budget to acquire food. Almost half of these households have used one of the most serious irreversible coping strategies with the resulting risk of further deteriorating their food security situation.	

[17] For a more detailed description of the calculation of the CARI see annex 2.

3.4 Secondary data collection

The primary data analysis was complemented by secondary data analysis. A general review of food security literature in Rwanda was undertaken. In addition, the analysis builds on the results of similar surveys conducted in 2009 and 2012.

3.5 Study limitations

3.5.1 SAMPLE SIZES

The sample size[18] was not designed to produce precise estimates for malnutrition prevalence at district level. The primary goal of collecting the nutrition data was to analyse the link between food security and nutrition.

The information from key informants was collected through a structured questionnaire but the sample was not designed to be statistically representative for villages in Rwanda; the information from the community questionnaire was therefore used for contextual information only.

3.5.2 COMPARISON WITH PREVIOUS CFSVA SURVEYS

Seasonality

Data collection for the 2015 CFSVA was conducted in April-May while in 2012 and 2009 data was collected in March-April and February-March respectively. The fact that data collection for the 2015CFSVA was done somewhat later than previous CFSVAs may influence the general trends of food security status[19].

Difference in samples

The 2012 and 2015 CFSVAs used the same sampling frame and the results from the two surveys are comparable. However, any comparisons with earlier CFSVAs must take into consideration that the 2009 survey excluded Kigali city and only included households with children under five years, while the 2006 survey only covered rural households.

Changes in questionnaires

Since the last CFSVA survey, the questionnaire has been revised. Although many of the questions are the same across all surveys, some questions have been improved or changed according to current standard practices. This may also cause slight differences in measured indicators.

Measuring food security

For the first time, the 2015 CFSVA adopts CARI for interpreting the food security situation in Rwanda (as opposed to the previous CFSVAs in which the Food Consumption Score (FCS) was used as a proxy indicator). CARI provides a more comprehensive measure of the food security situation than the previous approach, but the FCS remains an integral component of the CARI approach which addresses multiple dimensions of food security. Taking into consideration the change in approach to measuring food security and the different months during which data was collected, results from the 2015 CFSVA cannot be truly compared with those of previous surveys, notably in terms of measuring household food security status. However, the 2015 CFSVA will be established as the baseline for future food security reports, which will use a similar methodology.

[18] For more detail about the 2015 sampling methodology see annex 1

[19] This delay in the 2015 data collection was due to uncertainty regarding funding for the CFSVA. Food consumption score is one of indicators influenced by seasonality. Comparing food security status between the CFSVA 2015 with previous rounds has to take into consideration this difference in timing of data collection.

4. Food availability, markets and production

KEY MESSAGES

- The majority of households' food items are sourced from the market.
- Market dependency for beans is higher in September-October before the season A harvest and in April before the season B harvest.
- Even though food is generally available in the markets, 50 percent of households had experienced difficulties in accessing food at some point over the year.
- The most common access issues were seasonal difficulties in accessing food.
- The cost of beans and maize generally peaks towards the end of the year, before the season A harvest.
- At the time of the data collection, beans prices were higher than the five-year average.

4.1 Domestic food production

According to the EDPRS2, the agricultural sector retains the greatest potential to reduce poverty in Rwanda. There has been significant progress in the sector that has been guided by the National Agriculture Policy adopted in 2004, complemented by the Strategic Plan for Agricultural Transformation (SPAT) in Rwanda, currently in its third phase (2013-2018), and the Comprehensive Africa Agriculture Development Programme (CAADP) II. Rwanda was the first country to adopt and implement the CAADP framework in 2007 and to receive international funding for its implementation. Through the CAADP, Rwanda has committed at least 10 percent of the national budget to agriculture. The implementation of earlier SPATs and the CAADP resulted in agricultural production almost doubling between 2000 and 2012, with an annual average growth rate of 5.4 percent between 2008 and 2013.[20]

The government's Crop Intensification Programme (CIP)[21], which includes land use consolidation, improved seed and fertilizer and access to extension services, has led to improved cultivation practices. However, crop yields remain below potential and the vast majority of land remains under subsistence farming using traditional manual practices with very little use of irrigation systems. This implies that food production across the country will continue to be impacted by rainfall variability. Adverse climatic conditions, notably excessive rainfall and dry spells along with pests and diseases, remain the main risk to the agricultural sector and food security in the country.

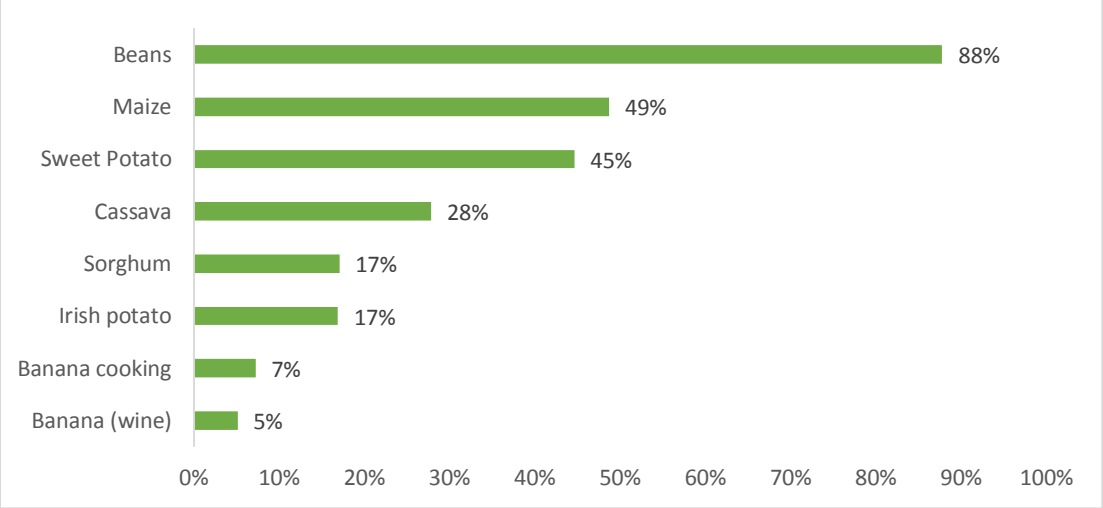
This CFSVA has found that 74 percent of households in Rwanda practice agriculture (including 88 percent of rural households). Of those households, 97 percent had cultivated at least one crop in the agricultural year preceding the survey. The findings confirm that the majority of agricultural households (93%) do not irrigate their land, underlining the impact that weather conditions will have on households' agricultural production and food security. Some 56 percent of households are using

[20] World Bank. Rwanda Economic Update February 2015. Managing Uncertainty for Growth and Poverty Reduction with a Special Focus on Agricultural Sector Risk Assessment.
[21] http://www.minagri.gov.rw/index.php?id=618

fertilizers or pesticides, with most of these households using only fertilizers and only 15 percent of farming households using both fertilizers and pesticides.

Most crops are annual (84%) while 16 percent are perennial. As Figure 5 shows, the vast majority of agricultural households grow beans (88%), followed by maize (49%) and sweet potatoes (45%). On average, households grow three different crops.

Figure 5: Percentage of households growing each crop, among households growing one or more crops



Source: Rwanda CFSVA 2015

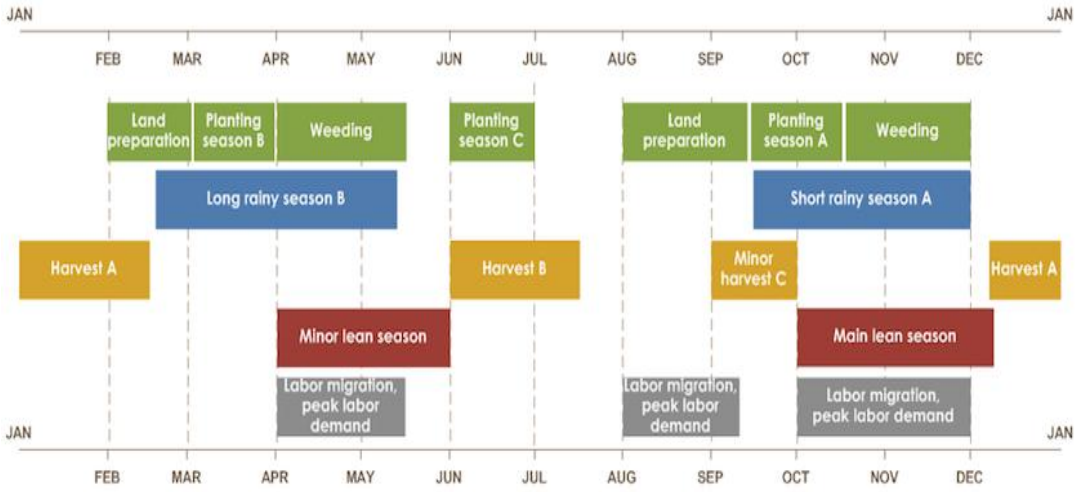
Commodity production varies by geographical area. The Northern and Western Provinces are surplus areas for Irish potatoes, while northern and eastern areas are the major sources of maize. Beans are generally sourced from all over the country, but localized deficits are significant in south-western zones. Cassava is mostly produced in south-eastern areas, while sweet potatoes are also common countrywide despite their progressively reduced importance in favour of selected crops in the "Crop Intensification Program".[22]

Rwanda has two distinct agricultural seasons, with a third minor season related to households that cultivate in marshland areas during the drier season (see Figure 6).

- Agricultural Season A: starts in September and ends in February of the following calendar year, with the main harvest in December to February
- Agricultural Season B: starts in March and ends in July of the same calendar year with main harvest in June-July
- Agricultural Season C starts in August and ends in September of the same calendar year with the harvest taking place in September

[22] National Institute of Statistics of Rwanda, Seasonal Agriculture Survey Report 2013, page 52 of 125

Figure 6: Seasonal calendar for Rwanda



Source: FEWS NET

The two most important crops with a clear seasonal pattern for planting and harvesting are beans and maize. According to information from sampled villages in the CFSVA, beans are planted two times a year, in September-October and in February-March. Beans are harvested from December to February and from May to July. Maize is mainly planted in September, and in a smaller number of villages also in February. The main maize harvest is in January to March while in a few of villages it is also harvested in June and July.

In the agricultural year before the survey, the majority of crops that households grew were cultivated in season A and B, 83 percent and 73 percent respectively, while only 15 percent of crops cultivated by households were grown in season C.

At the national level, Table 3 below shows the aggregate volume of seasonal agricultural production since 2013. Despite a lack of a long-term data series that is comparable with the most recent data, production volumes exhibit a downward trend during the two main seasons A and B for roots and tubers and bananas. However, compared with 2013 production, cereal production increased by 15 percent in season A 2014 and by 19 percent in season A 2015. Legumes and pulses were maintained at relatively stable levels.[23]

Table 3: Agricultural production (MT) 2013 to 2015

	2013			2014			2015
	Season A	Season B	Season C	Season A	Season B	Season C	Season A
Cereal	309,700	392,583	-	357,024	226,073	-	369,966
Tubers and Roots	1,423,805	1,885,447	74,864	1,284,816	1,280,959	115,841	1,319,108
Banana	1,216,873	1,513,922	-	941,207	863,442	-	983,989
Legumes and Pulses	254,447	188,221	1,833	262,032	197,493	3,641	275,498
Vegetables and Fruits	134,843	129,832	26,440	167,762	127,291	38,731	165,144

Source: National Institute of Statistics Rwanda

[23] National Institute of Statistics of Rwanda

4.2 Food stocks

To curb potential shocks related to the food supply, the government has put in place the National Strategic Grain Reserve (NSGR). Its main objective is to effectively and efficiently provide food commodities to support emergency response, food security and the government's humanitarian obligations that impact the availability, access and utilization of food on the part of all of Rwanda's citizens and other people resident in the country. The government is set to commit financial resources to rebuild the reserve after an emergency, and in the event that no emergency happens, regular stock rotation occurs.

The grain reserve has a storage capacity of 39,000mt and is required to cover emergency needs for 10 percent of the population for a period of three months; needs being a minimum ration of cereals (maize), legumes and pulses (at a daily rate of 2kg per household for cereals and 0.75kg for legumes and pulses). The strategic grain reserve can be used either in food emergencies as a result of any external event destroying food supplies, or in times of a shortfall in production that causes increased food prices. The strategic grain reserve can then release food to the markets to lower food prices.[24]

At the household level, the 2015 CFSVA found that the average stock duration reported was 1.9 months for season A, 1.6 months for season B and 1.2 months for season C.

4.3 Market environment and trade

The overall market and trade policy environment in Rwanda is supportive and more is gradually being achieved in terms of addressing issues related to markets and trade. However, a number of constraints linked with post-harvest losses, physical access, storage facilities, handling perishable commodities and unpredictable non-tariff barriers are still prevalent. Most of these challenges relate to rules and regulations imposed by the regional economic blocks of which Rwanda is a member. For instance, delays in reforming legislation, rules and procedures by individual member states are one reason for the slow implementation of the Customs Union and Common Market with regard to elimination of non-tariff barriers. These barriers result in farmer disincentives regarding agricultural production, adversely affecting consumers and undermining efficient trade flows.[25]

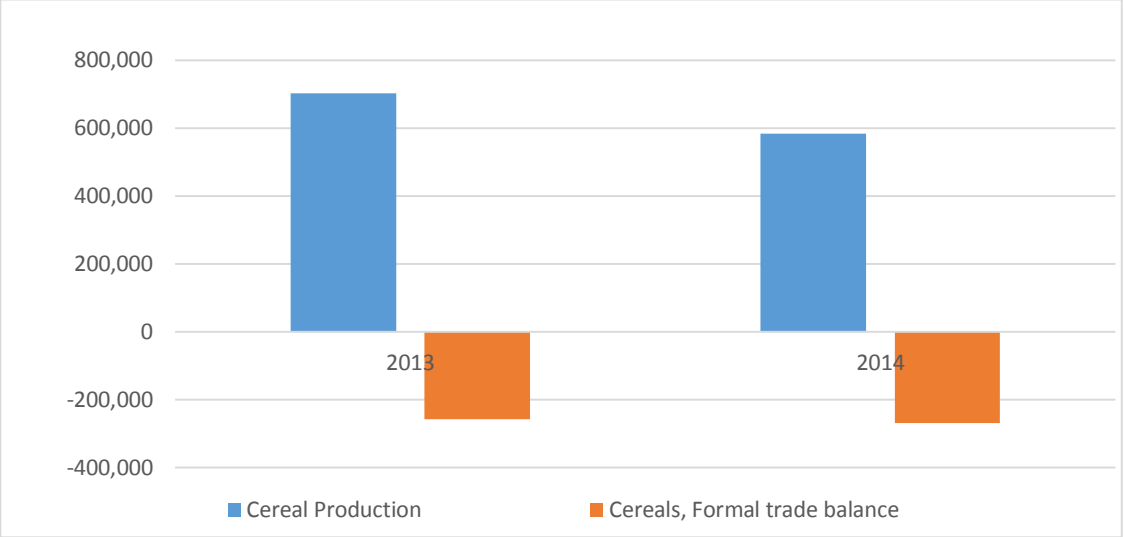
4.3.1 IMPORT/EXPORTS

During 2014, Rwanda's main formal exports were coffee, tea and minerals, while main imports were telephones for cellular networks or for other wireless uses, Portland cements, medicaments in measured doses for retail sale, vegetable fats and oils and their fractions and sugar, not containing added flavouring or colouring matter. The top five domestic export partner countries were Democratic Republic of Congo, Austria, Kenya, Switzerland and the United States of America; on the imports side, partner countries were mostly in the EAC and Asia.[26]

The formal trade of cereals showed a negative trade balance in both 2013 and 2014, with more cereals imported than exported. The balance was about -268,000mt in 2014 (the total production of cereals in Rwanda in 2014 was about 583,000mt (Figure 7)). In 2014, the top three importers of cereals were Bakhresa Grain Milling (Rwanda) Limited, Pembe flour mills (Rwanda) SARL and MINAGRI.[27] The first two are active in agro-processing, while the latter mainly focuses on whole grains and rebuilding the national strategic grain reserve among other priorities.

[24] National Strategic Grain Reserve Operations and Procedures Manual.
[25] Panos Kondreas, Ramesh Sharma, and Alessandro Constantino. Study on the Regional Food Security and Common market policy of East African Community. Preliminary findings. IBF International Consulting.
[26] National Institute of Statistics of Rwanda (NISR); Formal external trade in goods statistics annual report, 2014.
[27] National Institute of Statistics of Rwanda (NISR)

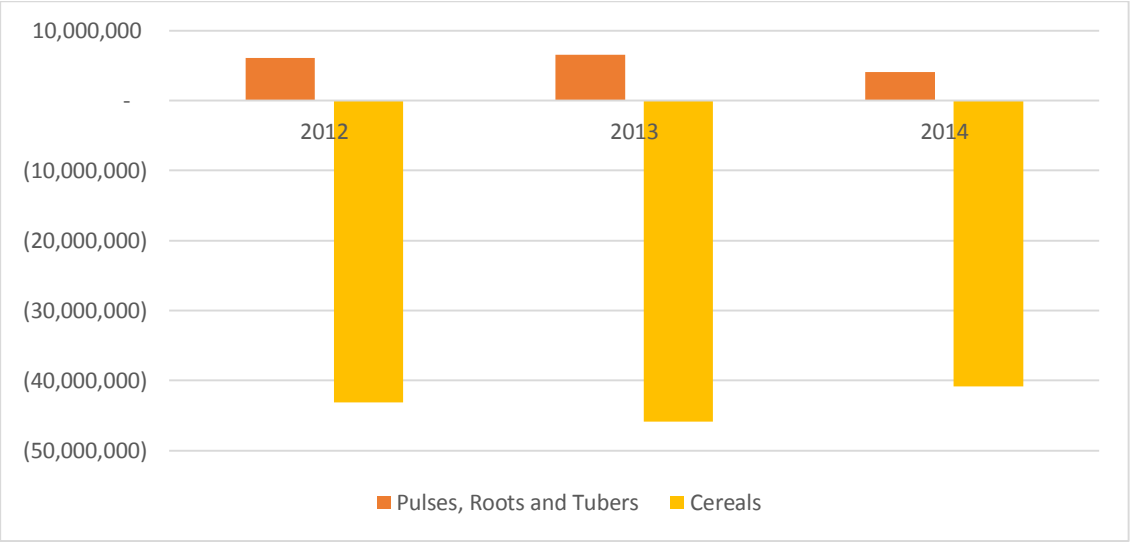
Figure 7: Cereal production vs formal trade balance (MT)



Source: National Bank of Rwanda (BNR) and National Institute of Statistics (NISR)

Informal trade takes place with neighboring countries (Uganda, Tanzania, Democratic Republic of Congo and Burundi) and involves mainly staple commodities for domestic consumption.[28] While the formal trade balance is negative, informal trade offers a different picture and could potentially reduce Rwanda's total merchandise trade deficit by 3 percent. [29] As shown in Figure 8, cereals are the main food commodity imported in Rwanda, while pulses, roots and tubers are more commonly exported. The trade balance, especially for cereals, has remained negative as per the figure below, despite the season A cereal production increase seen since 2013.

Figure 8: Trade balance (formal and informal) for staple commodities 2012-2014 ('000 RWF)



Source: National Bank of Rwanda

[28] USAID; Rwanda cross-border agricultural trade analysis, 2013.
[29] MINICOM; National cross-border trade strategy 2012-2017-a comprehensive strategy to support Rwanda's exports to neighboring countries. 2012.

According to the National Bank of Rwanda, informal cross-border exports reduced slightly between 2012/13 FY and 2013/14 FY, but are still a significant contributor to overall exports, representing around 18 percent of formal exports. Informal cross-border trade imports decreased by 19 percent mainly due to a newly instated Visa requirement for entry into DRC. Cross-border trade is mainly done with Uganda and DRC, with the trade in commodities dominated by crop products and live animals.[30]

4.4 Market access, market dependence and purchasing behaviour of households

Households' access to markets is determined by both their physical and economic access. Road networks and market infrastructure are being improved, but more effort is urgently needed to connect the most remote areas. Market purchases are the main source of food for most households. However, despite stable inflation rates, most poor households cannot afford to access adequate diets and face persistent food security challenges.

4.4.1 HOUSEHOLD MARKET PARTICIPATION

The larger part of crops cultivated by households are consumed by households themselves. On average, among crop growing households, 73 percent of produce is consumed within the household, while 19 percent is sold at the market.[31] These figures are similar to those from the 2012 CFSVA, which found that households were consuming 71 percent of their produce and selling 23 percent. In the 2015 CFSVA, households in the Eastern Province reported the highest share of crop produce sold (24 percent), while those in the Western and Northern provinces sold a lower share (15 percent and 16 percent respectively). Households that are mostly selling their produce (>50 percent) are found in the wealthier segments of the population (based on asset ownership); 21 percent of households in the wealthiest quintile are mostly selling their produce compared with 5 percent in the poorest quintile.

According to the 2015 Nutrition, Markets and Gender (NMG) survey, some disparities have been observed between men and women in terms of decision-making regarding the use of agricultural income. In total, 65 percent of men interviewed in the study said that were involved in all decisions, versus 51 percent of women.[32]

Crop growing households do not produce enough to cover their food needs. As shown in Figure 9, on average 70 percent of household food is bought at the market, while only a quarter comes from households' own production. Other sources of food make up a small amount what is consumed. This high market dependence for food is not a new finding and is similar to the findings of the 2012 CFSVA (65 percent of households' food was sourced from the market, while 30 percent came from own production).[33]

[30] National Bank of Rwanda. Annual report 2013/2014.

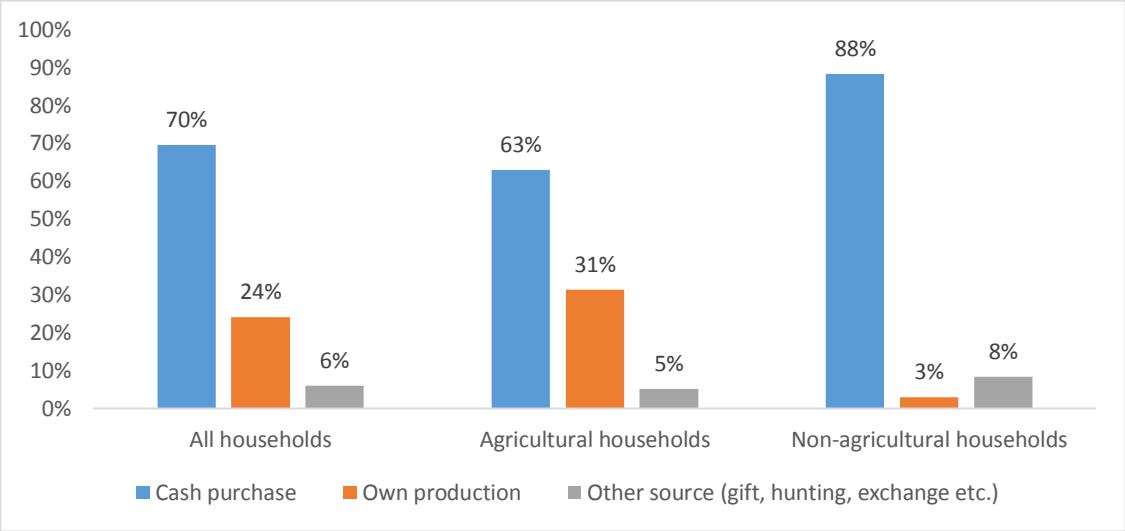
[31] Other use of crops are: given away, lost or other use.

[32] Nutrition, Markets and Gender survey: An integrated approach towards alleviating malnutrition among vulnerable populations in Rwanda. CIAT et *al,* 2015.
This was a case control survey, investigating determinants of malnutrition in children under 24 months in selected districts of Rwanda. The survey was conducted in nine sectors, one sector in every district, two districts in each of the four provinces and one district in Kigali city. Stunting risk factors resulting from underlying and immediate causes of malnutrition, including food, health, care, markets and household gender disparities are presented in the report.

[33] The methodology for calculating the sources of food have changed between 2012 and 2015, which means that the figures are not completely comparable between the years.

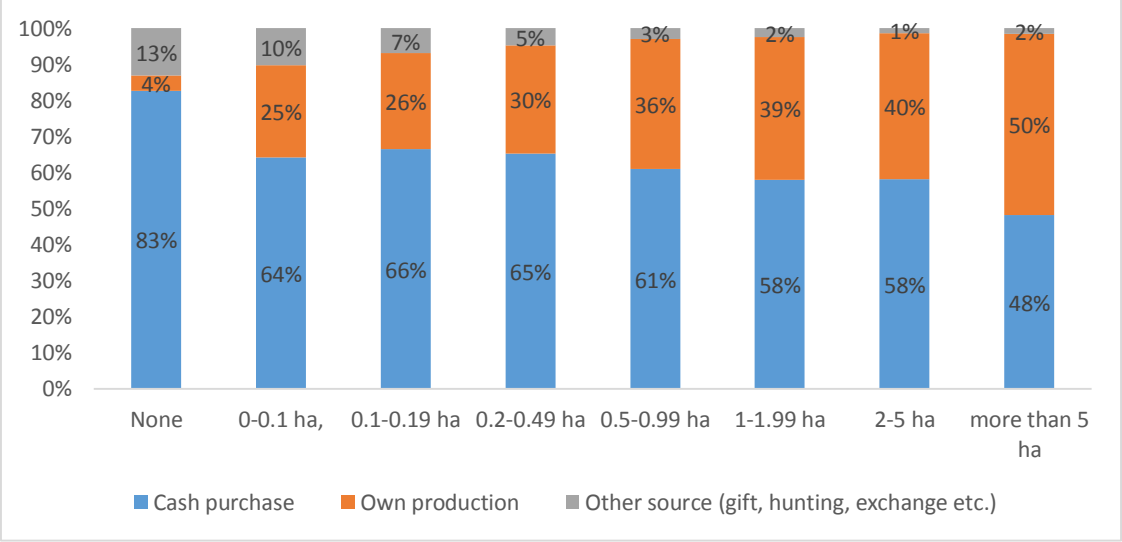
As expected, the share of food coming from own production is greater among households that practise agriculture, and increases in line with the size of the land owned (Figure 10). Still, for almost all households except those households (0.4%) that own more than 5ha of land, the market is the most important source of food.

Figure 9: Food sources, based on expenditures and the estimated monetary value of food from sources other than cash purchase



Source: Rwanda CFSVA 2015

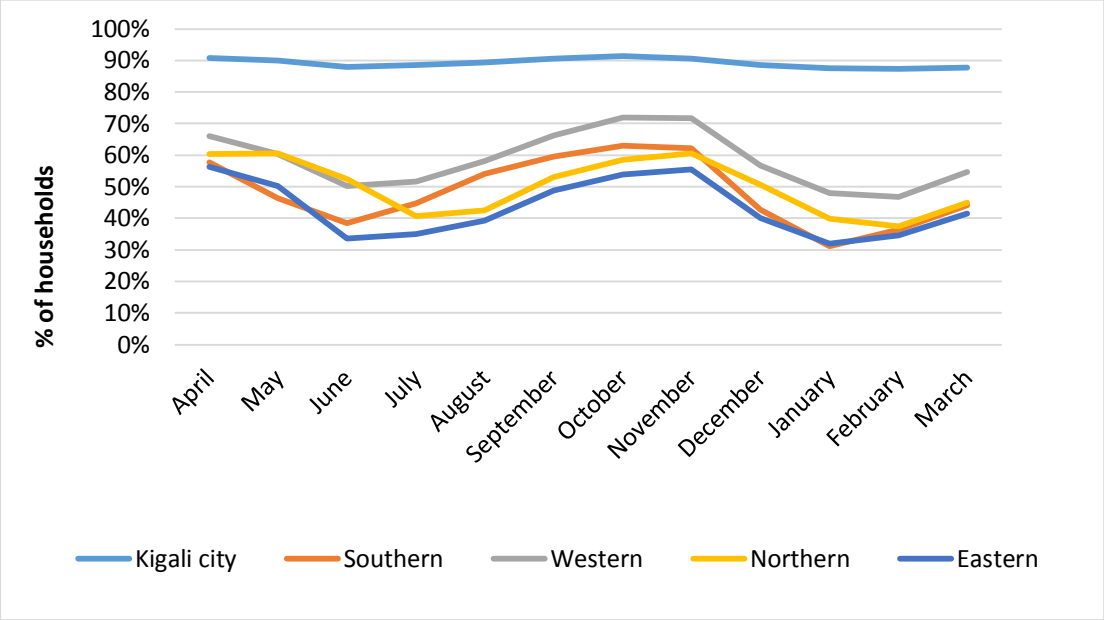
Figure 10: Percentage of food coming from purchase and own production, by size of land owned by the household



Source: Rwanda CFSVA 2015

The figures above provide information about households' food sources at the time data was collected for the CFSVA. However, food sources are not static over the year. Figure 11 below shows the seasonal change in the percentage of households that buy their beans. The percentage of households sourcing their beans from their own production peaks in June/July and from December to February, coinciding with harvest periods. In October/November and March, a higher percentage of households purchase beans. Households in Kigali show a different pattern with a high number of households buying their beans throughout the year with little seasonal variation.

Figure 11: Percentage of households buying beans at the market, by month



Source: Rwanda CFSVA 2015

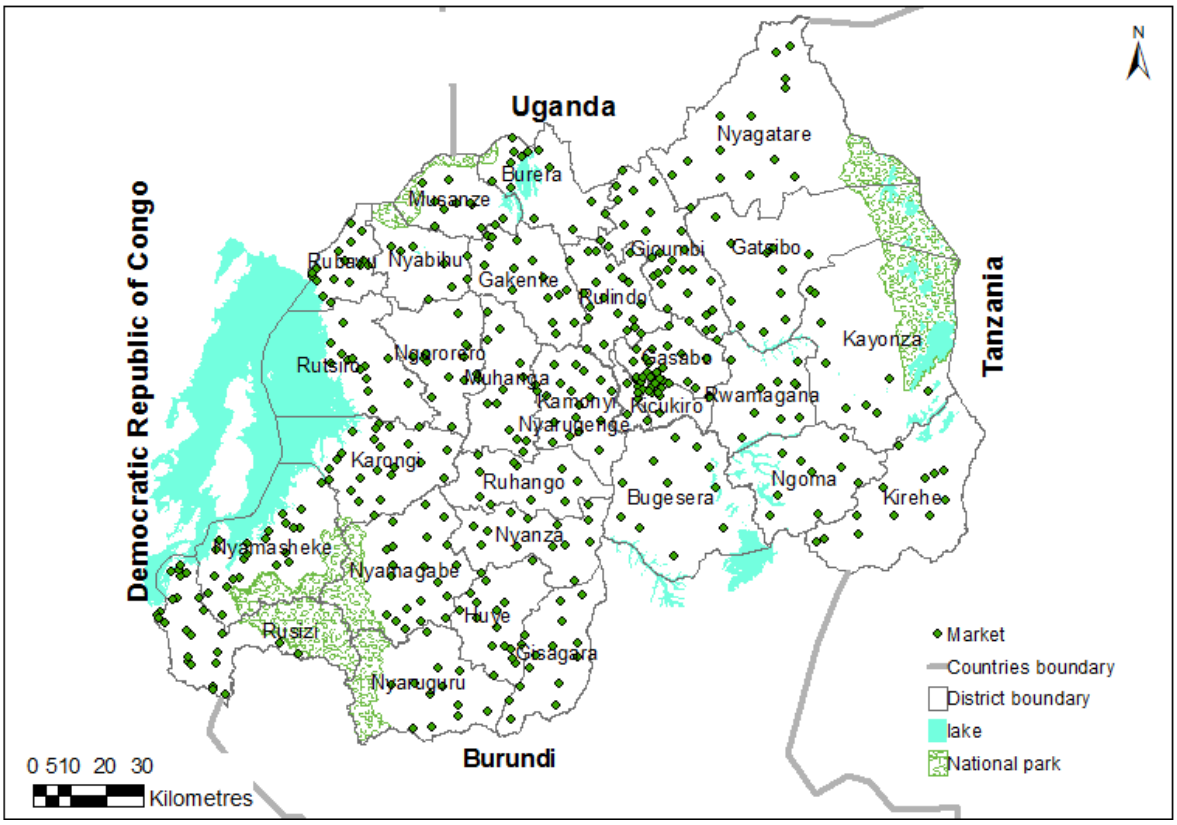
The pattern for cereals is similar to that for beans, with the clearest trend in the Eastern Province where 26 percent of households consume cereals as their preferred staple. The way households source roots, tubers and cooking bananas varies slightly over the year.

4.4.2 PHYSICAL ACCESS TO MARKET

Rwanda has a remarkable number of markets (about 450 in total), with at least one main market in each district (Map 2). Nonetheless, the 2015 CFSVA found that only six percent of the sampled villages had a market at the village level. In villages without a market, it took on average 78 minutes to reach the nearest market, and in 47 percent of districts it took longer than this. In villages without a market in Nyaruguru, Nyamagabe, Karongi, Rutsiro, Nyabihu, Ngororero, Nyamasheke, Gakenke, Nyagatare, Kayonza and Kirehe districts it took more than 90 minutes to reach the closest market.

In 63 percent of villages, the market is accessible all year round using transport other than walking. Villages in Gisagara, Nyaruguru, Ruhango, Ngororero, Musanze and Rwamagana have more difficulties in accessing their main market all year round other than by foot. The main barriers to accessing markets in the sampled villages were distance, high food prices, unpredictable price changes and poor roads.

Map 2: Location of markets in Rwanda



Source: NISR Spatial Database

4.4.3 HOUSEHOLD FOOD ACCESS ISSUES

Households were asked whether they had enough food or money to purchase food during the last 12 months, with those who did not being classified as having food access issues. Depending on the duration of the problems to access food and if the situation was considered normal or not, households were divided into three groups: those facing chronic, acute and seasonal food access issues.

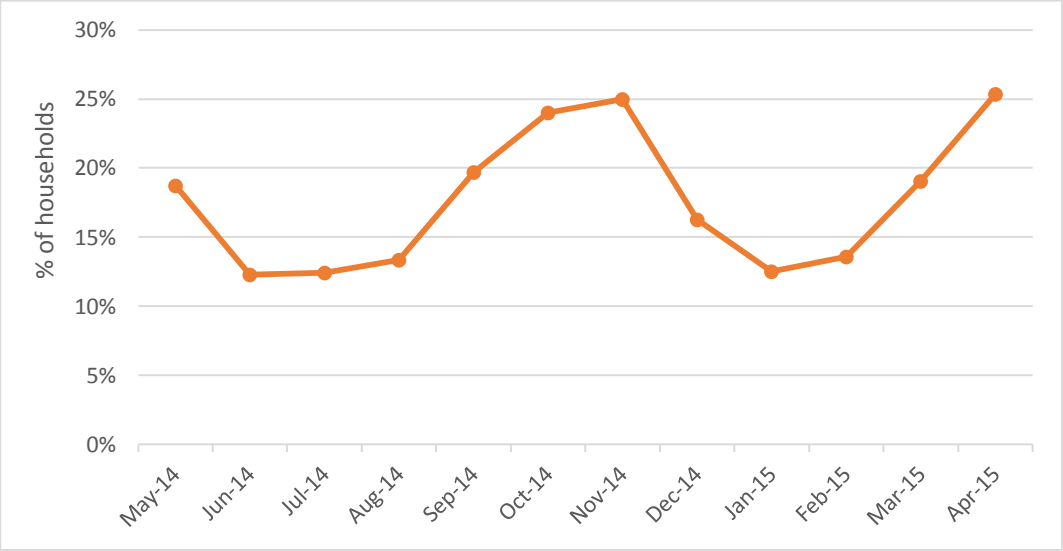
Chronic food access issues: Food access issues lasting for at least six months of the year and described as usual.

Acute food access issues: Food access issues experienced for a total of less than six months a year and not usual.

Seasonal food access issues: Food access issues recurrent for less than six months a year and considered usual.

In total, half of all households (50%) expressed that they had had difficulties in accessing food at some point during the past year. As seen in Figure 12, there is a clear seasonal pattern with a higher percentage of households experiencing food access issues during lean seasons twice a year, with the first lean period from September to November and the second from March until June.

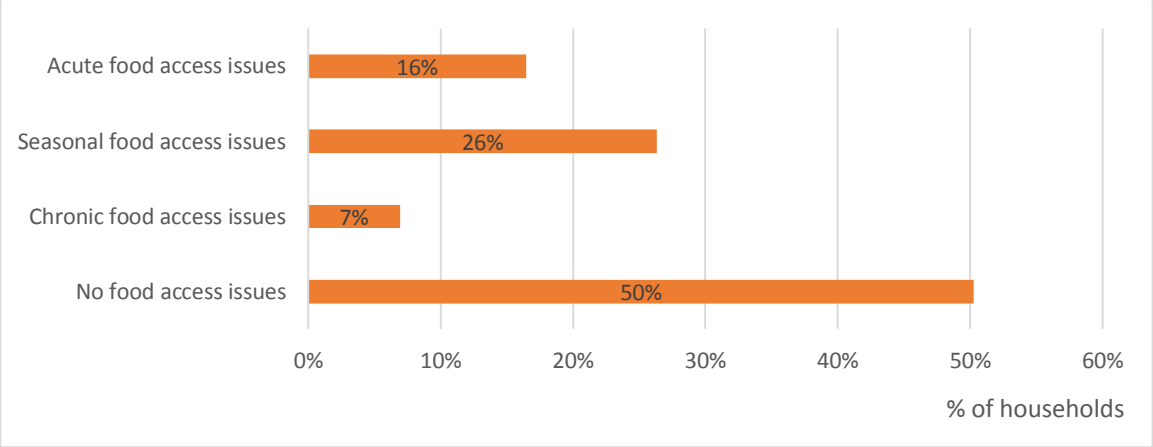
Figure 12: Households that experienced difficulties accessing food, by month



Source: CFSVA 2015

Among households that had experienced difficulties in accessing food, seasonal food access issues were most common (26% of all households) followed by acute food access issues (16%). Chronic food access issues were reported by only 7% of all households (Figure 13).

Figure 13: Type of food access issues



Source: CFSVA 2015

4.4.1 TERMS OF TRADE

For households mainly engaged in agricultural labour, their income in relation to food prices has a significant impact on their ability to access food. Households relying on unskilled agriculture daily labour are most commonly found in rural areas. Although there is a lack of long term data regarding casual labour wages, the 2015 CFSVA indicates a daily average of 780 RWF per person, with the lowest and highest daily wages being 548 and 1620 RWF respectively. Terms of trade ($wage_{1kg\ beans}$) is almost 1:2 meaning that with the average daily salary, one can purchase two kilograms of beans to feed a household for about three days. However, in 63 percent of districts, the daily wage is below the national average. In addition, households' purchasing power deteriorates as staple commodity prices increase.

4.5 Market performance

The functioning of markets is measured using information on market chains, price patterns and market integration, providing an understanding of the movement of food commodities and the ability of markets to smooth out supply and demand pressures. The analysis of price patterns provides an understanding of the seasonality of price trends and therefore when households are more likely to experience shocks related to increasing food prices.

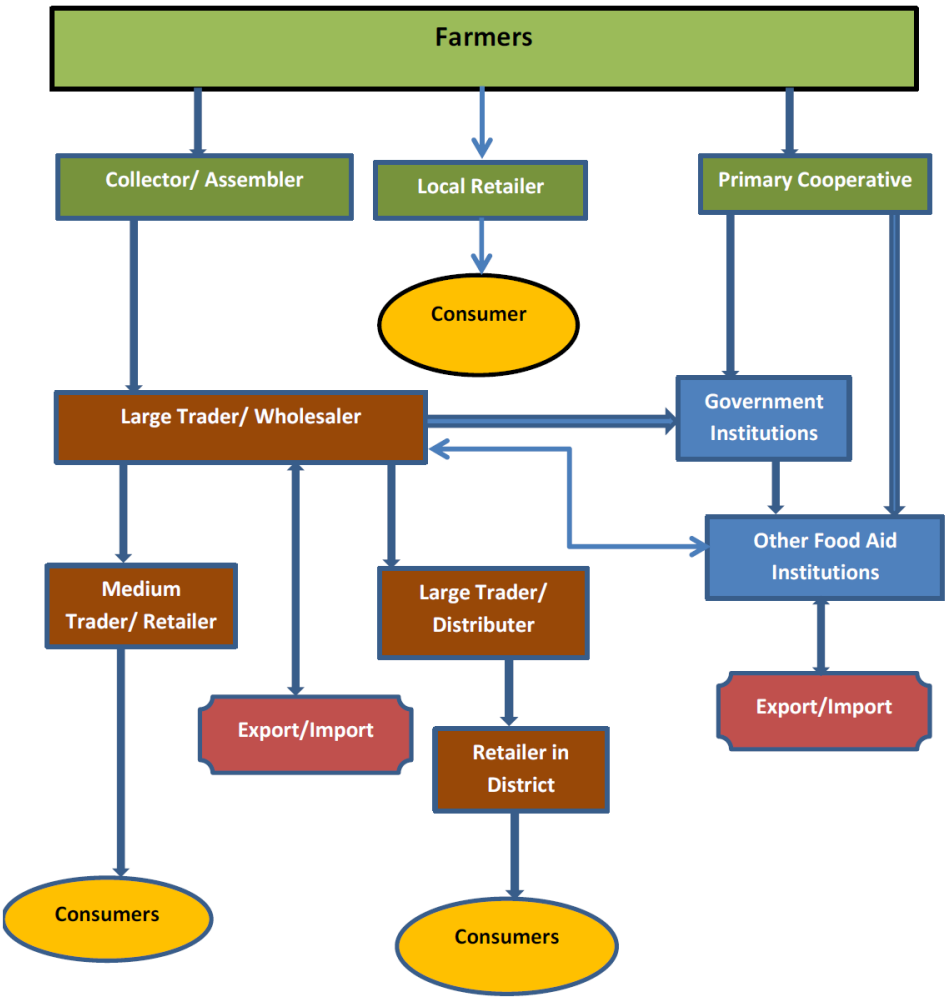
4.5.1 GENERAL TRADE FLOWS

The supply chains for the major commodities such as maize and beans tend to be short.[34] The main supply channel for maize begins with farmers selling to collectors and assemblers, who in turn supply wholesalers and processors. These provide commodities to medium and small scale traders who sell the product to the final consumer.

As shown by Figure 14, the supply chain for beans is comprised of three main supply channels: (1) through collectors and assemblers, (2) through local retailers and (3) through cooperatives and finally to the consumer.

[34] World Food Programme. Market Assessment 2014 – Towards a Market-Based Food Assistance to Refugees.

Figure 14: Supply chain of beans



Source: WFP Market assessment 2014

Larger traders are usually the ones providing transport and sometimes export or import goods. Food deficit districts have a slightly longer supply chain, as they are often supplied by other districts through Kigali. Other distribution channels include cooperatives buying from their members for sale to government institutions and relief agencies, or alternatively farmers selling to small traders in local markets. Perishable commodities such as potatoes, roots and tubers, bananas and vegetables have shorter supply chains as these products have to be sold more quickly.[35]

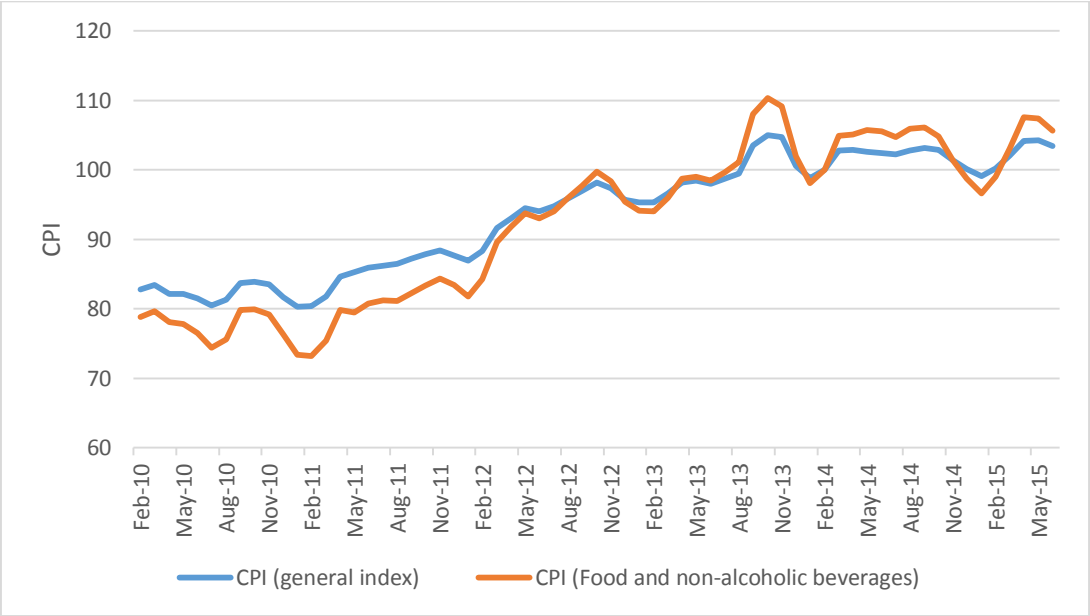
The 2015 CFSVA found that the main buyers of crops produced by households are traders in sector markets (34%), traders in village markets (23%) and individual consumers (18%). Other buyers are purchasers in the field (10%), traders in district market (8%) and cooperatives (7%).

[35] World Food Programme. Market Assessment 2014 – Towards a Market-Based Food Assistance to Refugees.

4.5.2 CPI/INFLATION

Since households are highly market-dependent for food, increasing food prices can have a significant impact on the food security of those households with low purchasing power. Food prices are the most important driver of inflation in Rwanda. After food inflation peaked at 30.9 percent during the global food price crisis in 2008, food inflation fell in 2010 to below pre-crisis levels. With increased inflation from the end of 2010 to 2012, inflation started to decrease again in the second half of 2012 as a result of falling food and energy prices combined with prudent monetary policy, declining import prices and decelerated inflation in the EAC region. This decrease in inflation continued through 2014. Energy prices remained low and stable which also contributed to lower inflation.[36] The decreased inflation trend reversed in the first half of 2015, during which there was increasing inflation. The Consumer Price Index[37] had risen 2.2 percent year-on-year in May 2015 (see Figure 15).[38]

Figure 15: Consumer price index (Reference: February 2014=100)



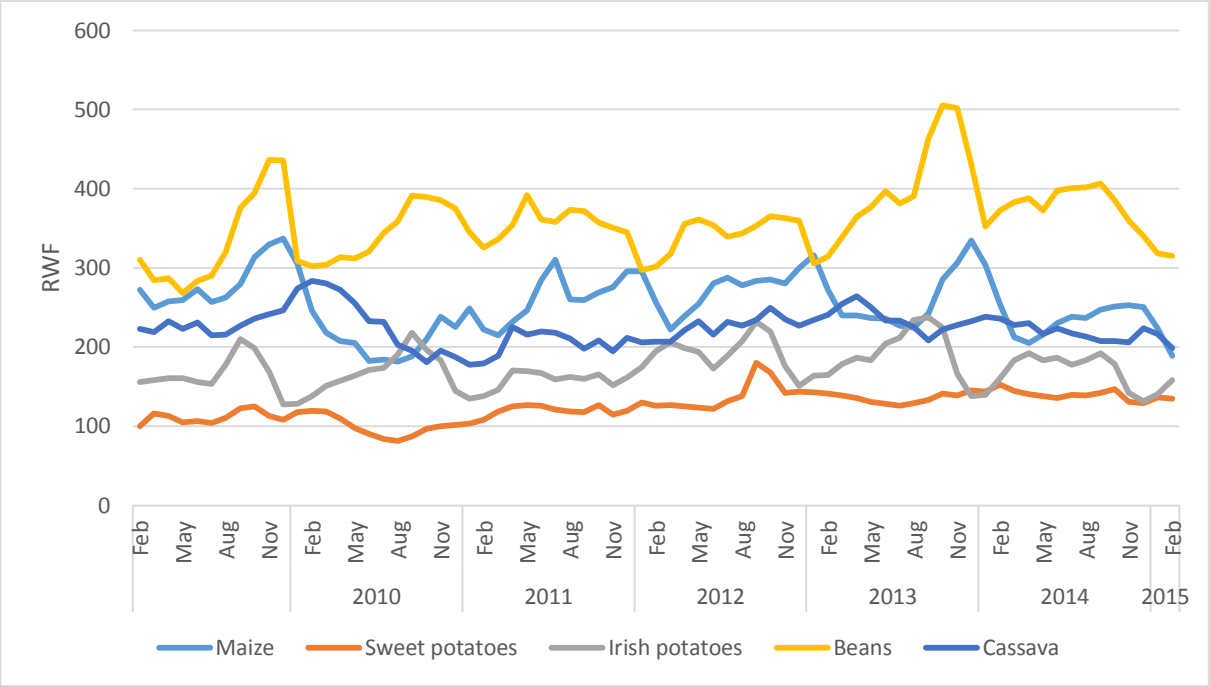
Source: National Institute of Statistics Rwanda

4.5.3 PRICE TRENDS AND SEASONALITY ANALYSIS

Seasonal price fluctuations are generally observed for annual crops, especially beans, maize and Irish potatoes. As shown by Figure 16 and Figure 17, bean prices mostly peak from September to December with a smaller peak in April, while they are lowest in January and August. These trends coincide with lean and harvest periods respectively. Maize prices are highest in January and lowest in September, while for Irish potatoes, prices are highest in September and lowest in July. Additionally, banana prices are higher in May and lower in August/September. The seasonality in prices is partly a result of a lack of storage. Given that households' purchasing power does not increase proportionally with seasonal price increases, lean periods, where most food is sourced from markets, are critical in terms of food access.

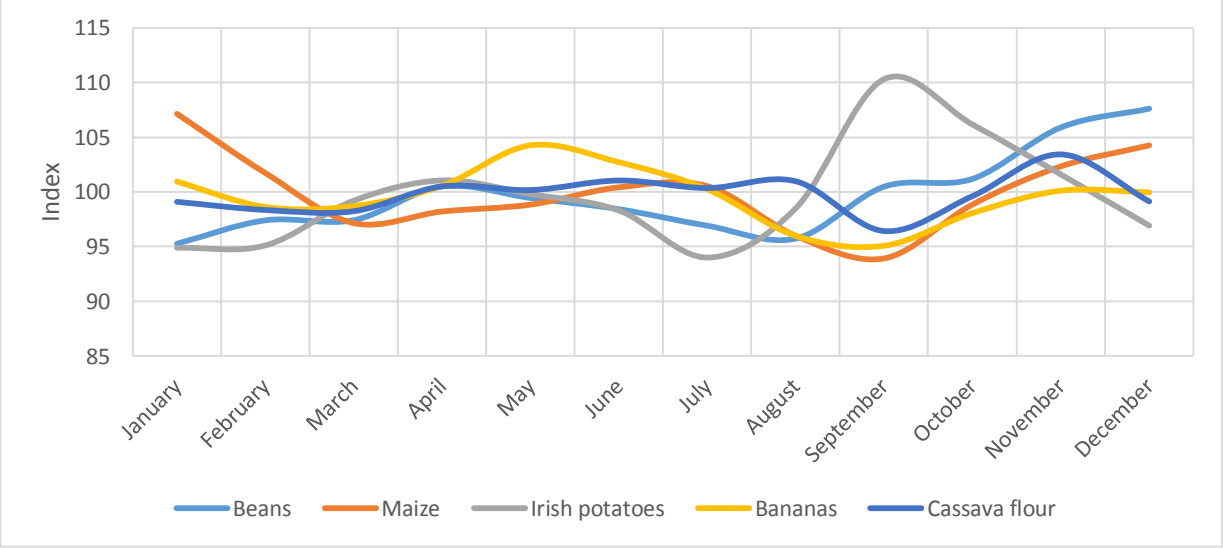
[36] World Bank. Rwanda Economic Update February 2015. Managing Uncertainty for Growth and Poverty Reduction with a Special Focus on Agricultural Sector Risk Assessment.
[37] The CPI is based on 1,022 items for which price information is collected on a monthly basis measuring the price level of a basket of consumer goods and services.
[38] National Institute of Statistics Rwanda: http://www.statistics.gov.rw/publications/article/rwandas-cpi-22-pct-year-year-may-2015

Figure 16: Price trends - Real prices (CPI reference February 2014)



Source: e-Soko/MINAGRI

Figure 17: Grand Seasonal Index for selected staples (2009-2014)



Source: WFP VAM calculations based on e-Soko/MINAGRI data

Given households' reliance on markets for food and the small share of their food produce sold, household food security is strongly related to food prices with poorer households far more vulnerable to fluctuating prices. Food prices for staple commodities such as maize and beans are generally increasing at the end of the year before the season A harvest. This is also the time of the year when household food stocks have run out and market dependency is highest. A drastic increase in food prices will therefore most likely push more households into food insecurity and only benefit the wealthiest farmers that are already selling most of their produce.

4.5.4 PRICE ANOMALIES

At the time of the survey, price anomalies for key staple commodities were observed in a significant number of markets across the country. In April 2015, bean prices were more than 10 percent higher than the five-year average in two thirds of selected key markets (Figure 18). Similarly, the same level of increase was observed in more than half of markets for Irish potatoes (Figure 20) and in more than 45 percent of markets for cassava flour (Figure 21). However, maize prices exhibited a variable trend across markets, with 37 percent of markets showing a decrease of about 10 percent compared with the five-year average, while about one in four markets showed an increase (Figure 19).

Figure 18: Beans, percentage change April 2015 prices vs. five-year average for April

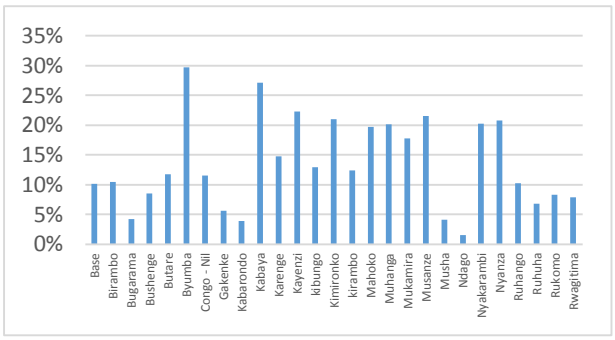


Figure 19: Maize, percentage change April 2015 prices vs. five-year average for April

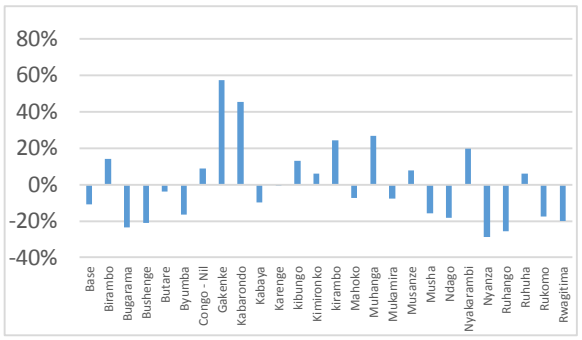


Figure 20: Irish potato, percentage change April 2015 prices vs. five-year average for April

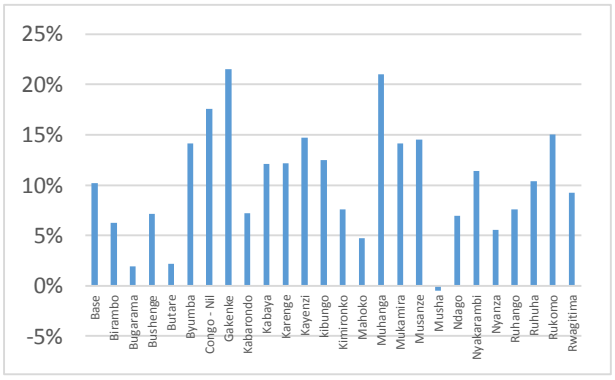
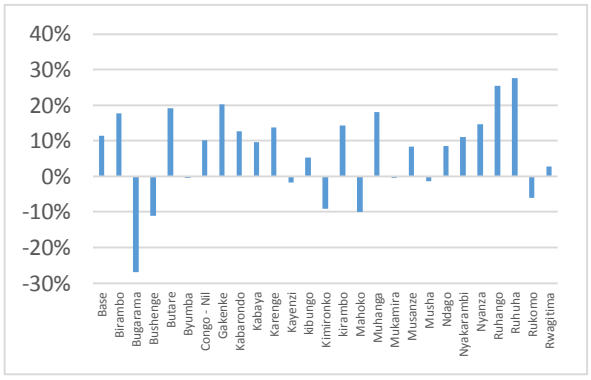


Figure 21: Cassava flour, percentage change April 2015 vs. five-year average for April



Source: e-Soko/MINAGRI

4.5.5 MARKET INTEGRATION ANALYSIS

The level of integration of markets was calculated using the correlation of food prices over time in different markets.[39] Considering at least one market per province, beans show the highest level of integration (0.8) on average (see Table 4). Despite continuous localized production deficits, beans are produced in all parts of the country and are commonly consumed across wealth groups and geographical zones. In addition, the commodity is significantly exchanged among markets, which is the main reason for the high level of market integration.

[39] Analysis of market integration is based on food price data collected by MINAGRI

Table 4: Integration of beans markets

	Byumba (North)	Kabaya (West)	Kimironko (Kigali)	Muhanga (South)	Mukamira (West)	Musanze (North)	Ndago (South)	Ruhuha (East)	Rwagitima (East)
Byumba (North)	1.00								
Kabaya (West)	0.88	1.00							
Kimironko (Kigali)	0.83	0.93	1.00						
Muhanga (South)	0.90	0.90	0.91	1.00					
Mukamira (West)	0.94	0.93	0.88	0.91	1.00				
Musanze (North)	0.83	0.94	0.85	0.82	0.90	1.00			
Ndago (South)	0.97	0.91	0.86	0.92	0.93	0.86	1.00		
Ruhuha (East)	0.93	0.82	0.83	0.93	0.85	0.80	0.95	1.00	
Rwagitima (East)	0.86	0.83	0.90	0.90	0.84	0.77	0.89	0.88	1.00

Source: WFP VAM calculations based on e-Soko/MINAGRI data

For maize grain, the average correlation coefficient for prices between markets is 0.7. The results show that Muhanga market appears to be less integrated market (Table 5). Although recent production data indicate a slight increase in domestic maize production, imported maize still accounts for an important share in the national market supply, which might be the reason for integration issues in some markets.

Table 5: Integration of maize markets

	Byumba (North)	Kabaya (West)	Kimironko (Kigali)	Muhanga (South)	Mukamira (West)	Musanze (North)	Ndago (South)	Ruhuha (East)	Rwagitima (East)
Byumba (North)	1.00								
Kabaya (West)	0.65	1.00							
Kimironko (Kigali)	0.60	0.86	1.00						
Muhanga (South)	0.15	0.33	0.71	1.00					
Mukamira (West)	0.80	0.90	0.94	0.53	1.00				
Musanze (North)	0.69	0.95	0.88	0.37	0.89	1.00			
Ndago (South)	0.79	0.64	0.75	0.41	0.86	0.60	1.00		
Ruhuha (East)	0.53	0.85	0.84	0.43	0.79	0.89	0.54	1.00	
Rwagitima (East)	0.67	0.72	0.74	0.33	0.75	0.83	0.51	0.82	1.00

Source: WFP VAM calculations based on e-Soko/MINAGRI data

There is a high level of market integration for Irish potatoes, with an average coefficient of 0.8. However, Ndago market is less integrated than average with markets such as Kabaya, Kimironko, Muhanga, Mukamira and Musanze markets. The most likely underlying causes for low levels of integration for this commodity are linked to local production, purchasing power and consumption patterns. Irish potatoes are not intensively cropped around Ndago market and are not commonly demanded since there are other cheaper, starchy substitutes such as sweet potatoes, banana and cassava.

Cassava is mainly supplied to other parts of the country by south-eastern zones, mainly Ruhango, Kamonyi, Muhanga and Bugesera. The average correlation coefficient for this commodity (0.1) is the lowest compared with other selected staples (maize, beans, Irish potatoes and cooking bananas).

5. The state of food security in Rwanda

KEY MESSAGES

- 80 percent of households in Rwanda are food secure and 20 percent are food insecure, according to the CARI index.
- The majority of households eat vitamin A-rich and protein-rich food daily, but only four percent consume hem iron rich food daily.
- Average household bean consumption fell between 2012 and 2015, probably because of relatively high prices.

5.1 Household food security

The CARI methodology combines a suite of food security indicators into a summary indicator. Each household is classified into one of four categories: food secure, marginally food secure, moderately food insecure, and severely food insecure (refer to Table 2 for descriptions of the categories). In general, these can be combined into two groups – food secure (including food secure and marginally food secure households), and food insecure (including moderately food insecure and severely food insecure households). Based on the CFSVA 2015, the CARI console for Rwanda is summarised in Table 6.

Table 6: The CARI Food security console, summary table of indicators included in the CARI and scores

CARI Reporting Console					
Domain	Indicator	Food Secure	Marginally Food Secure	Moderately Food Insecure	Severely Food Insecure
Current Status	Food Consumption Score	74 *(acceptable)*		19 *(borderline)*	7 *(poor)*
Coping Capacity	Food Expenditure Share	27 *(<50%)*	21 *(50-64%)*	15 *(65-74%)*	37 *(<75%)*
	Livelihood Coping Strategies	59 *(no coping)*	20 *(stress)*	17 *(crisis)*	4 *(emergency)*
Food Security Index		**40.0**	**40.2**	**16.8**	**2.6**

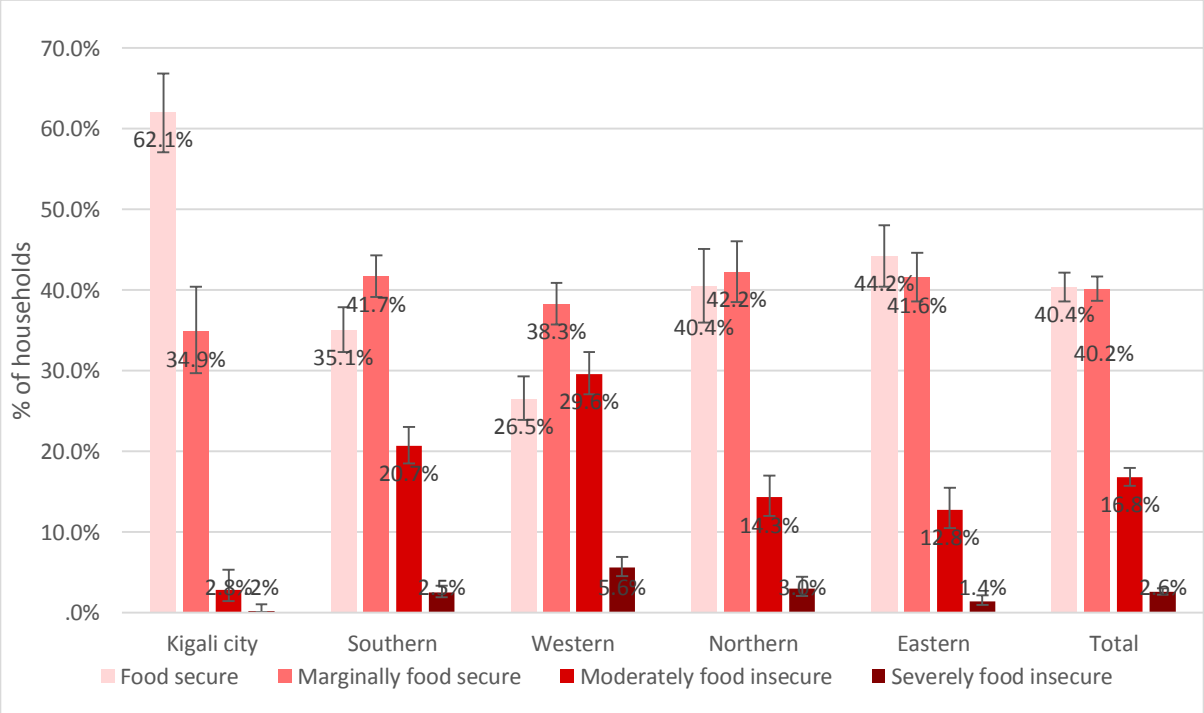
Source: Rwanda CFSVA 2015

At the time of the survey, 80 percent of all households were considered food secure and 20 percent food insecure according to the CARI food security index (Table 6). Among the 80 percent of households deemed food secure, 40 percent are found in the first group “food secure”. These are food secure households with little risk of becoming food insecure.

The remaining households (40%) fall into the second category, “marginally food secure”: these households are food secure based on their current food consumption, but with a lower coping capacity than the first group and greater vulnerability to the impact of shocks. Of the 20 percent of households considered food insecure, 17 percent are moderately food insecure and three percent are severely food insecure.

At the provincial level, the highest percentage of food secure households is found in Kigali city, while the lowest percentage of food secure households is found in the Western Province. More than a third of all food insecure households reside in districts in the Western Province. This is also the province with the highest percentage of severely food insecure households (6%). This pattern is similar to the findings of the 2012 CFSVA, with the Western Province identified as the most food insecure area followed by the Southern and Northern Provinces with similar levels of food insecure households, while households in the Eastern Province are generally more food secure.

Figure 22: Food security status by province based on CARI food security index (CI: 95%)



Source: Rwanda CFSVA 2015

The districts with the highest percentage of food insecure households are Rutsiro (57%), Nyamagabe (42%), Nyabihu (39%), Nyaruguru (37%), Rusizi (36%), Karongi and Nyamasheke (both 35%).

Table 7: Percentage and number of food insecure households by province and district

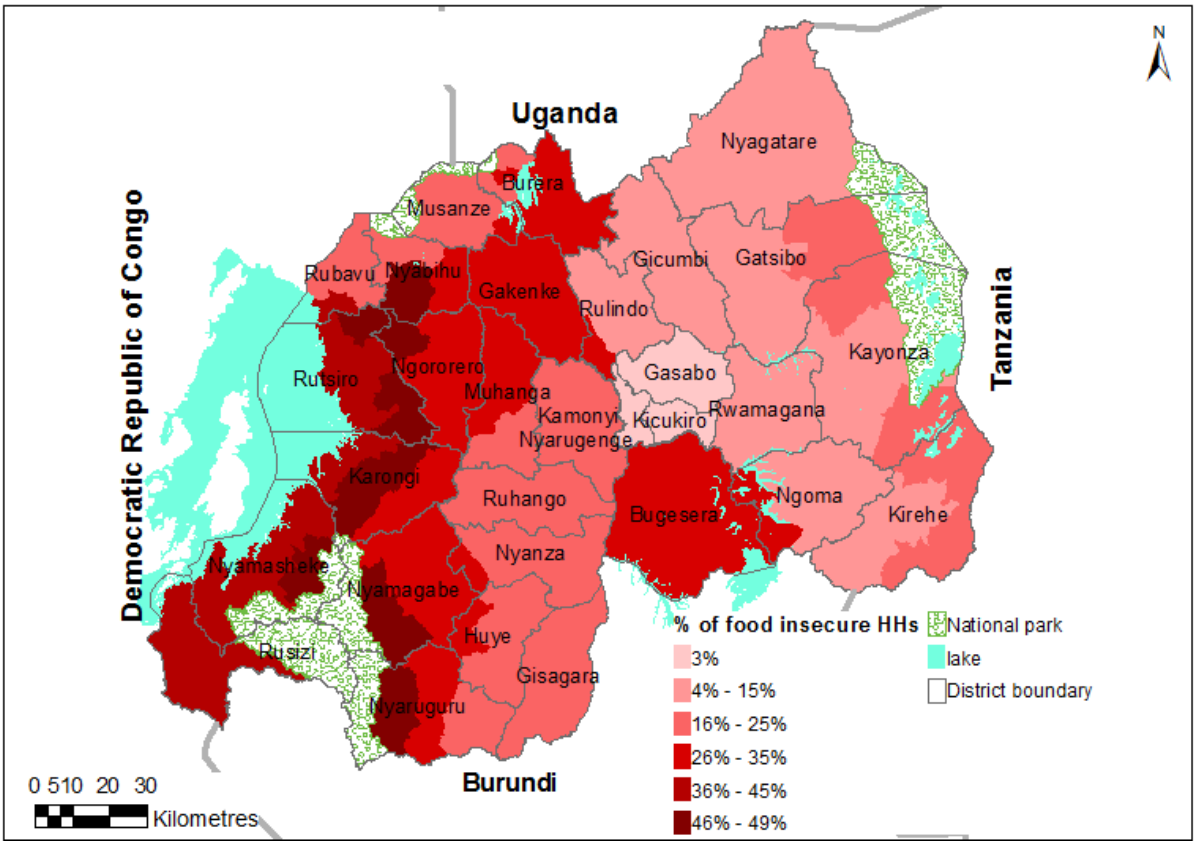
	HOUSEHOLD FOOD SECURITY STATUS								
	Food secure		Marginally food secure		Moderately food insecure		Severely food insecure		Total
	%	Households	%	Households	%	Households	%	Households	
RWANDA	**40%**	**979,707**	**40%**	**973,855**	**17%**	**407,978**	**3%**	**63,358**	**2,424,898**
PROVINCE									
Kigali city	62%	177,991	35%	99,966	3%	8,041	0%	666	286,664
Southern	35%	211,813	42%	251,843	21%	124,965	3%	15,178	603,800
Western	26%	143,954	38%	208,013	30%	160,950	6%	30,577	543,494
Northern	40%	158,338	42%	165,438	14%	56,079	3%	11,813	391,668
Eastern	44%	265,053	42%	249,140	13%	76,584	1%	8,496	599,272
DISTRICT									
Nyarugenge	60%	43,194	38%	27,689	2%	1,397	0%	0	72,280
Gasabo	64%	87,204	33%	45,450	3%	4,491	0%	0	137,146
Kicukiro	62%	47,629	35%	26,698	3%	2,181	1%	731	77,238
Nyanza	37%	28,426	30%	23,181	30%	23,183	4%	2,732	77,522
Gisagara	34%	26,049	46%	35,422	17%	13,504	3%	2,283	77,259
Nyaruguru	35%	22,316	28%	18,125	32%	20,147	5%	3,025	63,613
Huye	30%	23,392	54%	42,155	13%	9,797	3%	2,571	77,915
Nyamagabe	11%	7,868	47%	34,952	37%	27,716	6%	4,312	74,848
Ruhango	30%	22,997	44%	34,227	24%	18,825	1%	918	76,968
Muhanga	43%	32,071	47%	35,372	10%	7,764	0%	0	75,207
Kamonyi	57%	45,490	32%	26,121	10%	8,383	1%	474	80,468
Karongi	30%	21,825	35%	25,804	29%	21,036	6%	4,661	73,326
Rutsiro	13%	9,270	30%	21,285	48%	34,452	9%	6,260	71,267
Rubavu	30%	26,445	44%	39,010	22%	19,446	4%	3,949	88,849
Nyabihu	29%	19,061	32%	20,938	32%	21,153	7%	4,703	65,855
Ngororero	39%	30,848	37%	29,571	22%	17,665	1%	879	78,963
Rusizi	18%	14,557	47%	38,752	30%	25,085	6%	4,786	83,180
Nyamasheke	28%	22,666	38%	31,196	28%	22,743	7%	5,448	82,054
Rulindo	50%	33,471	42%	28,488	7%	4,847	1%	646	67,453
Gakenke	27%	21,604	50%	39,809	21%	16,513	2%	1,834	79,760
Musanze	44%	37,251	36%	30,648	15%	12,840	5%	4,017	84,756
Burera	41%	30,394	31%	22,996	21%	15,582	6%	4,652	73,624
Gicumbi	34%	28,959	53%	46,026	12%	10,109	1%	980	86,075
Rwamagana	46%	34,075	43%	32,151	9%	6,690	2%	1,259	74,175
Nyagatare	56%	59,347	32%	34,048	11%	11,277	1%	694	105,365
Gatsibo	27%	25,960	58%	55,944	12%	11,247	3%	3,170	96,320
Kayonza	46%	36,893	43%	34,924	10%	8,179	1%	521	80,517
Kirehe	31%	24,168	53%	40,968	15%	11,335	2%	1,408	77,879
Ngoma	51%	40,445	40%	31,687	9%	6,919	1%	596	79,647
Bugesera	41%	34,786	31%	26,184	27%	22,923	2%	1,477	85,369

Source: Rwanda CFSVA 2015 & Local Government

An analysis of food security by livelihood zone shows that areas in the western and southern parts of the country are more affected by food insecurity than those in the eastern part of the country. The highest percentage of food insecure households is found in the **Western Congo-Nile Crest Tea Zone** (49%), situated in a mountainous area between Lake Kivu coffee zone and East Congo-Nile highland farming zone. in the Lake Kivu Coffee Zone and the Northern Highland Beans and Wheat Zone, 37 and 32 percent of households respectively are found to be food insecure.

The prevalence of food insecurity is lowest in Kigali, while the South-Eastern Plateau Banana Zone and Eastern Agro-pastoral Zone also show low levels of food insecurity (11 percent and 12 percent respectively).

Map 3: Food insecurity by livelihood zones



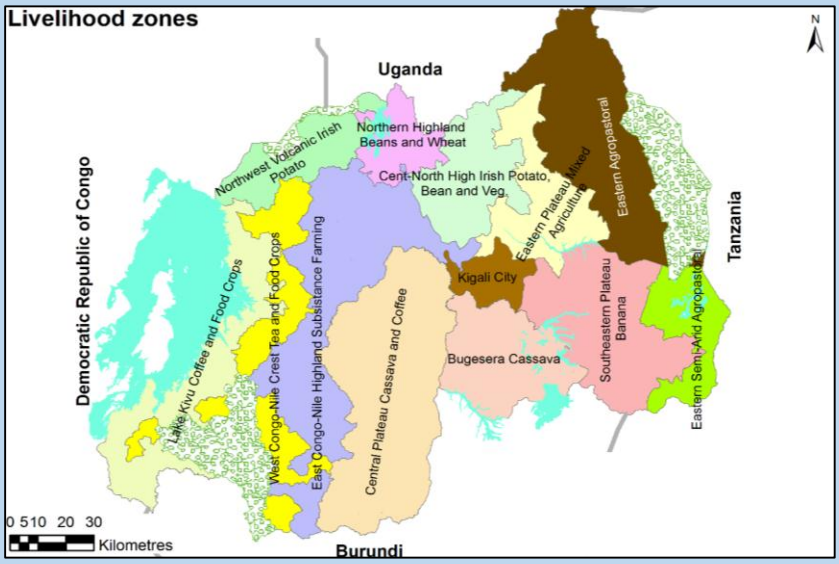
Source: Rwanda CFSVA 2015

LIVELIHOOD ZONES

The national livelihood zones in Rwanda were last updated in 2012 and consist of twelve zones. The CFSVA analyses food security by livelihood zone as these areas are similar in terms of local economies and livelihood opportunities, independent of administrative boundaries. The boundaries of the livelihood zones follow those of the sectors, which is the administrative level below districts. This means that a district can be part of several livelihood zones. The twelve zones are:

1. Lake Kivu Coffee Zone
2. West Congo-Nile Crest Tea Zone
3. Northwest Volcanic Irish Potato Zone
4. East Congo-Nile Highland Farming Zone
5. Central Plateau Cassava and Coffee Zone
6. Northern Highlands Beans and Wheat Zone
7. Central-Northern Highlands Irish potato, Beans and Vegetable Zone
8. Bugesera Cassava Zone
9. Eastern Plateau Mixed Agriculture Zone
10. Southeastern Plateau Banana Zone
11. Eastern Agro-Pastoral Zone
12. Eastern Semi-Arid Agro-Pastoral Zone

Map 4: Livelihood zones

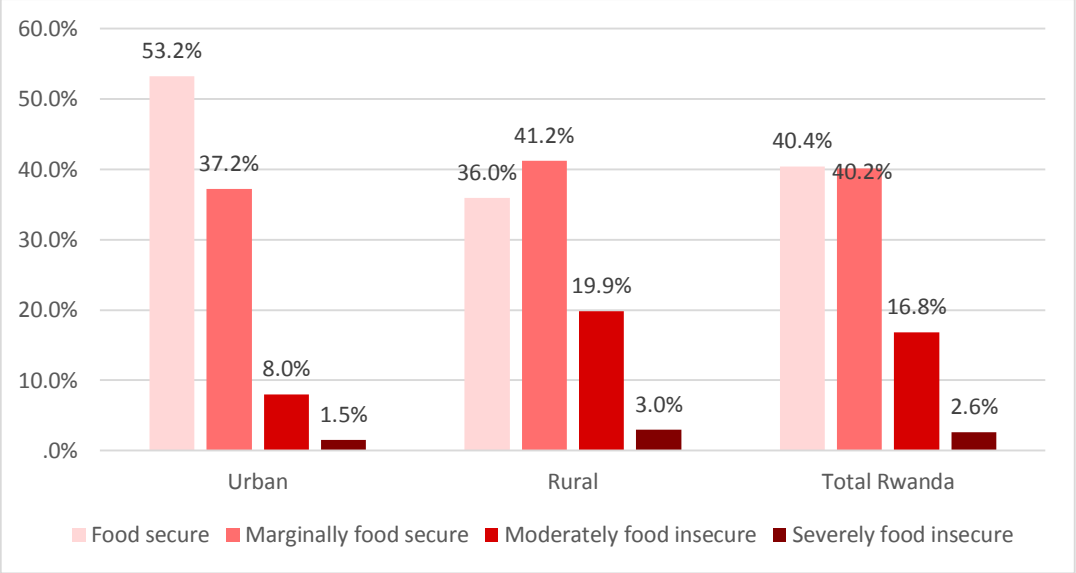


Source: Map based on FEWS NET livelihood zones, 2012

According to the results of the CFSVA, most households (74%) still live in rural areas. However, the urban population (26% of households) is growing, a factor which is likely to prompt different food security issues in future from those traditionally seen in rural areas.

In line with the 2012 CFSVA, households in rural areas are more likely to be food insecure, with 28 percent[40] (Figure 23) of rural households being either moderately or severely food insecure compared with 11 percent of households in urban areas.

Figure 23: Percentage of households by food security status: urban, rural and total



Source: CFSVA 2015

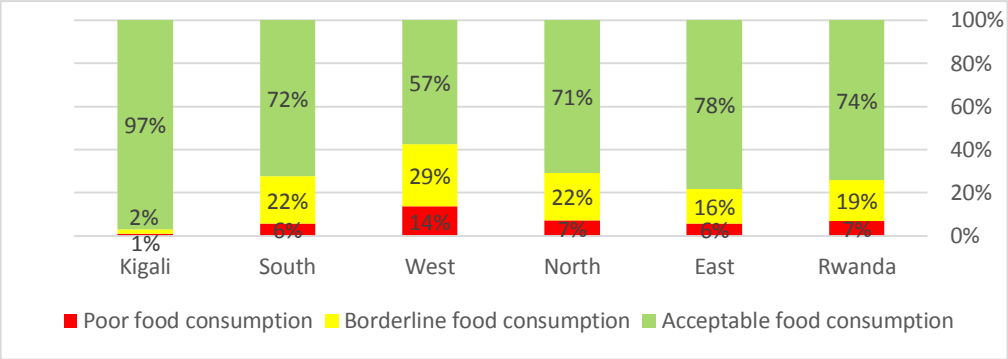
5.1.1 FOOD CONSUMPTION

The Food Consumption Score (FCS) is a food security indicator used widely across different countries and contexts. In the survey, households were asked what food items they had consumed in the past seven days out of a comprehensive list of food items. The FCS combines diet diversity, frequency of consumption (the number of days each food group is consumed), and the relative nutritional importance of different food groups. It uses standardized thresholds that subsequently divide households into three groups: those with poor food consumption, borderline food consumption, and acceptable food consumption.

As shown by Figure 24, 74 percent of households nationwide have an acceptable FCS, while 19 percent a borderline FCS and seven percent poor FCS. At the provincial level, almost all households in Kigali city (97%) have acceptable diets, while no more than 57 percent of households in the Western Province have an acceptable score. The Western Province also has the highest proportion of households with poor food consumption, with 14 percent of households consuming a diet that consists solely of starches flavoured with vegetables and very occasionally some oil and pulses.

[40] Due to rounding of figures it appears that the total figure of food insecure do not tally with the sum of moderately and severely food insecure.

Figure 24: Food consumption groups by province



Source: CFSVA 2015

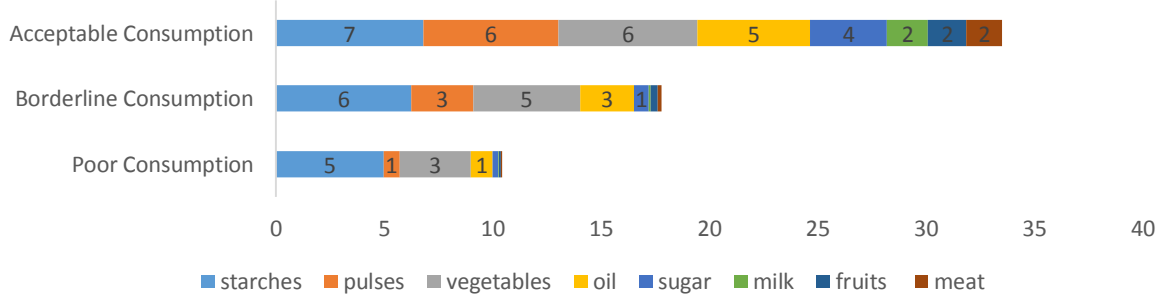
Table 8: Description of food consumption groups

Food consumption group	Description of food consumption groups in 2015 CFSVA	FCS cut-off point
Poor	Households with poor food consumption have a diet limited to starches and vegetables, which are consumed on average five and three times a week respectively. In addition, pulses and oil are consumed once a week.	≤ 21
Borderline	Households with borderline food consumption consume starches and vegetables almost daily. In addition, they consume pulses and oil three times a week. Sugar is consumed once a week, while items such as meat and milk are rarely consumed.	21.5 -35
Acceptable	Those with acceptable food consumption consume starches, pulses, vegetables and oil almost daily with the addition of sugar, milk, fruits and meat a few times a week.	> 35

Source: CFSVA 2015

Starches, such as cereals, tubers and roots, are consumed almost daily across all food consumption groups, but regarding other food items there are large differences seen across different food consumption groups. While pulses are consumed almost daily in households with acceptable food consumption, they are only consumed on about half of the days in households with borderline food consumption and no more than once a week in households with poor food consumption, limiting the intake of protein-rich food in these households (Figure 25).

Figure 25: Average number of days during a week food items were consumed, by Food Consumption Group



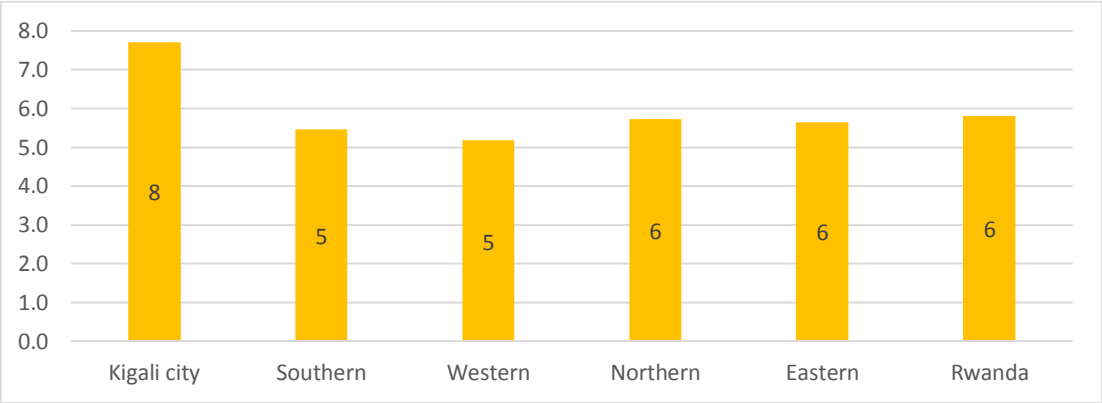
Source: CFSVA 2015

5.1.2 HOUSEHOLD DIETARY DIVERSITY

Dietary diversity was calculated based on the foods consumed in each household the day before the survey. The household dietary diversity score provides an indication of households' access to food and available resources to obtain food, rather than the nutritional value of food items consumed.[41] Based on this measure, items such as condiments, sugar and beverages are included in the diet diversity score. The maximum number of food groups that could be consumed is 12.

As shown in Figure 26, households across Rwanda on average consume food items from six groups. Households in Kigali have a higher dietary diversity and consume items from eight food groups, while households in the Southern and Western provinces consume food items from only five food groups.

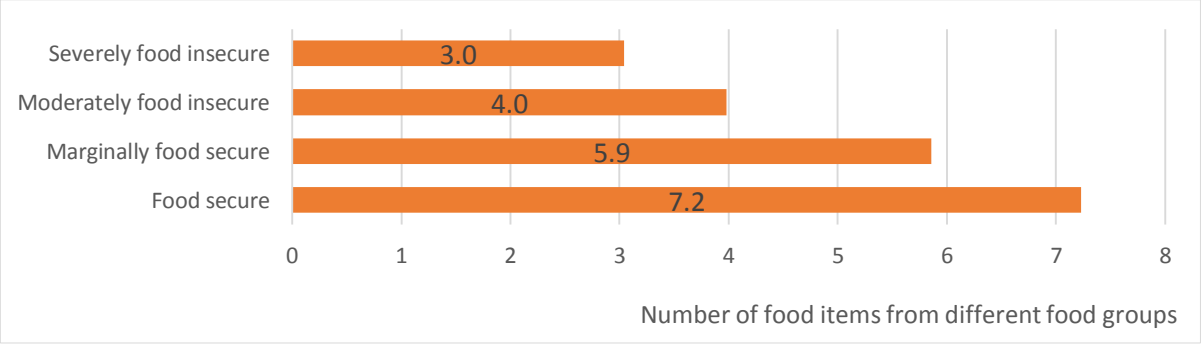
Figure 26: Average dietary diversity score by province



Source: Rwanda CFSVA

There are significant differences in dietary diversity depending on households' food security status (indicated by the CARI classification), with more food secure households consuming food items from a larger number of food groups (Figure 27).

Figure 27: Dietary diversity, average number of food items from different food groups consumed by food security grouping



Source: Rwanda CFSVA

Households with the lowest dietary diversity, (consuming items from four food groups or fewer), mostly consume tubers and roots, vegetables, pulses and condiments. When dietary diversity increases to five to six groups, cereals and oil are added to the diet. Households with higher dietary diversity, (i.e., consuming food from more than six groups), are generally eating fruit, milk and sugar too.

[41] FAO Guidelines for measuring household and individual dietary diversity

5.1.3 NUTRITIONAL VALUE OF FOOD ITEMS CONSUMED

To analyse the nutritional value of food items consumed by households, the CFSVA looks at how often a household ate foods rich in a certain nutrient in order to try and improve the link between household food consumption and nutritional outcomes. In the analysis, a distinction was made between households where the nutrients were never consumed (0 times/week), sometimes consumed (1-6 times/week), or were consumed at least daily (7 times or more/week).[42]

Food insecure households have nutrient-low diets and are consequently at high risk of suffering nutrient deficiencies. As seen in Figure 28, vitamin A rich food, which include orange vegetables and green leafy vegetables, were consumed by most households in the week before the survey. Other vitamin A rich foods are orange fruits, organ meat, eggs and dairy products.[43]

Protein-rich food items such as pulses, nuts, fish, meat, eggs and dairy were consumed daily by 65 percent of households, although there was great variation between food secure and food insecure households. While 92 percent of food secure households consumed protein daily, almost half of severely food insecure households had not consumed any protein-rich food items during the week before the survey.

Only a small proportion of households regularly consumed hem iron rich food items such as meat, organ meat and fish/seafood.[44] Only five percent of severely food insecure households had consumed hem iron rich food during the week before the survey. Iron deficiency is an issue of concern in Rwanda. According to the 2015 Demographic and Health Survey (DHS), 19 percent of all women between 15 and 49 years are suffering from anaemia as a result of diets with low iron intake.

VITAMIN A

Vitamin A deficiency is common in developing countries and can cause blindness in children and increase the risk of disease from infections.

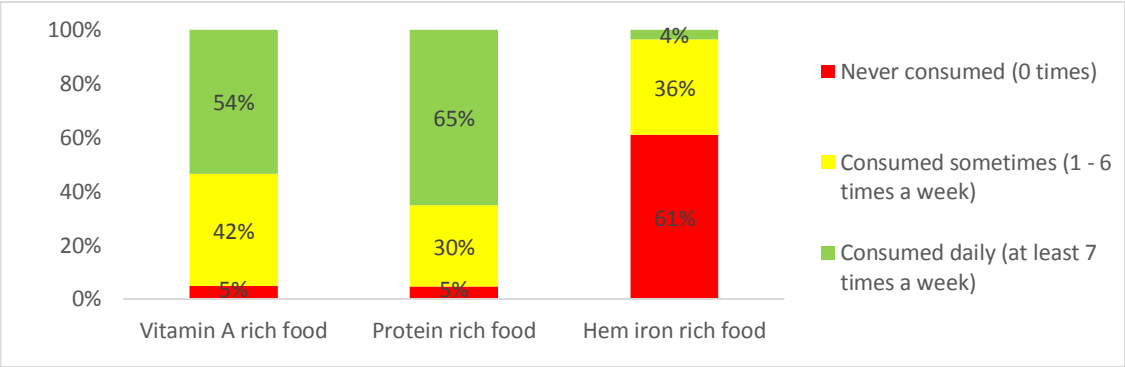
PROTEIN

Proteins provide energy and serve as building blocks of the body. Diets low in protein impair child development and cause malnutrition.

IRON

Iron deficiency causes anemia and contributes to adverse pregnancy outcomes, impaired physical and cognitive development, increased risk of morbidity and decreased work productivity.

Figure 28: Percentage of households by frequency of nutrient-rich food items consumed

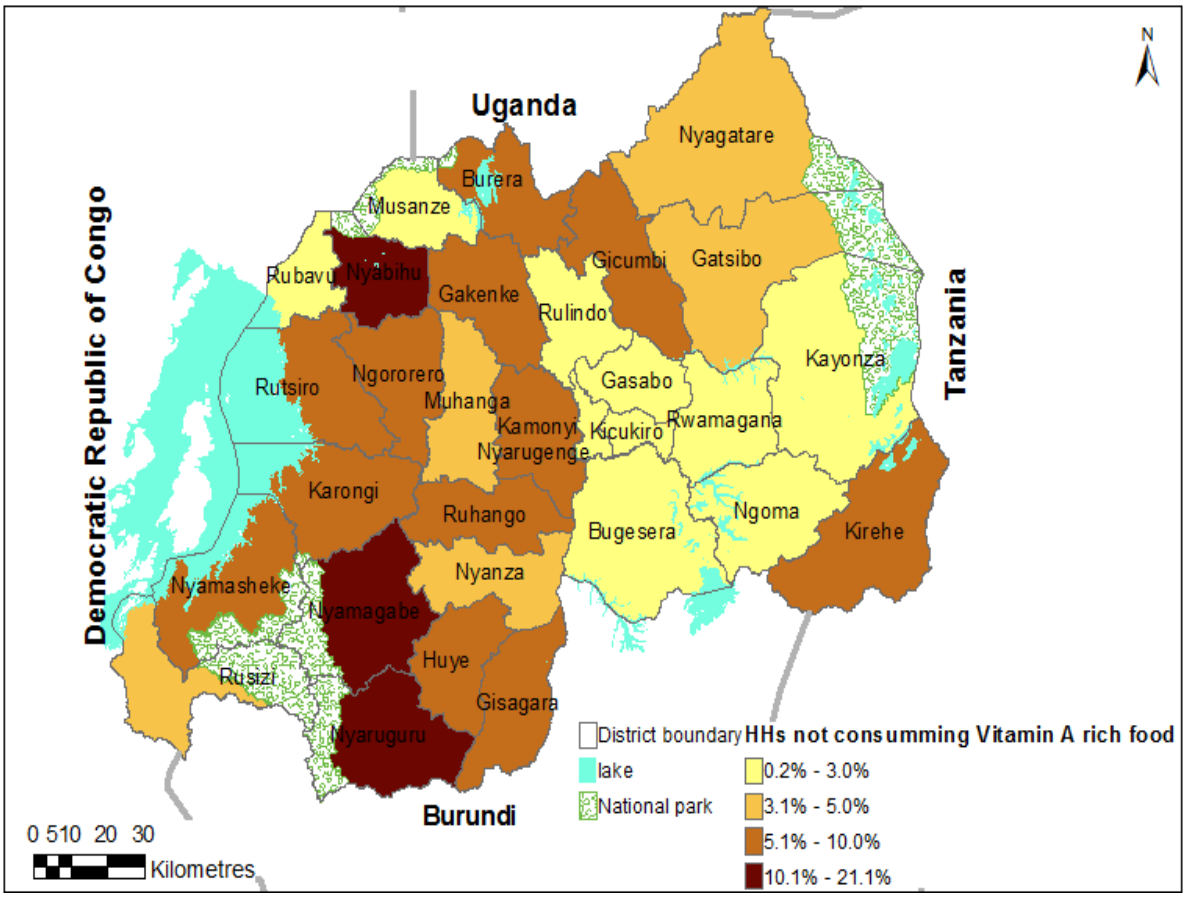


Source: Rwanda CFSVA 2015

[42] WFP Technical Guidance Note: Food Consumption Score Nutritional Quality Analysis (FCS-N)
[43] Fish is not included as vitamin A rich food as only certain types of fish are rich in vitamin A.
[44] Iron from vegetable sources is not included due to the relatively low concentration of iron in vegetables compared with animal sources.

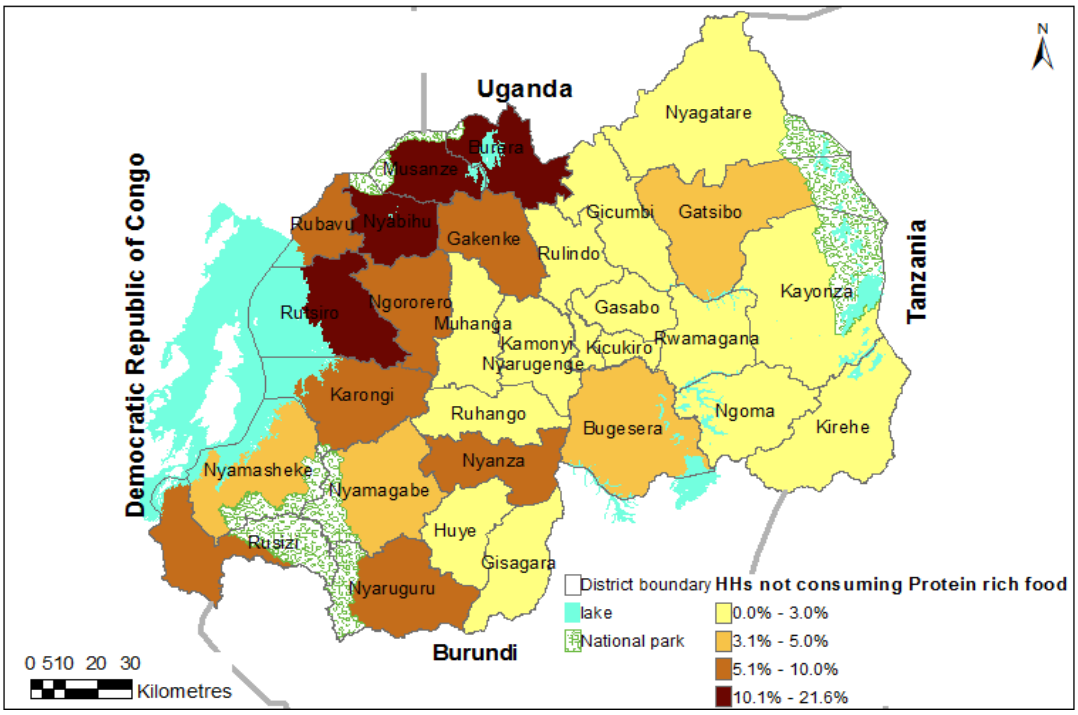
Consumption patterns of food items rich in vitamin A, protein and hem iron show clear geographical differences between districts. Districts in the Western and Southern Provinces have a higher percentage of households that had not consumed any vitamin A rich food items, while the Northern Province had a higher percentage of households that had not consumed protein rich foods. The percentage of households that had not consumed any hem iron rich food is generally high across the country, but peaks in Burera and Gakenke Districts in the north, Nyabihu and Rutsiro in the west, and Nyamagabe and Nyanza in the south.

Map 5: Percentage of households with no consumption of vitamin A-rich food in the week before the survey



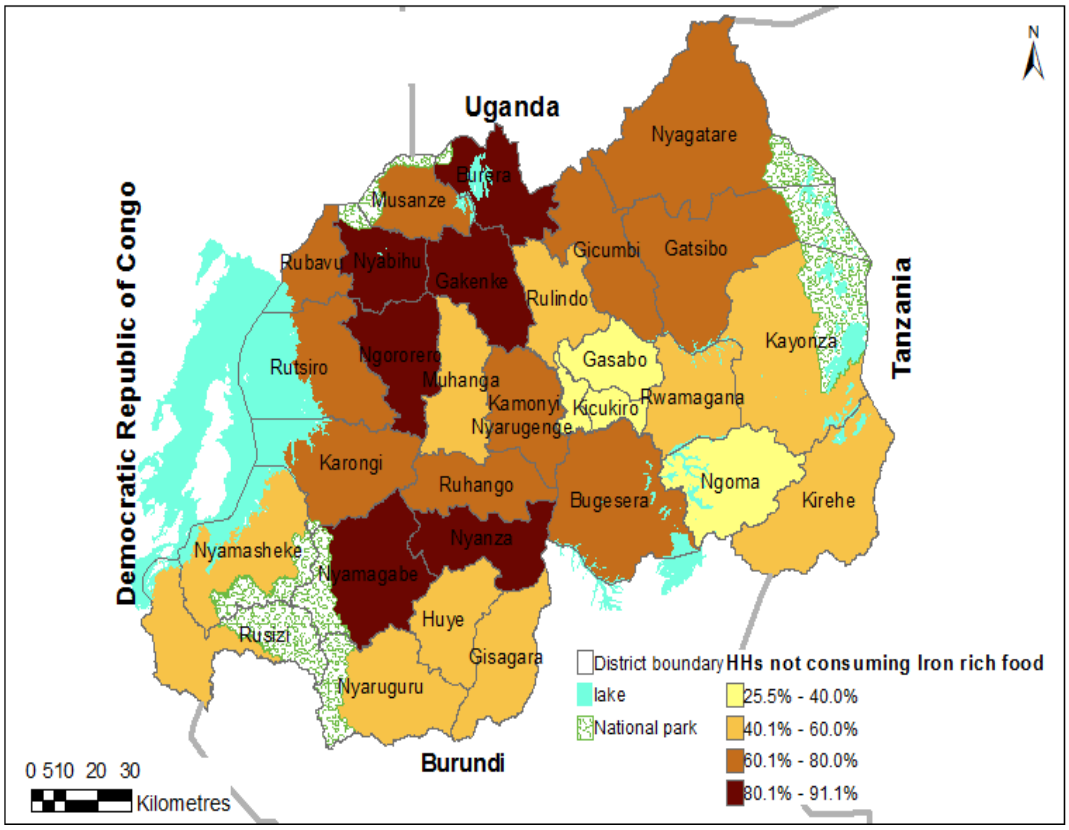
Source: Rwanda CFSVA 2015

Map 6:Percentage of households with no consumption of protein-rich food in the week before the survey



Source: Rwanda CFSVA 2015

Map 7: Percentage of households with no consumption of hem iron-rich food in the week before the survey



Source: Rwanda CFSVA 2015

5.2 Food security based on the Food Consumption Score

In previous rounds of the CFSVA in Rwanda, the FCS has been used as a proxy for food security. Consequently, it was used to analyse food security trends over time.[45]

According to the 2015 CFSVA, the percentage of Rwandan households with acceptable food consumption reached 74 percent, while 19 percent of households had borderline food consumption and seven percent of households had poor food consumption. As shown in Table 9, Kigali city had the highest percentage of households with acceptable food consumption (97%) and the Western Province the lowest percentage (57%).

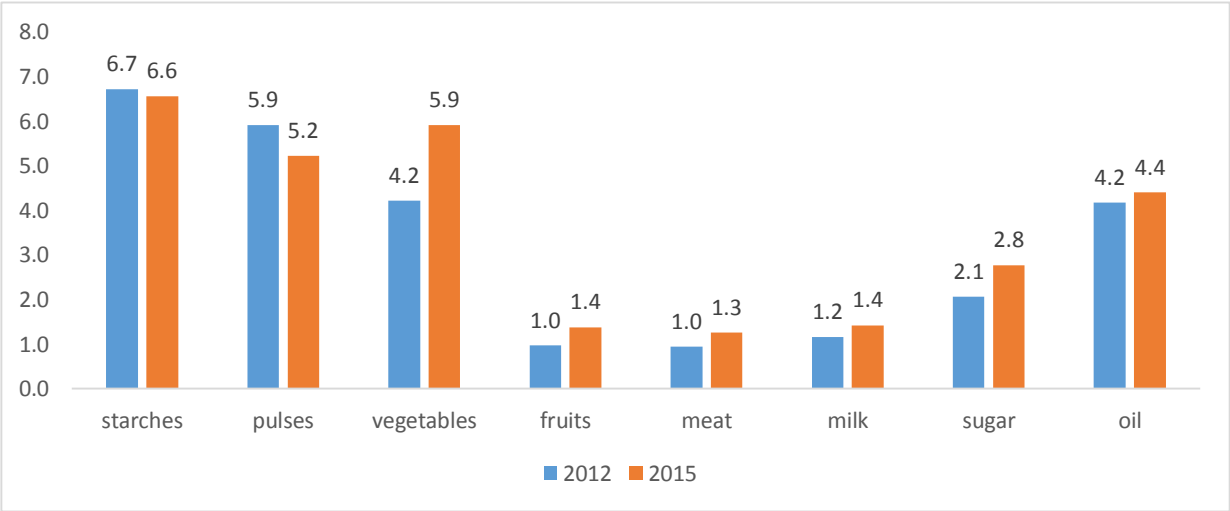
Table 9: Food consumption groups in 2015

	POOR FOOD CONSUMPTION	BORDERLINE FOOD CONSUMPTION	ACCEPTABLE FOOD CONSUMPTION
Rwanda	7%	19%	74%
Kigali city	1%	2%	97%
Southern Province	6%	22%	72%
Western Province	14%	29%	57%
Northern Province	7%	22%	71%

Source: CFSVA 2015

An analysis of the food types consumed by households indicates that all food groups except starches and pulses are now consumed more frequently than three years previously (Figure 29). Pulses are consumed less often in all provinces, except in Kigali where the percentage of households with acceptable food consumption is also highest.

Figure 29: Average number of days in a week food items from the different food groups were consumed



Source: CFSVA 2012 & 2015

[45] When comparing results from year to year, it is important to consider any changes in methodology and timing of the data collection. Data collection for the current CFSVA took place in April-May, while occurring in March-April for the 2012 CFSVA and February-March for the 2009 CFSVA.

The proportion of households which do not consume starches on a daily basis increased from 12 percent in 2012 to 17 percent in 2015, while the proportion of households not consuming pulses daily rose from 14 percent to 26 percent over the same period. However, the increase in the frequency of consumption of all other food groups is a positive development, especially in the case of vegetables.

At the district level, a few districts have seen an improvement in food consumption since 2012. For example, in Rulindo in the Northern Province, the percentage of households with acceptable consumption has increased by 14 percentage points. Meanwhile, Nyabihu, Nyaruguru, Gakenke, Musanze, Nyagatare, Kirehe and Burera Districts have seen the most significant decrease in the share of food secure households as measured by the FCS indicator.

THE IMPACT OF CONTEXTUAL FACTORS ON FOOD CONSUMPTION

The FCS measures the current food security situation and is sensitive to factors such as seasonality and changes in food prices. For example, an analysis of bean prices for April 2015 shows that prices are higher than the five-year average. As households are highly dependent on the market for beans at this time of the year, the inflated prices may affect the consumption of beans in households with low purchasing power and thereby lower households' FCS.

6. Who are the food insecure?

KEY MESSAGES

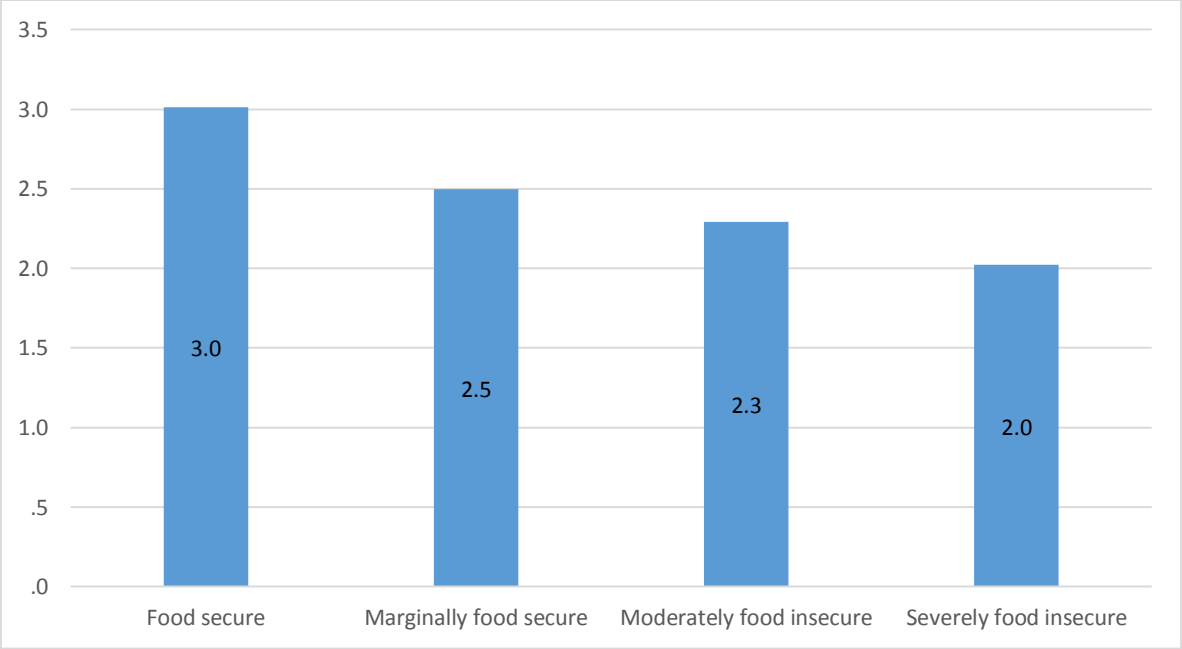
- Food insecure households are typically rural households with few adult household members, and who mainly depend on agricultural daily labour, their own agricultural production or external support for their livelihoods.
- Food insecure households engaged in agriculture typically have less livestock, farm amounts of agricultural land, grow fewer crops, are less likely to have a vegetable garden, have lower food stocks and consume more of their own production at home.
- Households headed by women are more often food insecure than those headed by men.

6.1 Household demographics

According to the CFSVA, the average household size is five persons per household, and on average 46 percent of household members are dependents (younger than 15 years or older than 60 years).

Food secure households generally have a higher number of household members of working age (above 18 years). While the average number of household members above 18 years across the total population is 2.6 per household, the average number in food secure households is three, while in severely food insecure households it is two. Households with a higher number of household members over the age of 18 years are generally wealthier than those with fewer adult household members.

Figure 30: Average number of household members above 18 years by food security status



Source: CFSVA 2015

Households rarely host returnees from foreign countries (less than one percent of households do so). A slightly higher share (five percent) of households host temporary residents, although this percentage increases to 10 percent among wealthier households.

6.2 Characteristics of household head

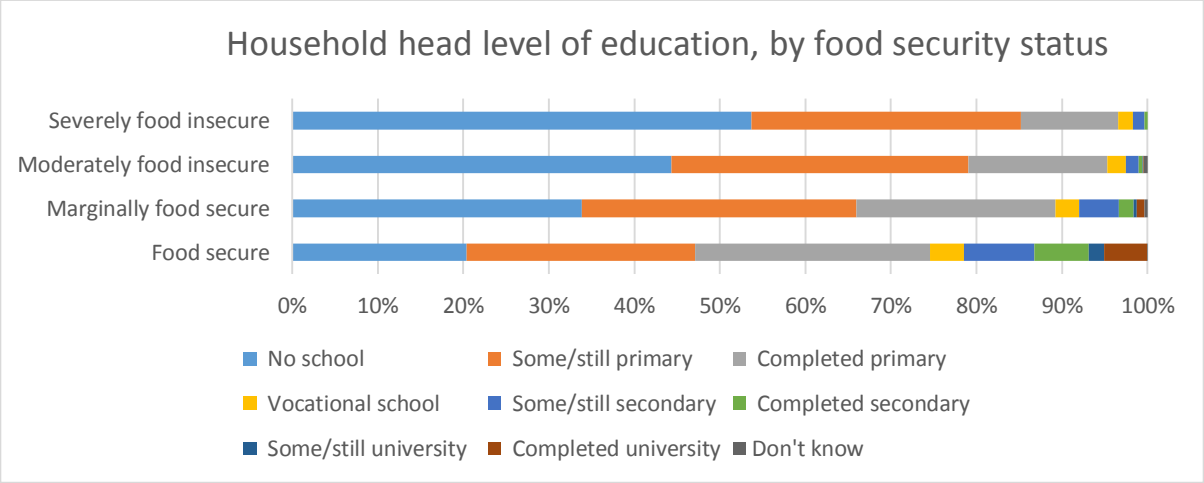
Household food security is related to the gender, marital status, disability status, and education level of heads of household. Nationally, 27 percent of all households are headed by women. Among households headed by women, 69 percent are either food secure or marginally food secure, compared with 79 percent of households headed by men. Part of the reason why households headed by women are more food insecure than those headed by men is that in 70 percent of cases, women heads of household are widows and have fewer adult household members that can contribute to household income. As a result, women heads of household have a higher percentage of dependents: 20 percent of households headed by women have a very high percentage of dependents[46] in the household, versus only eight percent of male-headed households.

In total, 13 percent of all heads of household are disabled, although this proportion is higher among food insecure households. About 25 percent of household heads in severely food insecure households are disabled, compared to only nine percent in food secure households.

According to the 2015 CFSVA, 69 percent of heads of household have some education and 64 percent know how to read and write. When comparing households headed by men and women, the latter are less educated. On average, 50 percent of female heads of household have some education compared with 76 percent of male heads of household. Among the spouses of household heads, 74 percent have some education and 69 percent know how to read and write.

The education level of the head of household is strongly related to households' food security status. Very few food insecure households are headed by individuals educated to secondary school level or above.

Figure 31: Household head level of education, by food security status



Source: CFSVA 2015

Although this CFSVA found that heads of households were often uneducated, this will change in the coming years given the high school attendance rate among today's children. In 2013, the net enrolment rate for primary school was 97.5 percent for girls and 95.7 percent for boys.[47]

[46] Households with more than 70% of household members being dependents are classified as having a very high percentage of dependents.
[47] Ministry of Education. 2013 education statistical yearbook.

Of all households surveyed, 58 percent had a child between 7 and 14 years currently attending primary school. Households were asked if the children attending school had missed school for one week or more since January 2015. In 16 percent of households there was at least one child that had missed school for a week or more. The most common reason for this absence was sickness (76% of absent children), while less common reasons mentioned were that the child refused to go (8%), unpaid school fees (7%), housework (2%) and working for cash (2%). Children in poorer households were more likely to have been absent than those in wealthier households: in the wealthiest quintile seven percent of households reported at least one child being absent since January 2015, compared to 22 percent of households in the poorest quintile.

6.3 Wealth and poverty

Poverty and food insecurity are intrinsically linked, with poverty being one of the main predictors of food insecurity. Rwanda has seen a reduction in poverty rates, although 39.1 percent of households are still living in poverty according to the latest poverty statistics from 2013/14. The highest poverty rate was in Nyamasheke District (62%) and the lowest in Kicukiro District (16.3%).

The main reasons enabling the reduction in poverty rates between 2010/11 and 2013/14, according to the EICV 4, were: the increase in business establishments, improved water and sanitation and increased household assets, among others.

6.3.1 EXPENDITURES

Expenditure information was collected from a comprehensive list of food and non-food items. Food expenditure covers all food that is bought and consumed by a household.

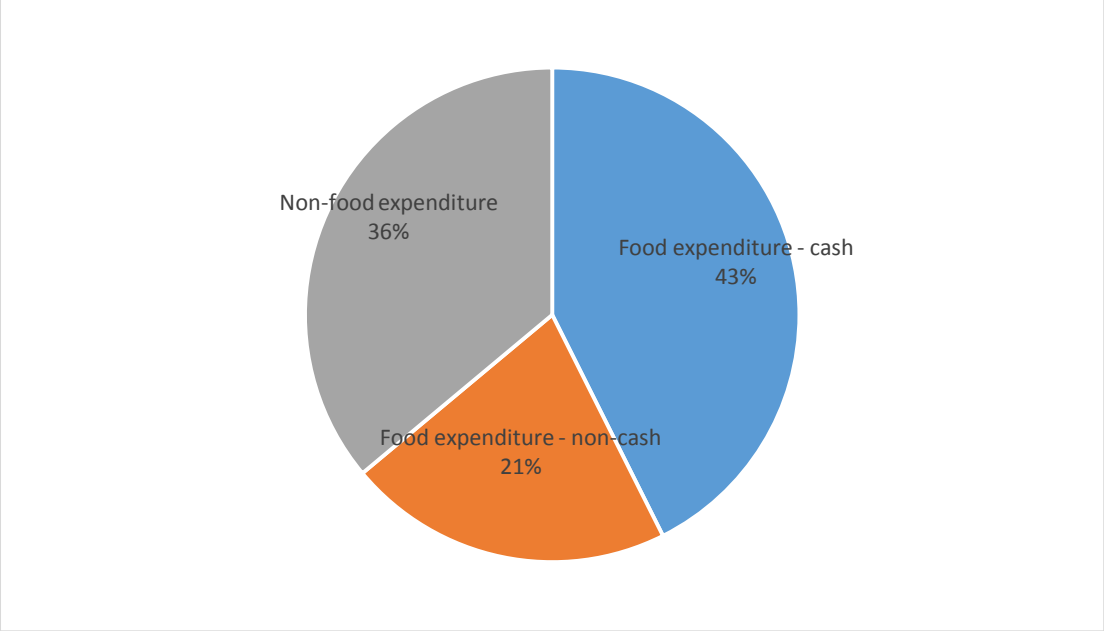
The average (median) per capita annual expenditure is 219,527 RWF, but with large variations across households. For instance, the 20 percent of households with the lowest expenditure spend on average 32,000 RWF (median) per year per capita, while the 20 percent of households with the highest expenditure spend 521,000 RWF (median).

The share of the total household budget spent on food was calculated by dividing the total amount spent on food by the total monthly expenditure on both food and non-food items. The share out of the total household budget spent on food can be used as a measure of economic vulnerability. In general, the poorer the household, the larger the share of total household budget spent on food.[48] Given this association, the CARI food security index uses the share of household expenditure on food as a measure of economic vulnerability.

[48] Engel's law: As income rises, the proportion of income spent on food falls, even if actual expenditure on food rises.

As shown in Figure 32, households on average spend 64 percent of their total budget on food, amongst which 43 percent is food bought with cash and 21 percent is acquired by other non-cash means.

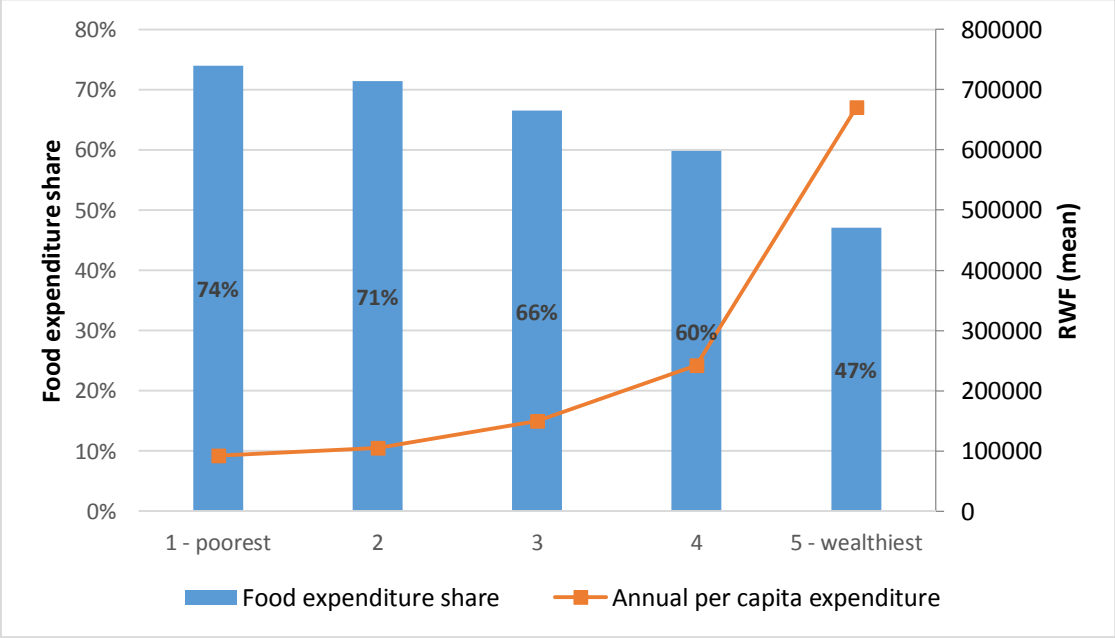
Figure 32: Average share of expenditure on food and non-food items



Source: CFSVA 2015

In As shown in Figure 33, households in the wealthiest quintile groups, as defined by the wealth index (see section 6.3.2 below), have a lower average share of food expenditure than households in poorer quintiles. The figure also shows that the average annual per capita expenditure in the three poorest groups is below the national poverty line (as of 2013/2014) at 159,375 RWF.

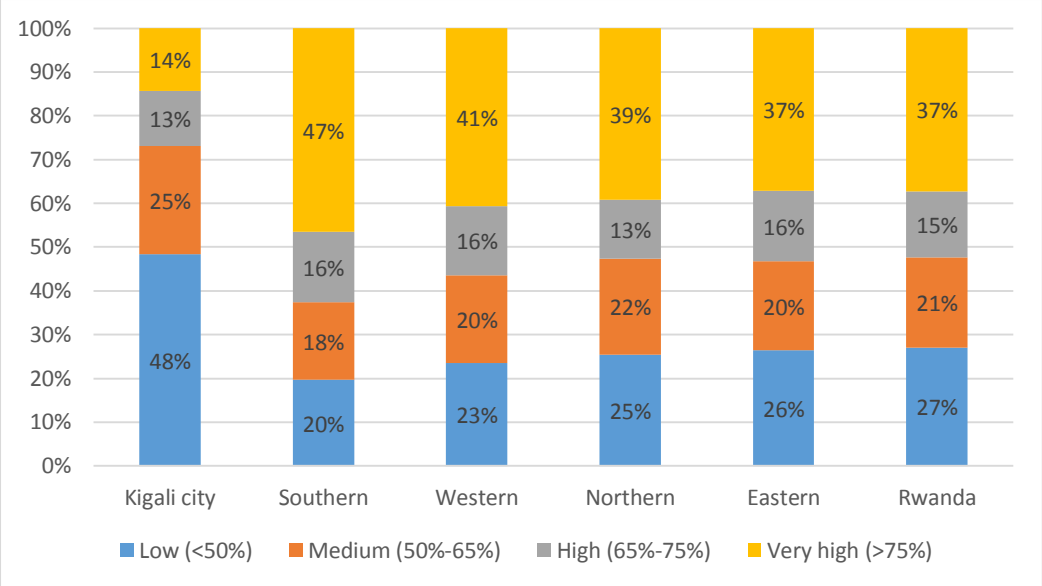
Figure 33: Average share of total budget spent on food, by wealth group quintile



Source: CFSVA 2015

Households were classified into four different groups based on the share of their total budget that they spent on food: low (<50%), medium (50%-65%), high (65%-75%) or very high expenditure (>75%). On average, 37 percent of all households have a very high share of expenditure on food. These households are likely to be vulnerable to economic shocks as there is little additional budget available for any other expenses except their most basic requirements. Households in the Southern Province are most likely to have a very high share of expenditure on food, while Kigali has the greatest proportion of households with low expenditure on food (Figure 34).

Figure 34: Average share of total budget spent on food, by province



Source: CFSVA 2015

6.3.2 WEALTH INDEX

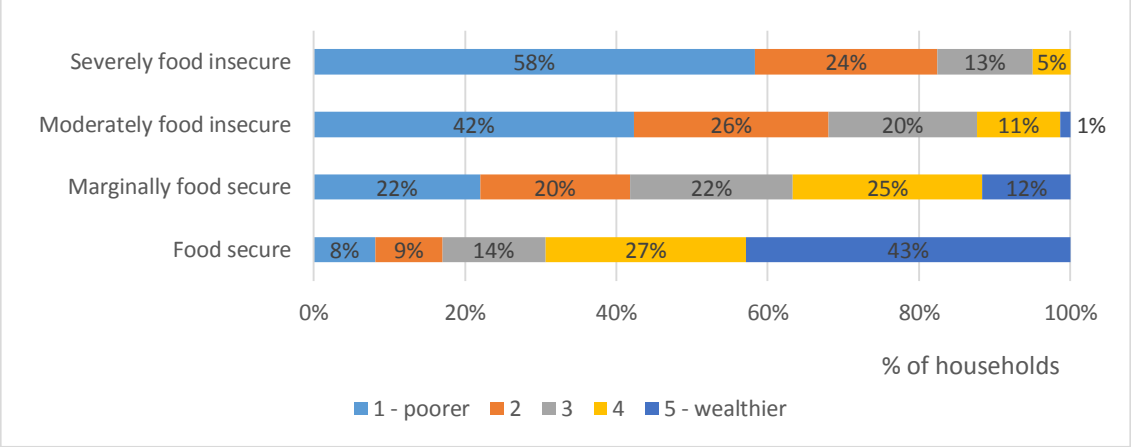
In the 2015 CFSVA, a wealth index was constructed to classify households according to their estimated wealth status. The wealth index ranks households based on asset ownership and housing characteristics as a proxy to separate wealthier households from poorer households. The assets and housing characteristics included in the 2015 CFSVA were: ownership of an iron, tape/CD player, mobile phone, improved lighting, improved floor, improved walls, improved toilet and more than two sleeping rooms in the house.

The wealth index measures relative wealth and, unlike a poverty line, it is not an absolute measure of poverty or wealth. When referring to the wealth of households based on the wealth index, households can be described as relatively poorer or wealthier, but households cannot be identified as absolutely poor or wealthy. The wealth index quintiles divide the whole population into five equally large groups, based on their wealth rank[49].

[49] Households were sample using cluster sampling and sample weights were used for the sample to represent the actual proportion of households. The quintiles were created on the unweighted sample creating slightly different size of the quintiles when the weights are used in the analysis.

As expected, there is a clear relationship between food security and wealth, with poorer households more often found to be food insecure. As shown in Figure 35, 70 percent of food secure households belong to the two wealthiest quintiles, while 82 percent of severely food insecure households are in the two poorest quintiles.

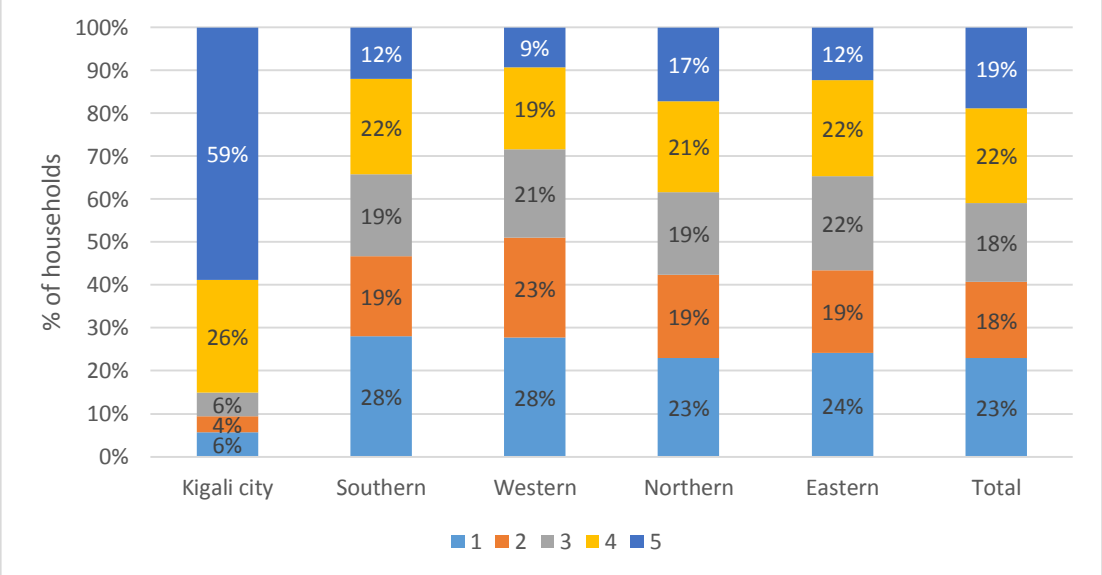
Figure 35: CARI food security status by wealth quintile



Source: CFSVA 2015

The majority (59%) of households in Kigali are in the wealthiest quintile, compared with only nine percent of households in the Western Province. This finding corresponds with the high levels of food insecurity in the Western Province (Figure 36).

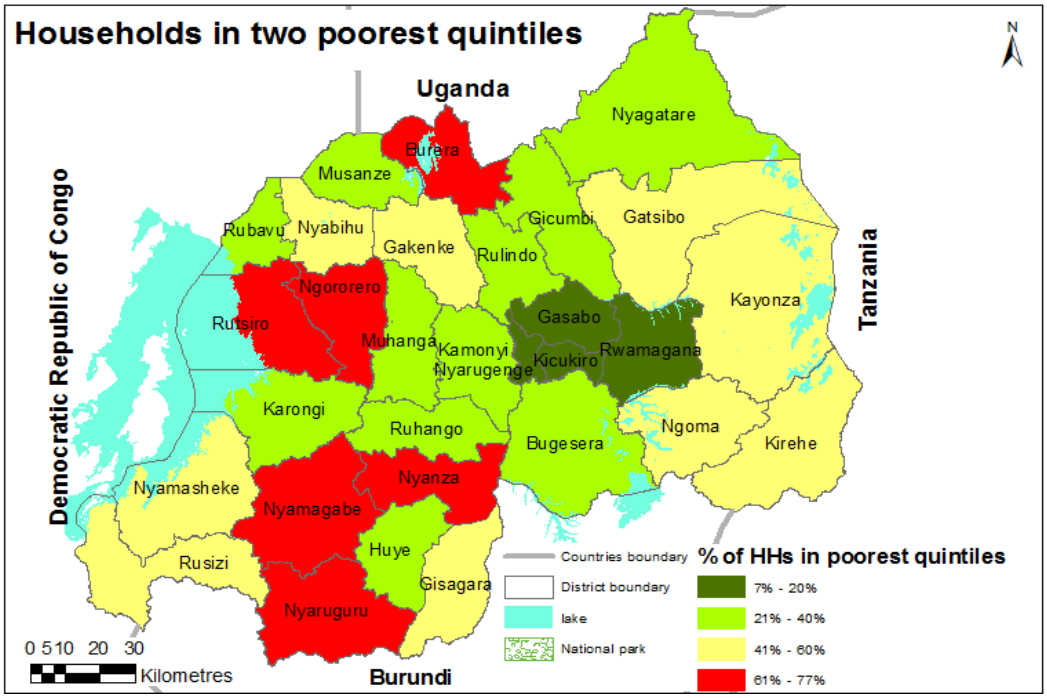
Figure 36: Percentage of households in each wealth quintile, by province



Source: CFSVA 2015

The districts with the highest percentage of households in the two poorest quintiles are Nyaruguru (77%), Burera (67%), Rutsiro (66%), Ngororero (65%), Nyamagabe (64%) and Nyanza (62%), as shown in Map 8.

Map 8: Percentage of households in the two poorest wealth quintiles



Source: CFSVA 2015

6.4 Livelihoods activities

The ways in which households sustain their livelihoods are related to households' wealth as well as their food security status and vulnerability to different shocks. In the 2015 CFSVA, households were asked how many activities they rely on to sustain their livelihoods, and what their three most important income activities are. In Rwanda, almost half of households (48%) rely on two livelihood activities, 41 percent rely on only one livelihood activity and 10 percent rely on three or more livelihood activities. The activities most commonly engaged in by households are: agricultural production (72 percent of households), daily labour agricultural work (24 percent), livestock raising for sales (18 percent), unskilled daily labour (13 percent) and informal sale/petty trade (11 percent).

In order to reduce the number of livelihood groups in the analysis, households were grouped together primarily based on the main income generating activity of the household. Factors taken into consideration when grouping different households were the similarities in the nature of the activity and in per capita expenditure, as well as different food security outcomes between households engaged in the different activities. Based on this information, households were initially classified in eight groups according to their primary livelihood activity. In addition, households relying on agriculture as their main livelihood activity were divided into two groups, purely crop-growing farmers and agro-pastoralists getting at least 10 percent of their income from livestock.

The group of agriculturalist households was divided further, based on their level of expenditure as a proxy for income. Agriculturalists with an annual per capita expenditure of less than 118,000 RWF (the national poverty line) were classified as low-income agriculturalists, while those with an annual per capita expenditure above 118,000 RWF were classified as medium/high income agriculturalists.

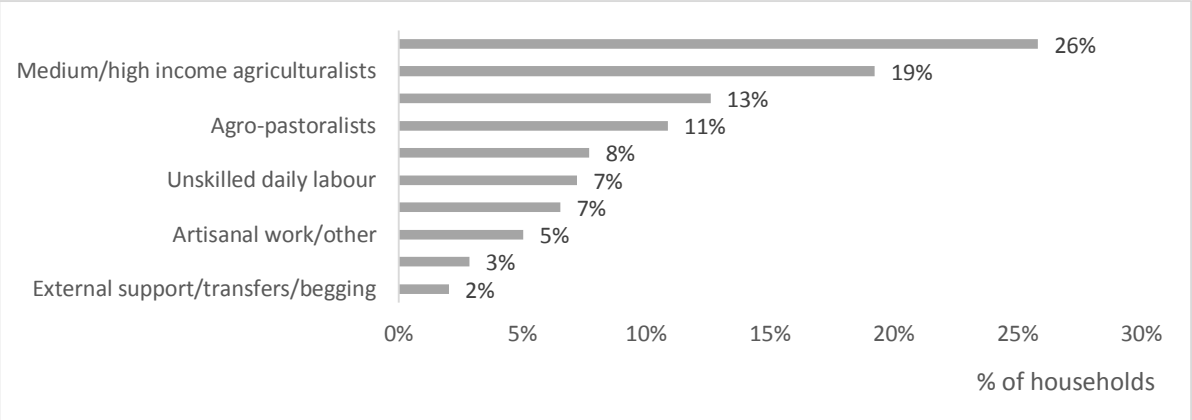
This classification resulted in ten final livelihood groups: (1) low income agriculturalists; (2) medium/high income agriculturalists; (3) agro-pastoralists; (4) agricultural daily labour; (5) unskilled daily labour; (6) skilled labour; (7) formal/informal trade and petty trade; (8) salaried work and own business; (9) transfers/support/begging; and (10) artisanal work and other activities.

Table 10: Profiles of livelihood groups

LIVELIHOOD GROUP	DESCRIPTION (based on average group characteristics)	% in the two lowest wealth quintiles
Low-income agriculturalists Rwanda: 26% Urban: 7% Rural: 32%	Low income agriculturalists obtain the vast majority (84%) of their income from their own land, with some contribution from daily agricultural labour.	56%
Medium/high-income agriculturalists Rwanda: 19% Urban: 10% Rural: 23%	More than 82 percent of households' income comes from agricultural production on their own land, with smaller contributions from agricultural labour, non-agricultural daily labour and petty trade.	33%
Agricultural daily labour Rwanda: 13% Urban: 6% Rural: 15%	Agricultural daily labourers gain 78 percent of their income from daily agricultural labour and 18 percent from their own crop production.	78%
Agro-pastoralists Rwanda: 11% Urban: 3% Rural: 14%	In the agro-pastoralist group, the main income source is crop production (64%), but with a significant contribution from raising livestock for sale (29%).	33%
Salaried work/own business Rwanda: 8% Urban: 24% Rural: 2%	This group gains 67 percent of income from salaried work and 18 percent from their own business or self-employment.	4%
Unskilled daily labour Rwanda: 7% Urban: 12% Rural: 5%	These households combine income from daily labour (83%) with agricultural production (11%).	39%
Trade/petty trade Rwanda: 7% Urban: 16% Rural: 3%	These households on average get 67 percent of their income from informal/petty trade, 11 percent from trade with agricultural products and 11 percent from their own agricultural production.	12%
Artisanal work/other Rwanda: 5% Urban: 12% Rural: 3%	Artisans and households in other activities gain 46 percent of their income from "other activities" and 38 percent from artisanal work, with other contributions from agricultural production (9%).	22%
Skilled labour Rwanda: 3% Urban: 8% Rural: 1%	This group gains 48 percent of income from unspecified skilled labour activities and 37 percent from transport. In addition a small proportion of income comes from agricultural production and petty trade.	10%
External support/transfers/begging Rwanda: 2% Urban: 3% Rural: 2%	These are households that earn the majority of their income from remittances (73%), begging (8%) and social transfers (8%), with a small addition from their own agricultural production (5%).	54%

As shown by Figure 37, low-income agriculturalists are the largest livelihoods group and comprise 26 percent of all households. The two agriculturalist groups combined (including both low and medium/high income agriculturalists) make up 45 percent of all households. The agriculturalist groups are the two largest livelihoods groups in rural areas, where 32 percent of rural households are low-income agriculturalists and 23 percent are low-medium income agriculturalists. The largest livelihoods groups in urban areas are salaried work (24% of urban households) and trade (16% of urban households).

Figure 37: Percentage of households in each livelihood group



Source: CFSVA 2015

In Kigali, the most prevalent livelihood groups are salaried work/own business, trade/petty trade, and unskilled labour, while in the other parts of the country, the agriculturalist livelihood groups dominate. Low-income agriculturalists are most prevalent in the Southern and Western Provinces, while in the Northern and Eastern provinces low-income and medium/high income agriculturalists are equally common. Agro-pastoralists are the third most common livelihood group in the Southern and Eastern Provinces, while agricultural labour is the third largest livelihood group in the Western and Northern Provinces (Table 11).

Table 11: Percentage of households in each livelihood group, by province

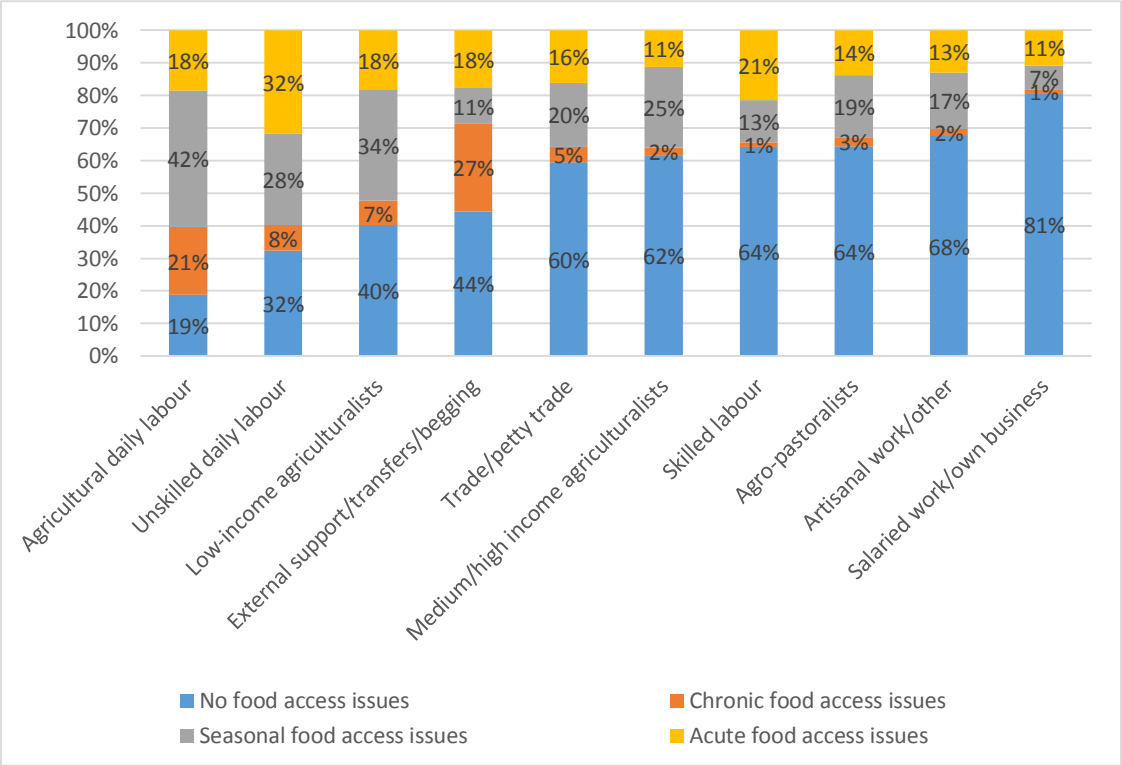
	Low-income agriculturalists	Medium/high income agriculturalists	Agro-pastoralists	Agricultural daily labour	Unskilled daily labour	Skilled labour	Trade/petty trade	Salaried work/own business	External support/ transfers/begging	Artisanal work/other	Total
Kigali	2%	8%	1%	1%	14%	10%	17%	31%	4%	13%	100%
Southern	34%	16%	18%	13%	5%	2%	4%	4%	2%	3%	100%
Western	33%	17%	9%	19%	8%	1%	5%	4%	2%	2%	100%
Northern	22%	22%	10%	16%	8%	2%	6%	6%	2%	4%	100%
Eastern	28%	28%	12%	11%	5%	2%	5%	3%	2%	6%	100%
Rwanda	26%	19%	11%	13%	7%	3%	7%	8%	2%	5%	100%

Source: CFSVA 2015

6.4.1 CHARACTERISTICS OF LIVELIHOOD GROUPS IN TERMS OF FOOD SECURITY

There are significant differences in the level of food access issues between households in different livelihood groups (Figure 38). Four out of five agricultural labourer households reported having food access issues at some point during the year. The most common food access issues were seasonal difficulties in accessing food, although one in five households also mentioned chronic food access issues, suggesting that they have difficulties in accessing food for more than six months per year. A high percentage of households relying on external support also had chronic food access issues.

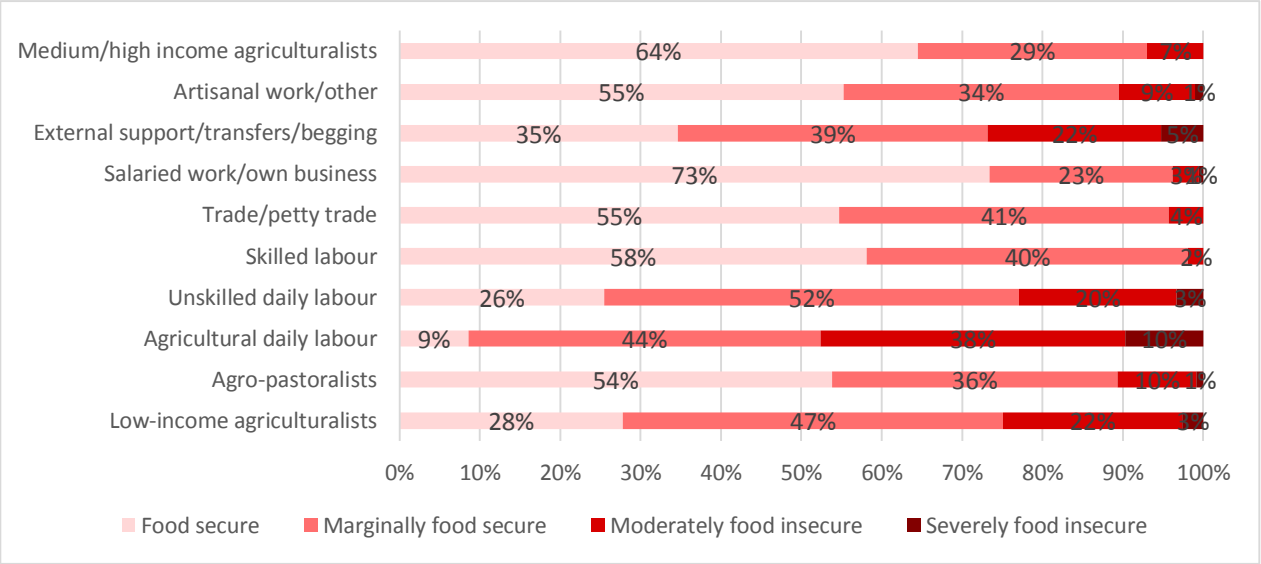
Figure 38: Type of food access issues by livelihood group



Source: CFSVA 2015

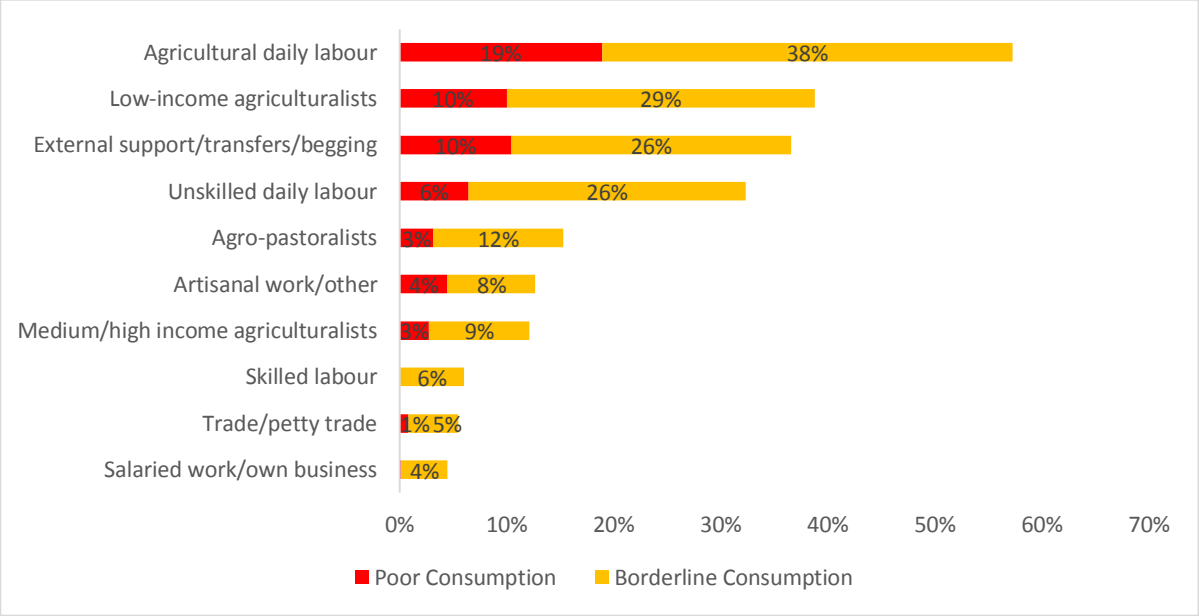
Households engaged in agricultural daily labour are typically the most food insecure and have the highest proportion of households with inadequate diets of all livelihood groups. The other three livelihood groups in which households have a significantly lower food security status are those relying on external support, transfers and begging; low income agriculturalists and unskilled daily labourers. Meanwhile, households engaged in trade, salaried work or their own business or skilled labour activities are more likely to be food secure (Figures 39 and 40).

Figure 39: Food security (CARI index) by livelihood group



Source: CFSVA 2015

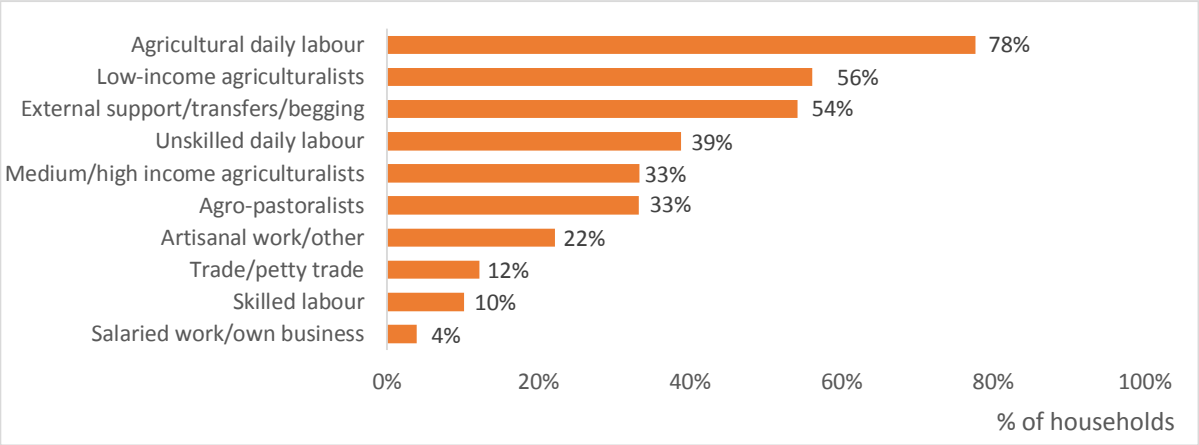
Figure 40: Food consumption by livelihood group



Source: CFSVA 2015

The food security situation of different livelihood groups is strongly related to the households' wealth. A high percentage of households in the poorer segments of the population (as defined by the wealth index) are found among livelihood groups in which households are agricultural daily labourers, low-income agriculturalists and those relying on external support, transfers and begging. In contrast, wealthier households are more often found among traders, households relying on skilled labour and those with salaried work or their own business (Figure 41).

Figure 41: Percentage of households in the poorest segment of the population, based on the wealth index



Source: CFSVA 2015

In addition, households with the highest share of their budget spent on food are mostly agricultural daily labourers, low-income agriculturalists and those relying on external support (remittances, transfers, begging). These households allocate an average of three quarters of their total budget to food. Low-income agriculturalists[50] and agricultural daily labourers also have a low per capita expenditure.

Table 12: Annual per capita expenditure and share of total expenditure that is spent on food

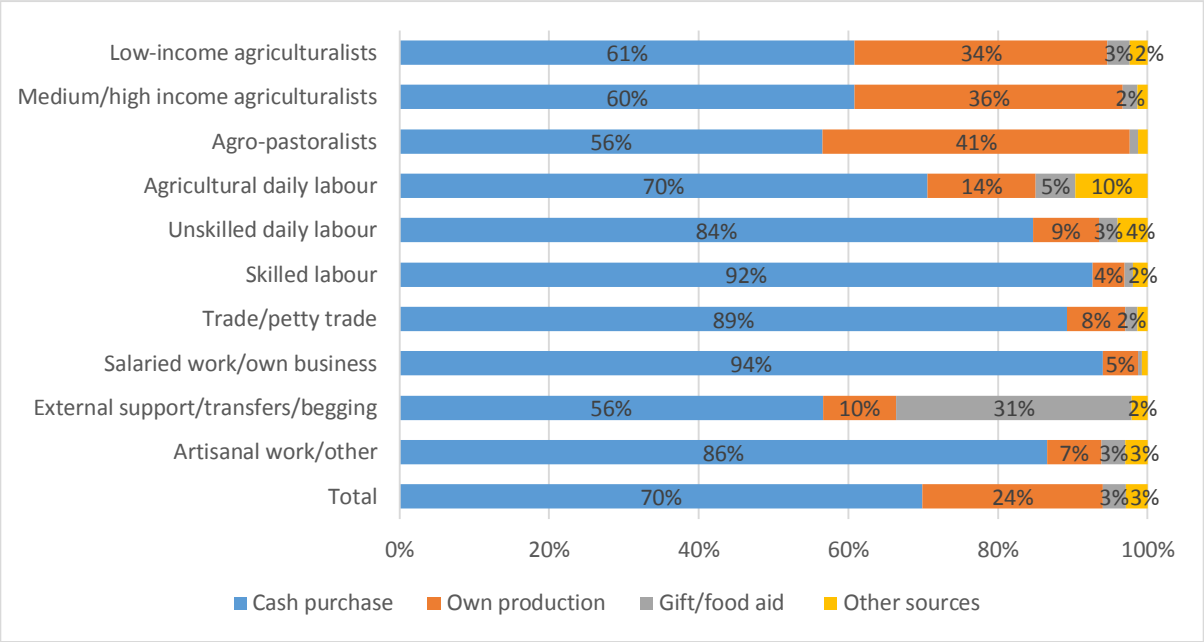
LIVELIHOOD GROUP	Annual per capita expenditure in RWF (median)	Share food expenditure
Low-income agriculturalists	61,067	73%
Medium/high income agriculturalists	204,800	58%
Agro-pastoralists	134,100	61%
Agricultural daily labour	56,560	76%
Unskilled daily labour	107,850	67%
Skilled labour	289,240	57%
Trade/petty trade	269,660	54%
Salaried work/own business	494,600	47%
External support/transfers/begging	108,000	73%
Artisanal work/other	284,186	55%

Source: CFSVA 2015

The majority of households' food is acquired by cash purchase in all livelihood groups, with skilled labourers and salaried workers being most reliant on the market for their food and the agriculturalist groups, agro-pastoralists and those relying on external support being the least market dependent.

[50] By definition, all households in this group have a per capita expenditure lower than 118,000 RWF.

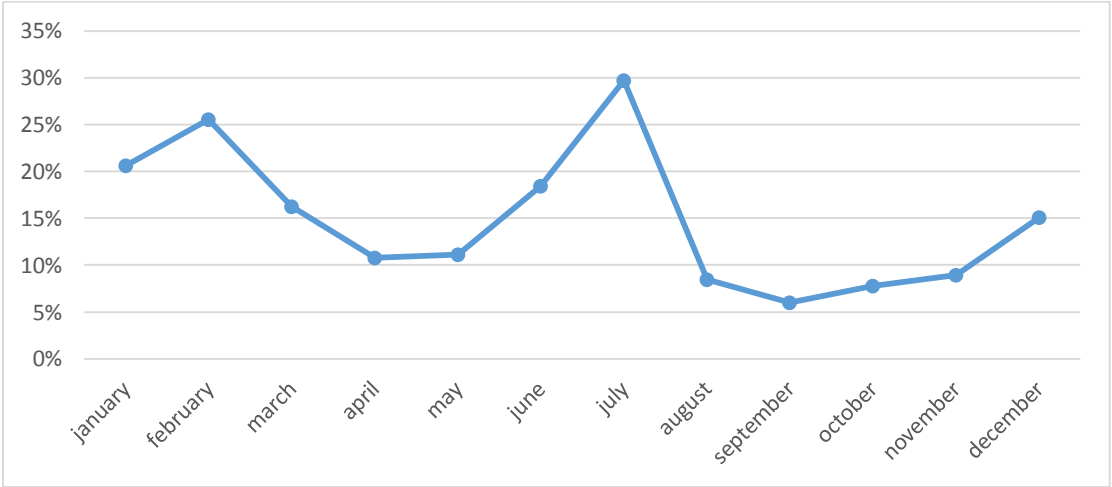
Figure 42: Food sources (by value of food) by livelihood group



Source: CFSVA 2015

Both agricultural production and agricultural labour livelihood activities were found to have the same clear seasonal pattern in terms of households relying on these activities as sources of income and food etc. Both activities are particularly important to households when the season A harvest starts in December and continues through February, as well as during the season B harvest starting in June and continuing through July.

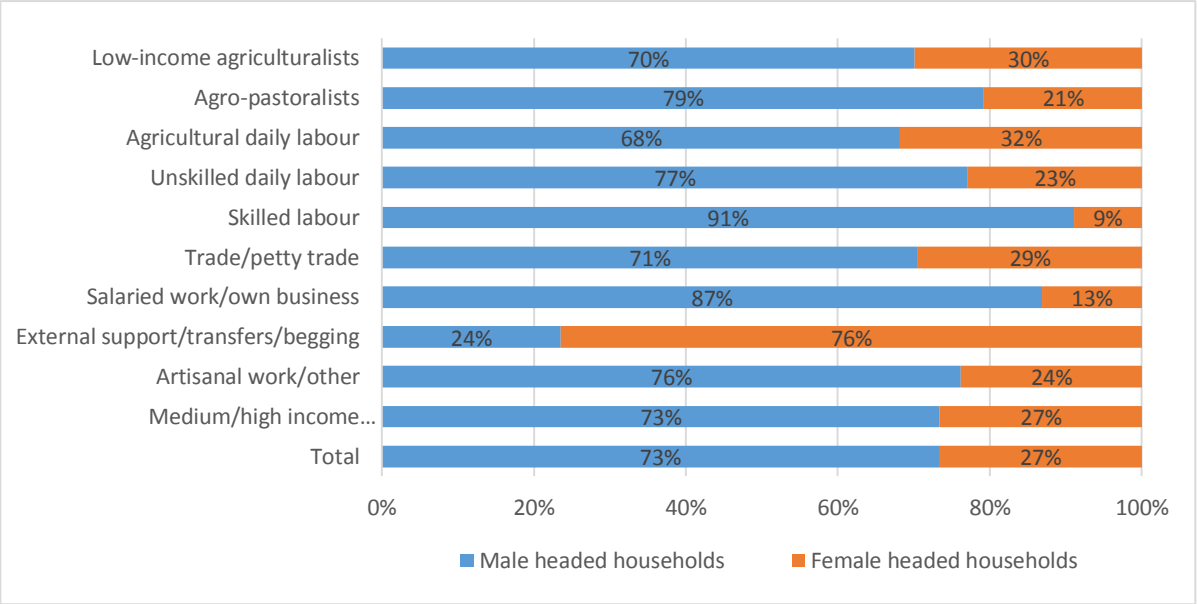
Figure 43: Months in which agricultural labour is more important as a livelihood activity (% of households)



Source: CFSVA 2015

Households headed by women are more likely to rely on remittances and are slightly over-represented in low-income agriculture, agricultural labour and trade/petty trade livelihood groupings; while 27 percent of all households are headed by women, at least 29 percent of households in these livelihood groupings are represented by women. Households headed by women are less likely to rely on skilled labour and salaried work/own business (Figure 44).

Figure 44: Percentage of male and female- headed households in each activity



Source: CFSVA 2015

In the CFSVA, households were asked which household members participate in each livelihood activity. In agricultural production, it is most common that both the head of household and spouse are engaged (44 percent of households). However, in more than a quarter of the households engaged in agricultural production, only women or women and children are engaged; this is either the woman head of household or the spouse of a male household head. In comparison, n no more than 4 percent of households are only men engaged in agricultural production. The same pattern is seen for agricultural labour: it is most common that the head of household and spouse are both participating, but in 27 percent of households only women are engaged and in 14 percent of households only men are engaged. An additional livelihood activity where women's participation is more prevalent is receiving remittances. In contrast, a higher percentage of only men participating in livelihood activities is found among households relying on unskilled labour (non-agricultural), skilled labour, transport, salaried work and households' own business. Trade and "other" livelihood activities have a more equal participation of men and women.

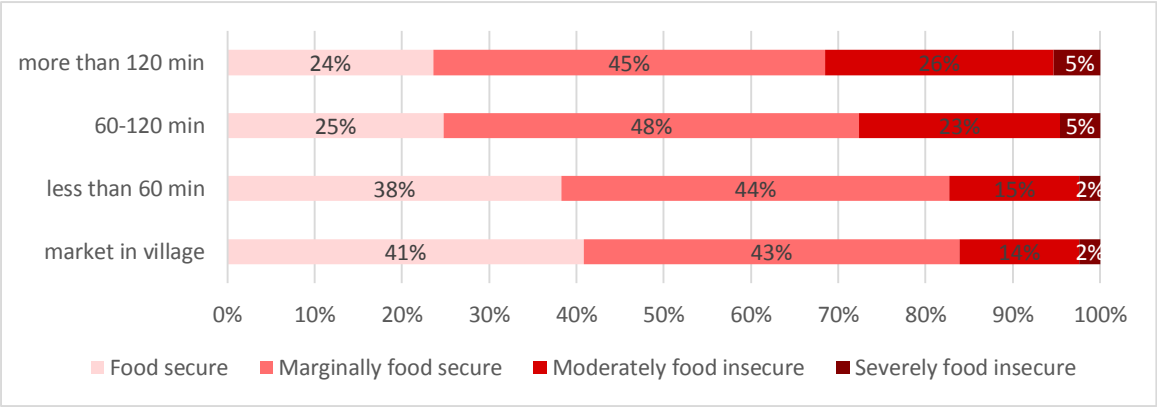
This gendered divide between different household members' participation in different livelihood activities highlights the challenges faced by women, particularly women heads of household, as the livelihood activities women are more often involved in typically generate less income than those activities more commonly engaged in by men.

6.5 Location of household

In each of the sampled villages, key informants were asked about the distance they travelled to reach services such as health facilities and markets. Just 7.5 percent of villages had a functioning health facility and for those villages without one, the average time to spent get to reach the nearest health facility was a little more than an hour. However, among sampled villages without a health facility in Nyamagabe, Rutsiro, and Kirehe, it took on average more than 90 minutes to reach the nearest health facility.

As shown in Figure 45, households in villages that are better connected to markets are more likely to be food secure. This can partly be explained by the better food security and nutrition status of households in urban areas, where facilities are more closely available. However, the association remains, although less strong, when rural households are analysed separately; this implies that there is a relationship between households' food security and nutrition status and remoteness, irrespective of the urban/rural divide.

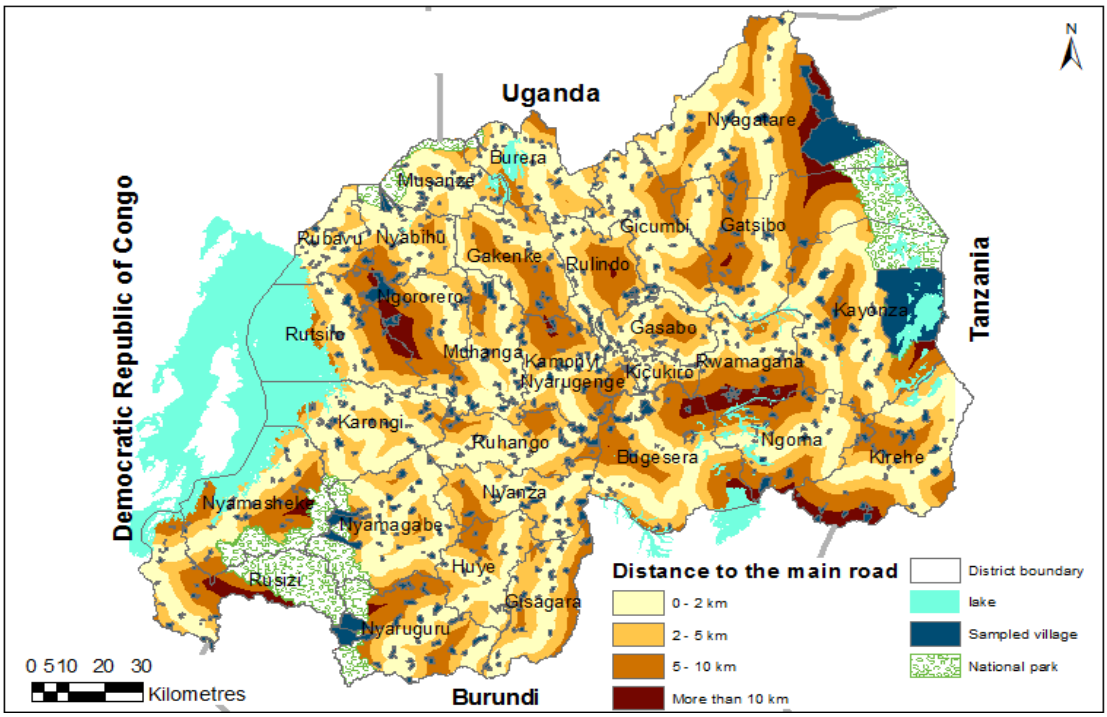
Figure 45: Distance to market by food security status



Source: CFSVA 2015

The districts with the highest percentage of households located far away from roads (>5km) are Gakenke, Nyagatare, Gatsibo and Kirehe. Although Gakenke, Nyagatare and Gatsibo all have an above average percentage of food insecure children, no relationship between households' distance from the road and their food security status.

Map 9: Distance to roads



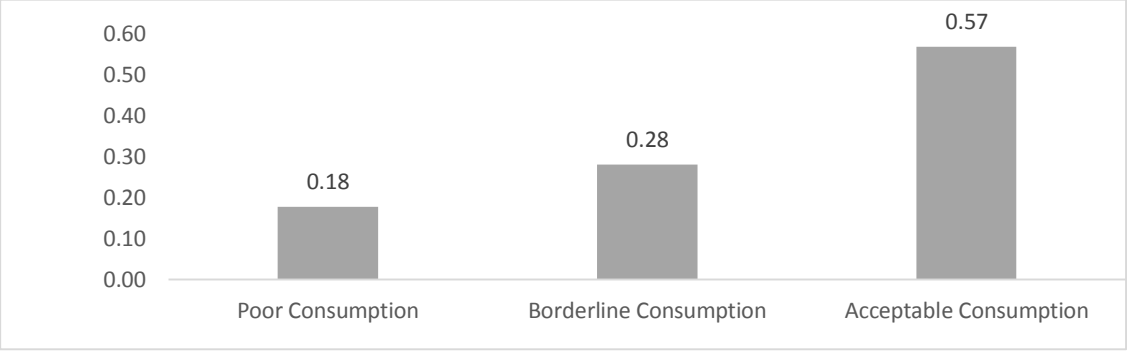
Source: Based on national road network dataset

6.6 Farming practices and food security

6.6.1 LIVESTOCK OWNERSHIP

The majority of households in Rwanda own or manage animals, although a significant difference exists between urban and rural areas. In rural areas, where some 71 percent of all households own or manage livestock, there is a link between livestock ownership and both improved food security and better diets. The trend is clearer when the number and type of livestock owned are taken into account through the tropical livestock unit (TLU), where one cow is considered the equivalent of 0.8 TLU.[51] Figure 46 shows that households with acceptable food consumption have an average TLU of 0.57, while households with poor food consumption have an average TLU of 0.18.

Figure 46: Average Tropical Livestock Unit by food consumption group



Source: CFSVA 2015

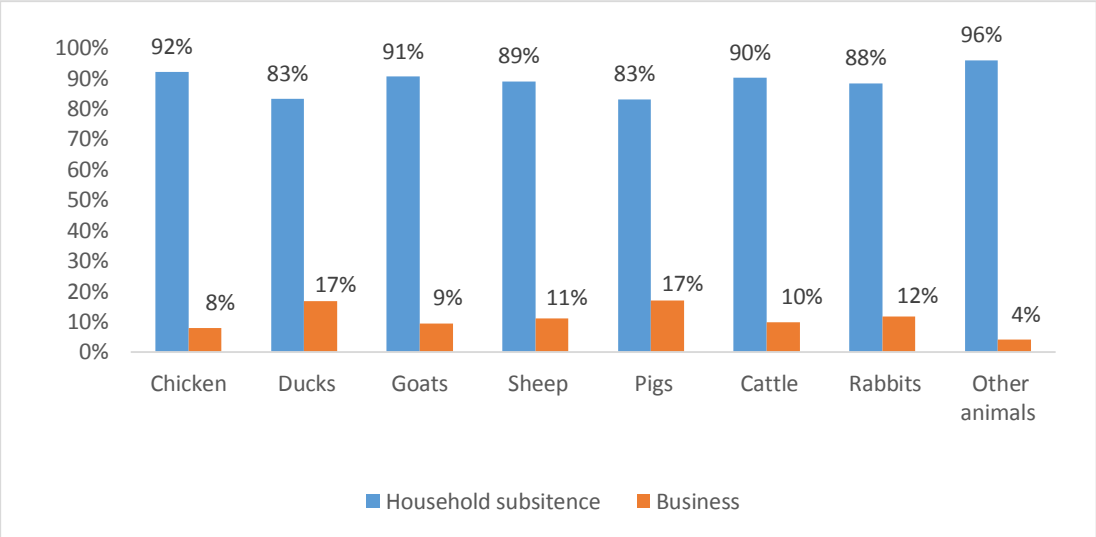
[51] One TLU is equivalent to one cattle of 205kg at maintenance. The summative scale used the following standard weight: cattle: 0.8, goat: 0.1, pork: 0.3, poultry: 0.007, rabbit: 0.007. The coefficients have not been specifically validated for Rwanda.

There is a clear difference in food consumption patterns between households that manage livestock and households that own livestock. In general, households that manage livestock have poorer food consumption compared with those who own livestock; 79 percent of household owning livestock have acceptable food consumption, compared to 62 percent of households that manage livestock.

At the national level, the consumption of meat and milk is surprisingly on average lower among households that own livestock. This finding results from the increased level of consumption of meat and milk among wealthier urban households who seldom own any livestock, but who consume more meat and milk than rural households owning livestock. Milk is consumed on average 2.5 days a week in urban households that do not own livestock, compared to only on 1.4 days a week by rural households that own livestock. However, when rural households are considered independently, it is clear that rural households that own livestock – in particular cattle - consume more meat and milk than those that do not. Rural households that do not own cattle on average consume milk 0.6 days a week, while rural households that own cattle consume milk on about 2.1 days a week.

Animals owned or managed by households are mostly used for household subsistence (Figure 47). It is usually only the wealthier households that sell livestock or livestock products.

Figure 47: Use of livestock owned or managed by households



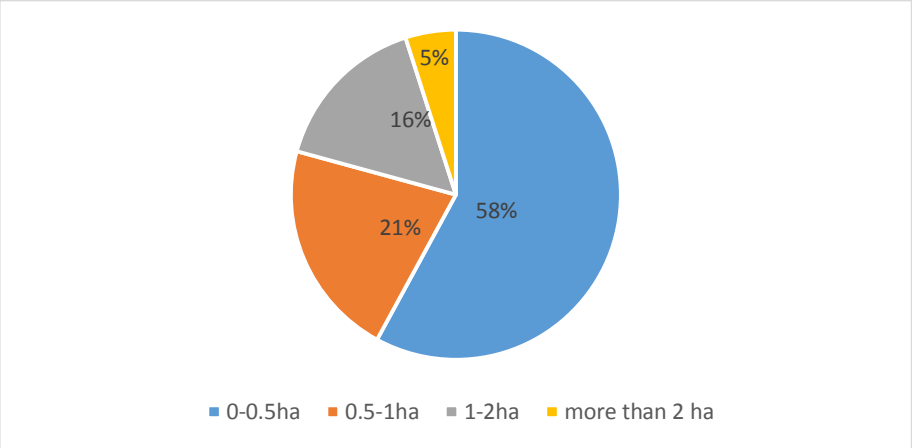
Source: CFSVA 2015

6.6.2 SIZE OF AGRICULTURAL LAND OWNED

On average, 67 percent of all households own land for crop production or livestock pasture. There is no clear difference between the food security status of households that own land and those who do not. However, food insecure households that do not own land are among the poorest households, while food secure households that do not own land are among the wealthiest households.

Among households that own land, the majority own small plots (smaller than 0.5ha) and only a few households (5%) own plots larger than 2 hectares (Figure 48).

Figure 48: Percentage of households by land size owned



Source: CFSVA 2015

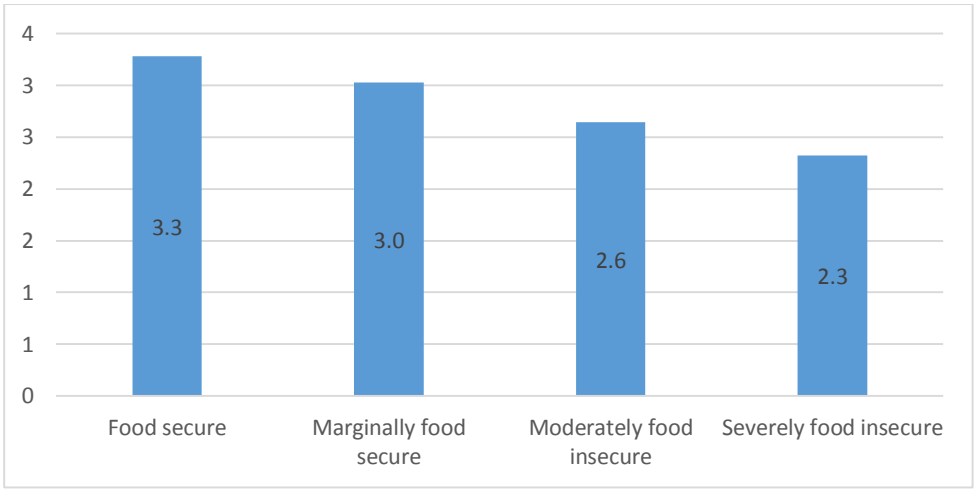
Larger plots of land are more often owned by food secure households: one in 10 food secure households own plots larger than 2 hectares. The percentage of households with small plots (less than 0.5ha) is highest in the Western Province (63%) and lowest in the Eastern Province (53%).

In addition to owning land, some households rent land for farming or are using farming land for free. In the Western and Southern Provinces, where plots owned by households are typically smaller households are more likely to rent land. For example, more than 50 percent of households in Gisagara and Karongi Districts rent land for farming. The use of farming land for free is most common in Kigali, where 20 percent of farming households pay nothing for land.

6.6.3 NUMBER OF CROPS GROWN

In total, 74 percent of Rwandan households practice agriculture, including 88% of rural households and 34% of urban households Among households practicing agriculture, almost all (97%) grew at least one crop in the agricultural year preceding the survey. Farming households grow an average of three crops. Only a few districts do households grow a higher diversity of crops; households in Gisagara, Muhanga and Rulindo grow on average more than four crops. Food secure households tend to grow a higher number of different crops than food insecure households (Figure 49). Irrespective of households' food security, the three most common crops grown by households are beans, sweet potato and maize.

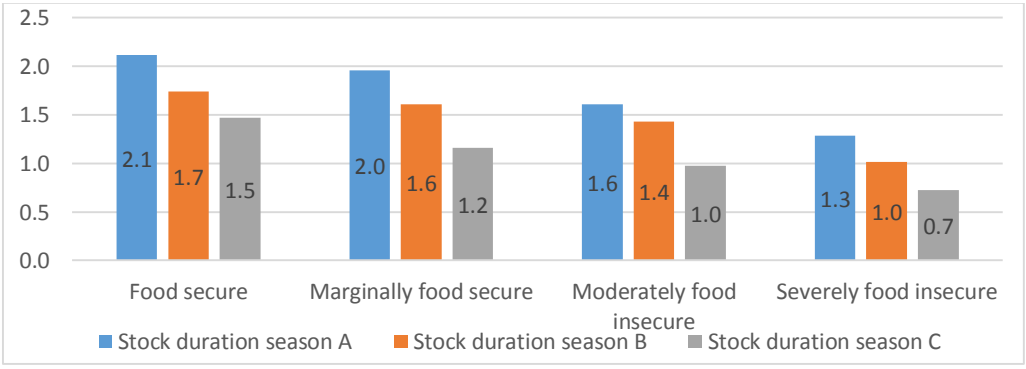
Figure 49: Average number of crops grown by food security group



6.6.4 STOCK DURATION

The average food stock duration reported by surveyed households was 1.9 months for season A, 1.6 months for season B and 1.2 months for season C. Food insecure households' food stocks do not last as long as those of food secure households (Figure 50).

Figure 50: Average number of months harvests last in the household, by food security group

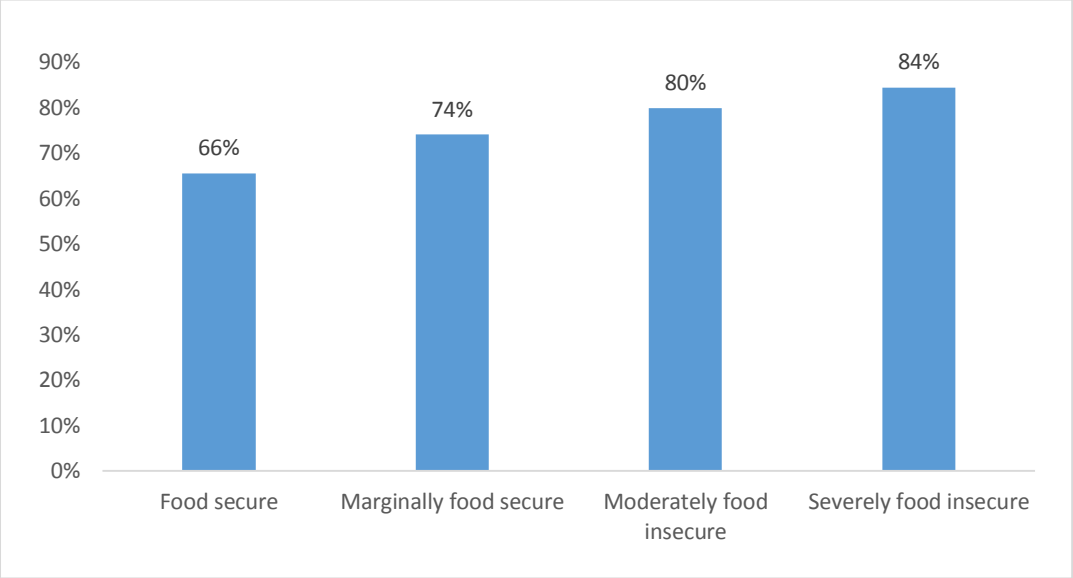


Source: CFSVA 2015

6.6.5 USE OF AGRICULTURAL PRODUCTION

Although the percentage of the household crop production that is consumed within the household is high across all food security groups, there is a clear trend that less food secure households tend to consume more and sell less of their own production. As shown in Figure 51, food secure agricultural households consume on average 66 percent of their produce, while severely food insecure households consume as much as 84 percent, leaving little to be sold.

Figure 51: Average percentage of crop production that is consumed within the household

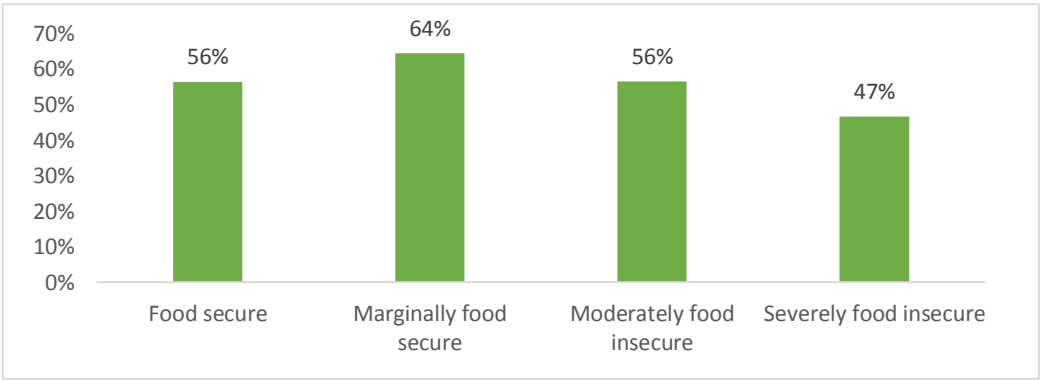


Source: CFSVA 2015

6.6.6 VEGETABLE GARDENS

The most food insecure households are least likely to own a vegetable plot, while marginally food secure households are most likely to do so. Food secure and moderately food insecure households are equally likely to own a vegetable plot (Figure 52). One possible explanation for this is that food secure households more often live in urban areas where they are less likely to have a garden.

Figure 52: Percentage of households owning a vegetable plot/garden



Source: CFSVA 2015

7. Nutrition status in children and women

The primary concern related to nutrition in Rwanda is the high level of stunting. This has been recognised in policies and programmes and although it is still a concern, the levels of stunting have decreased in the last three years, from 42 percent in 2012 to 37 percent in 2015.

KEY MESSAGES

- Malnutrition rates among children under 5 years have improved since 2012: stunting rates have dropped from 42 percent to 37 percent between 2012 and 2015.
- In the Northern Province, stunting rates have seen a remarkable improvement during the past three years, declining from 52 percent in 2012 to 39 percent in 2015.
- Stunting rates are now highest in the Western Province at 46 percent.
- Infant and young child feeding practices are poor: no more than 15 percent of children

A National Food and Nutrition Policy was drafted in 2013[52] and updates the pre-existing National Nutrition Policy of 2007. The focus of the policy is to reduce the prevalence of stunting in children under 2 years and to improve the food security situation among the most vulnerable families. Since the National Nutrition Policy was adopted in 2007, a large range of district-based nutrition interventions have been implemented. These interventions have included the screening, health facility referral and treatment of children at risk of malnutrition, community based nutrition programmes, behaviour change communication and the use of micronutrient powders for the fortification of food prepared at home.

In addition, the Rwanda Health Sector Strategic Plan 2012-2018 recognises that challenges remain to further improve the nutrition situation in Rwanda. These challenges include the previously low prioritization of nutrition in the health sector, resulting in inadequate human and financial resources available for nutrition programmes.

In order to efficiently implement national policies at the district level, District Plans to Eliminate Malnutrition (DPEM) have been integrated into District Development Plans. The first phase of the DPEM began in 2011 with selected districts, and was extended to all districts of Rwanda in 2012. In 2014, an assessment of these plans found that DPEM related activities were being implemented in all districts. The results showed that the performance level varied across districts.[53]

7.1 Nutritional status in children

Among households interviewed in the CFSVA, anthropometric measurements were taken for all children under 5 years old. In total, 4,058 children were measured. The children's age, weight and height or length were recorded to calculate wasting, stunting and underweight in children. These measures were calculated using the standard deviation (Z-scores) of the WHO 2006 reference standard. Z-scores of -2 and -3 were used as cut-off points for moderate and severe malnutrition respectively. In addition, the mid-upper arm circumference (MUAC) was measured for all children under 5 years.

[52] Government of Rwanda. National food and nutrition policy. 2013
[53] Ministry of Health. District Plans to Eliminate Malnutrition Assessment Report. 2014.

Nutrition data was collected primarily to explore linkages between malnutrition and food security, as the sampling for the survey was done based on household food security indicators. However, the malnutrition prevalence is relatively precise at the national and provincial level.

In Rwanda, the level of wasting is low. The CFSVA found 1.7 percent of children under 5 years to be waste, which is an improvement compared to 3.6 percent in 2012 and is within 'acceptable' limits as defined by WHO. High levels of stunting in Rwanda remain a concern; in 2015, 36.7 percent of children under 5 are stunted, down from 43 percent in 2012. The percentage of children who are underweight is 8.1 percent (compared to 12 percent in 2012) (Table 12).

Although the levels of stunting are still high, there has been a reduction in the last three years, meaning that Rwanda has gone from being in a 'critical' situation (stunting above 40%) to 'serious' (stunting level between 30 and 39 percent).

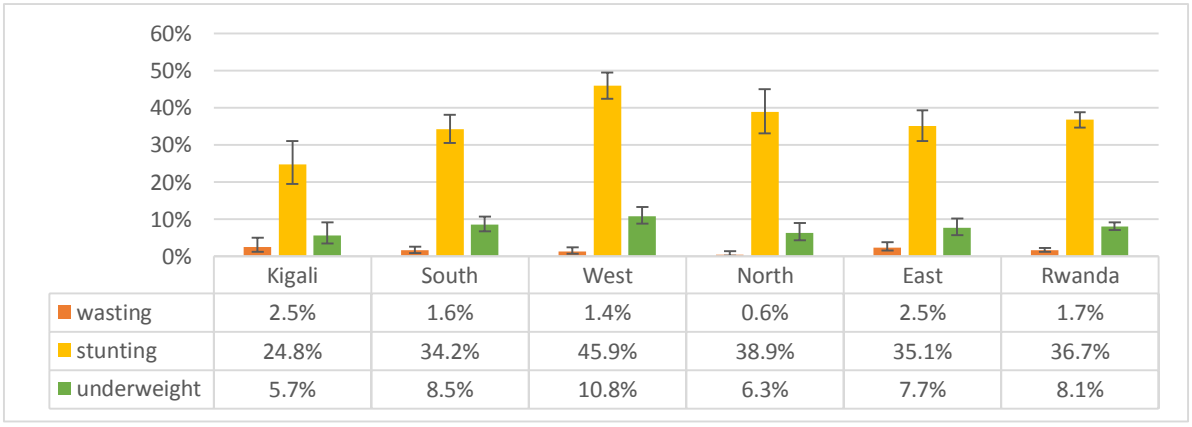
Table 13: Prevalence of malnutrition among children under five years

	MODERATE			SEVERE			GLOBAL		
		95% CI			95% CI			95% CI	
	%	Lower	Upper	%	Lower	Upper	%	Lower	Upper
WASTING	1.0%	0.7%	1.4%	0.7%	0.5%	1.1%	1.7%	1.3%	2.2%
STUNTING	24.5%	22.9%	26.2%	12.2%	10.9%	13.6%	36.7%	34.7%	38.8%
UNDERWEIGHT	7.3%	6.4%	8.3%	0.8%	0.6%	1.2%	8.1%	7.1%	9.2%

Source: CFSVA 2015

The differences in levels of wasting across the provinces are small. Differences in stunting rates are more significant, with the highest rate of almost 46 percent found in the Western Province; although this level is still deemed critical, the stunting rate in this province has reduced from 51 percent in 2012. The stunting rate is lowest in Kigali at 25 percent (Figure 53). In 2012, stunting levels were highest in the Northern Province (52 percent), meaning this province has seen a reduction in stunting of 13 percentage points over the last three years.

Figure 53: Percentage of malnourished children under five years old, by province

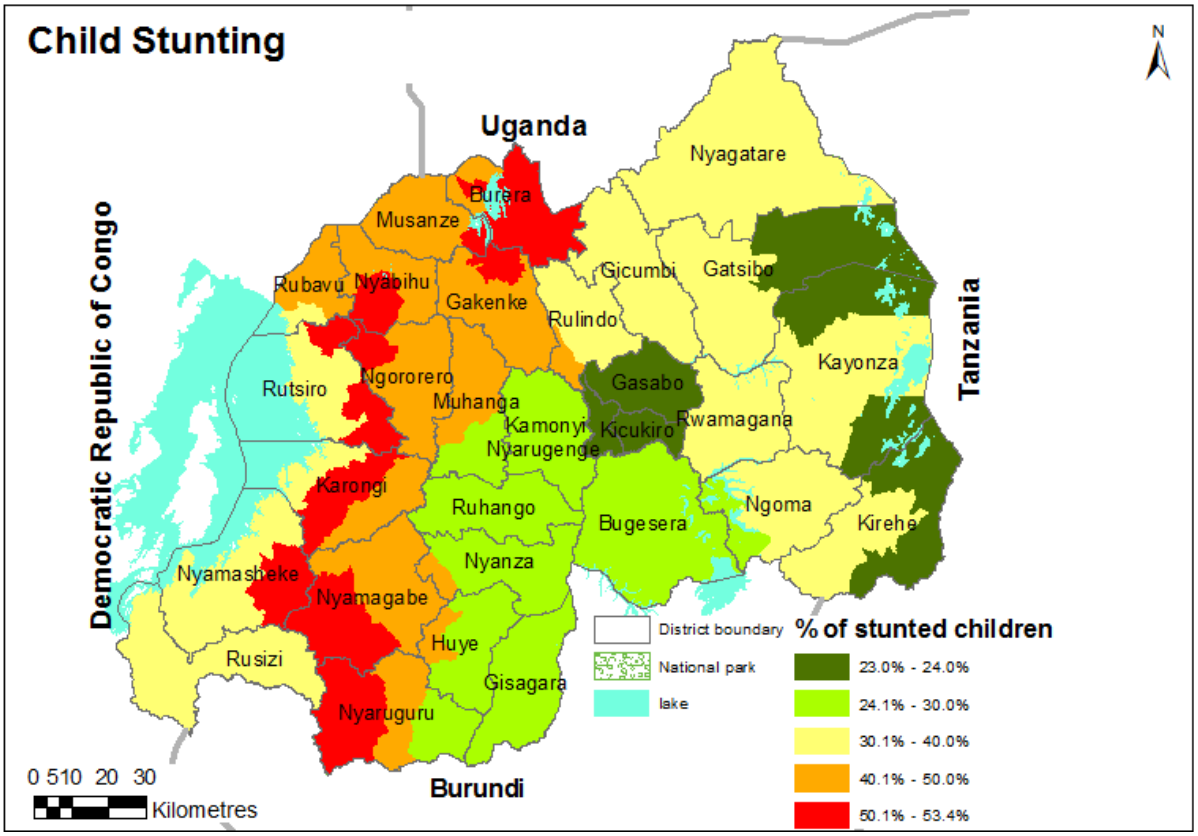


	Kigali	South	West	North	East	Rwanda
wasting	2.5%	1.6%	1.4%	0.6%	2.5%	1.7%
stunting	24.8%	34.2%	45.9%	38.9%	35.1%	36.7%
underweight	5.7%	8.5%	10.8%	6.3%	7.7%	8.1%

Source: CFSVA 2015

Map 10 below shows stunting rates by livelihood zone. The three livelihood zones with the highest stunting rates are Western Congo-Nile Crest Tea Zone (53%), Northern Highland Beans and Wheat Zone (51%) and East Congo-Nile Subsistence Farming Zone (49%).

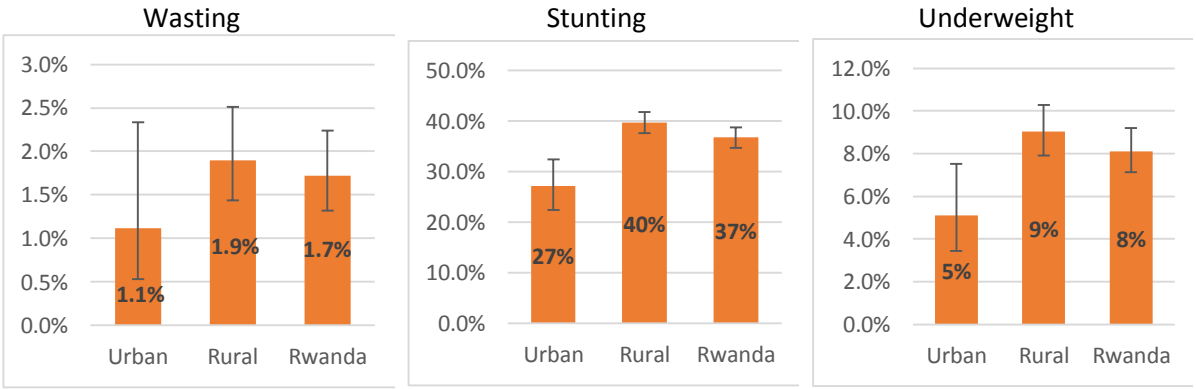
Map 10: Child stunting by livelihood zone



Source: CFSVA 2015

Child malnutrition rates are generally higher in rural areas, especially for stunting which stands at 40 percent in rural areas compared to 27 percent in urban. Levels of wasting show no significant differences between urban and rural areas, while there is a small difference in levels of underweight between urban and rural areas (Figure 54).

Figure 54: Percentage of children wasted, stunted and underweight, by urban/rural area

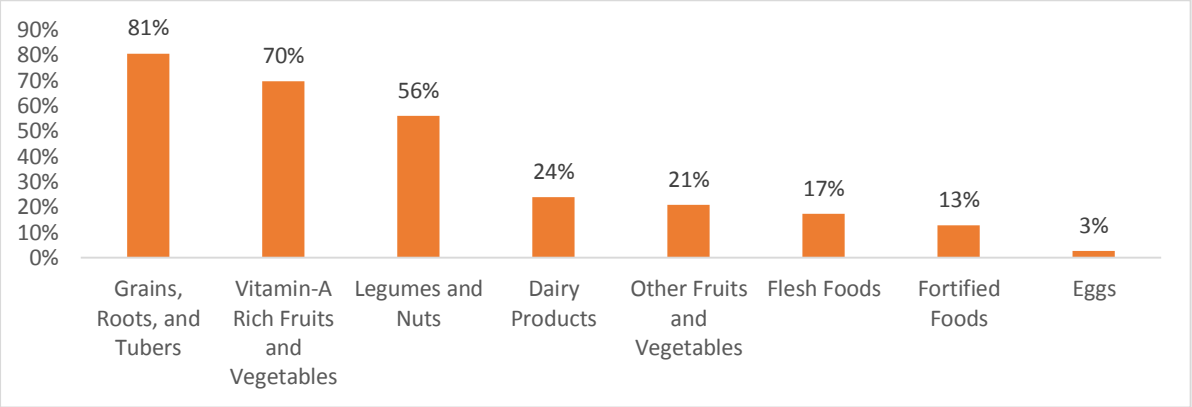


Source: CFSVA 2015

7.2 Child food consumption

For children aged 6 to 23 months, the caretaker was asked what the child had consumed in the 23 hours before the survey. As shown in Figure 55, the most common food items consumed by children in this age group come from the following food groups: grains, roots and tubers; vitamin A rich fruits and vegetables; and legumes and nuts.

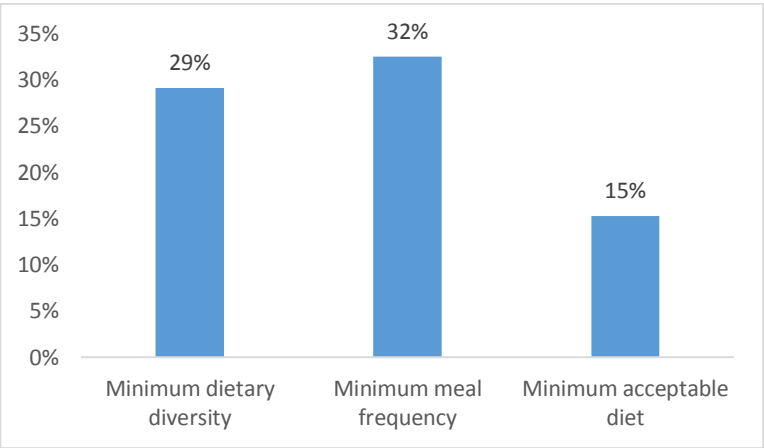
Figure 55: Percentage of children between 6 and 23 months that had consumed food items from the different food groups in 23 hours before the survey



Source: CFSVA 2015

Based on the diversity and frequency of food consumed among children aged 6-23 months, the minimum dietary diversity, minimum meal frequency and minimum acceptable diets were calculated. The results showed that a low percentage of children of this age are meeting all the requirements for a minimum acceptable diet, in total only 15 percent. About 32 percent of children are reaching the minimum meal frequency while 29 percent are obtaining minimum dietary diversity (Figure 56).

Figure 56: Percentage of children aged 6-23 months reaching the levels for minimum acceptable diets



Source: CFSVA 2015

CHILD DIET INDICATOR THRESHOLDS

Minimum dietary diversity:

Consumption of four or more food items out of seven food groups

Minimum meal frequency:

For breastfed children, twice for 6–8 month olds and three times for 9–23 months. For non-breastfed children, four times for 6–23 month olds

Minimum acceptable diet:

Meeting the requirements for both minimum acceptable diet and minimum meal frequency

7.3 Women's nutritional status

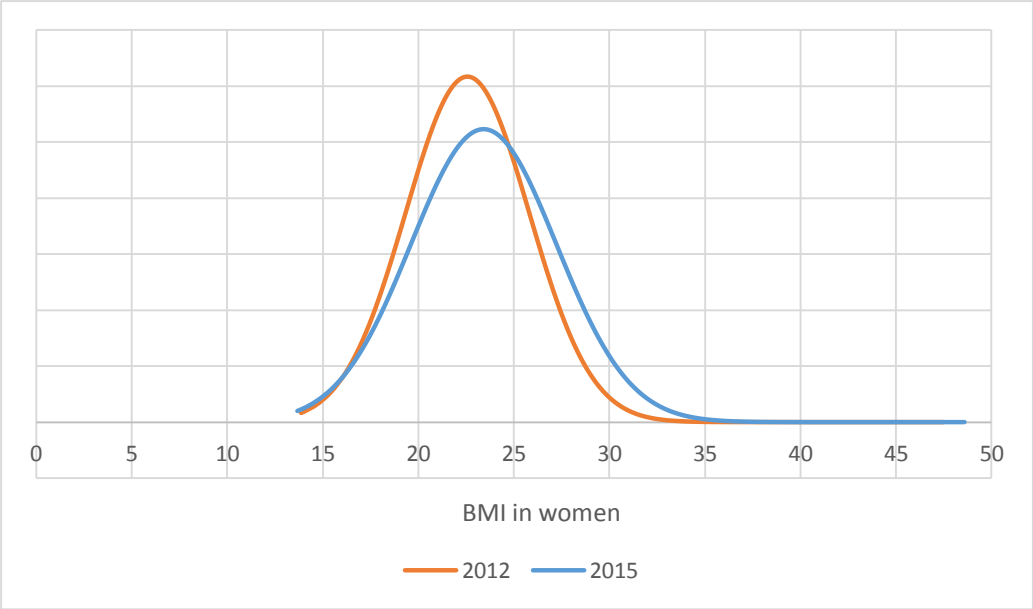
The CFSVA measured the height and weight of non-pregnant women of reproductive age (between 15-49 years old), as well as MUAC for all women between 15 and 49 years. Four indicators were used to evaluate women's nutritional status: height, weight, Body Mass Index (BMI) and MUAC. Height and weight measures were taken for 6,220 non-pregnant women and MUAC was taken for 6,708 women.

NUTRITION INDICATORS FOR WOMEN	
Stunting:	Height < 145 cm
Wasting:	BMI <18.5
	MUAC <221 mm
Overweight:	BMI >25

The findings show that 3 percent of non-pregnant women of reproductive age are stunted, 27 percent are overweight and 5 percent are wasted (based on weight and height measures). The wasting figure for both pregnant and non-pregnant women according to the MUAC is also 5 percent.

Since the previous CFSVA in 2012, there has been a shift in women's nutritional status, with more women now overweight. Although 67 percent of women are still considered 'normal' according to their BMI, the percentage of overweight and obese women has increased in the past three years as shown by Figure 58 below.

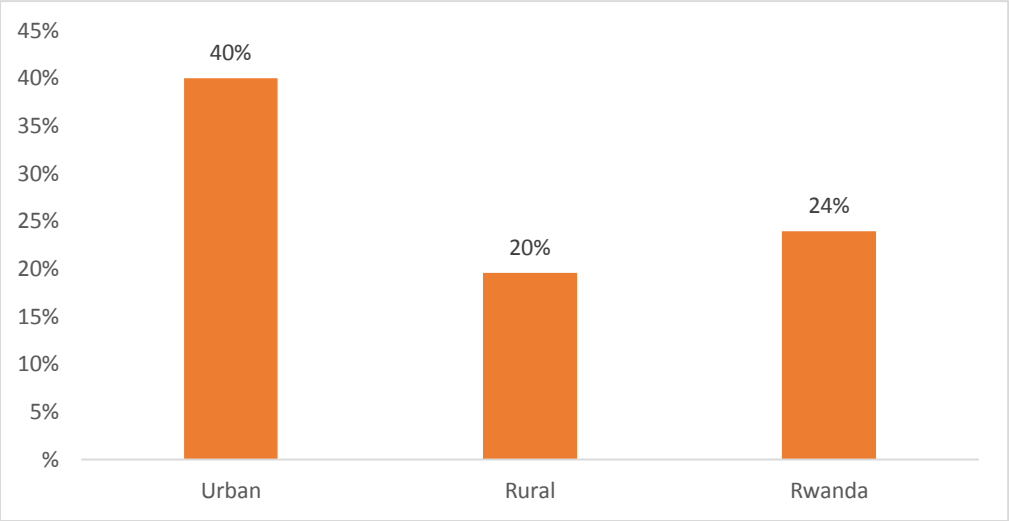
Figure 57: Normal distribution of BMI in women, comparison of 2012 and 2015 CFSVA results



Source: CFSVA 2015

While the prevalence of underweight in women only slightly differs between urban and rural areas, there is a clear divide in the prevalence of overweight between urban and rural areas. As shown in Figure 59, the CFSVA found that 40 percent of women in urban areas are overweight. This could indicate that obesity is likely to become a serious concern given the increasing urban population.

Figure 58: Percentage of women overweight, by urban/rural area

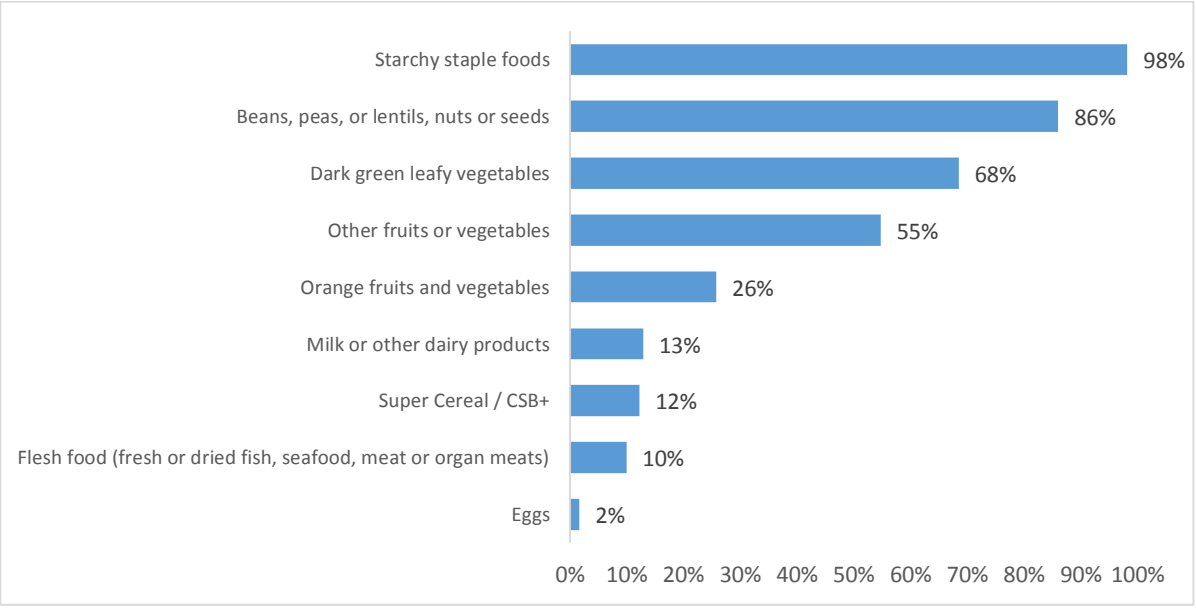


Source: CFSVA 2015

7.4 Food consumption among women

Women in surveyed households were asked what they had consumed the day before the survey. The food items mentioned were grouped into one of the following nine food groups: (1) any starchy staple foods; (2) beans, peas, lentils, nuts or seeds; (3) dark green leafy vegetables; (4) other fruits or vegetables; (5) orange fruits or vegetables; (6) milk or other dairy products; (7) super cereal/CSB+; (8) flesh food; and (9) eggs.[54] The food items most commonly consumed by women in Rwanda are starchy staple foods, pulses and dark green leafy vegetables.

Figure 59: Percentage of women consuming different food items the day before the survey



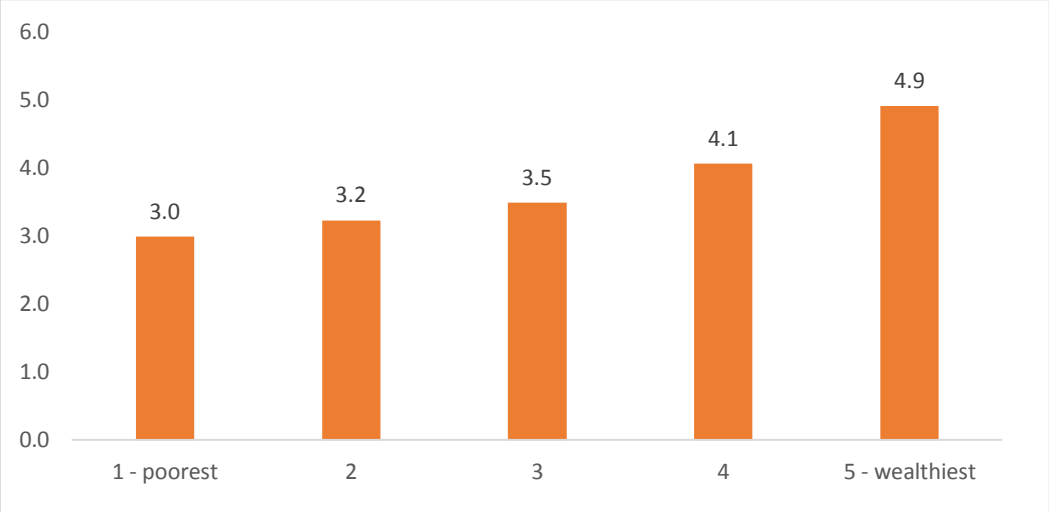
Source: CFSVA 2015

[54] In the women's dietary diversity score (WDDS), super cereal/CSB+ is normally not considered as an own group and organ meat and flesh food are separated into two different group.

Based on these food groups, a dietary diversity score was calculated by summing the number of food items from different groups that women consumed. The purpose of individual dietary diversity scores is to reflect the nutritional quality of the diet; thus a higher score reflects a diet with a better nutritional quality.

Women's average dietary diversity score is 3.7, but with differences depending on the food security status and wealth of the woman's household. The dietary diversity score for women in the wealthiest households is 4.9, compared with 3.0 in the poorest households (Figure 60).

Figure 60: Average dietary diversity score among women divided by household wealth group



Source: CFSVA 2015

8. Factors related to malnutrition in children

In this section, factors related to malnutrition in children will be examined more closely. The main focus will be on factors related to stunting, as wasting levels are fairly low across Rwanda.

KEY MESSAGES

- Children of mothers with a low level of education are more often stunted.
- Households most commonly consume water from an improved but untreated source (40 percent of households), while 13 percent of households consume untreated water from an unimproved source.
- Children in food secure and wealthier households are less likely to be malnourished.
- Still, some 29 percent of children in food secure households are stunted.

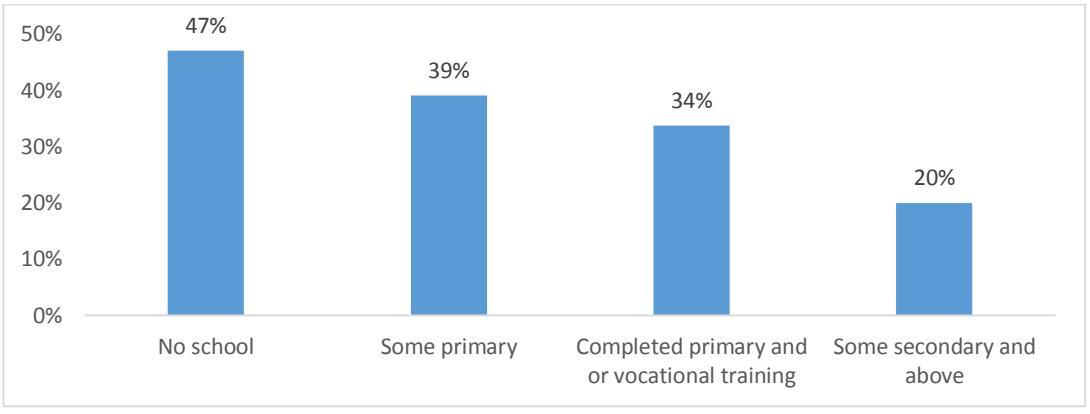
8.1 Individual and immediate factors related to malnutrition

8.1.1 MOTHERS' EDUCATION AND NUTRITIONAL STATUS

In line with previous assessments, the results from the 2015 CFSVA show that factors related to mothers are important in explaining stunting in children. One important factor is the nutritional status of the mother. Stunted women are more likely to have stunted children: 68 percent of children born to stunted mothers are also stunted, compared with 36 percent of children born to non-stunted mothers. However, according to the CFSVA results, only 3 percent of women are stunted.

Another important factor is the level of education of the mother. As seen in Figure 61, the higher the education level of the mother, the less likely the woman is to have a stunted child. This factor is important on a broader scale as 18 percent of women of reproductive age do not have any education.

Figure 61: Child stunting by mother's education level



Source: CFSVA 2015

The mother's health and nutritional status during pregnancy is an important factor affecting the intra-uterine development of the child and the child's future nutritional status. The 2015 CFSVA results show that the overwhelming majority (96%) of women who are currently pregnant or have been pregnant previously have received antenatal care during their pregnancy, with most women visiting the antenatal clinic three or four times.

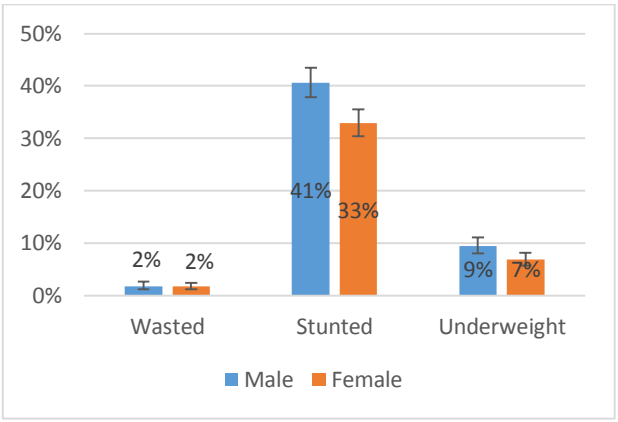
Most women also took an iron supplement during their last pregnancy (62%). However, anaemia in women remains common. According to the 2015 DHS, about 19 percent of all women in Rwanda are suffering from anaemia.

About 80 percent of women said that they sleep under a mosquito net each night, reducing their risk of contracting malaria.

8.1.2 CHILD SEX, SIZE AT BIRTH AND AGE

Similar to the previous CFSVA and DHS findings, the 2015 CFSVA found that boys are more often stunted than girls. Some 41 percent of boys under 5 years are stunted, compared with 33 percent of girls. The level of wasting is the same in female and male children, while underweight prevalence is slightly higher among boys.

Figure 62: percent children malnourished, by sex of the child



Source: CFSVA 2015

For children who had a birth certificate (in total 93 percent of children), information regarding birth weight was collected. Malnourished children were found to have a lower birth weight than those currently with a normal nutritional status. The differences in birth weight between normal and malnourished children are significant for both stunting and underweight.

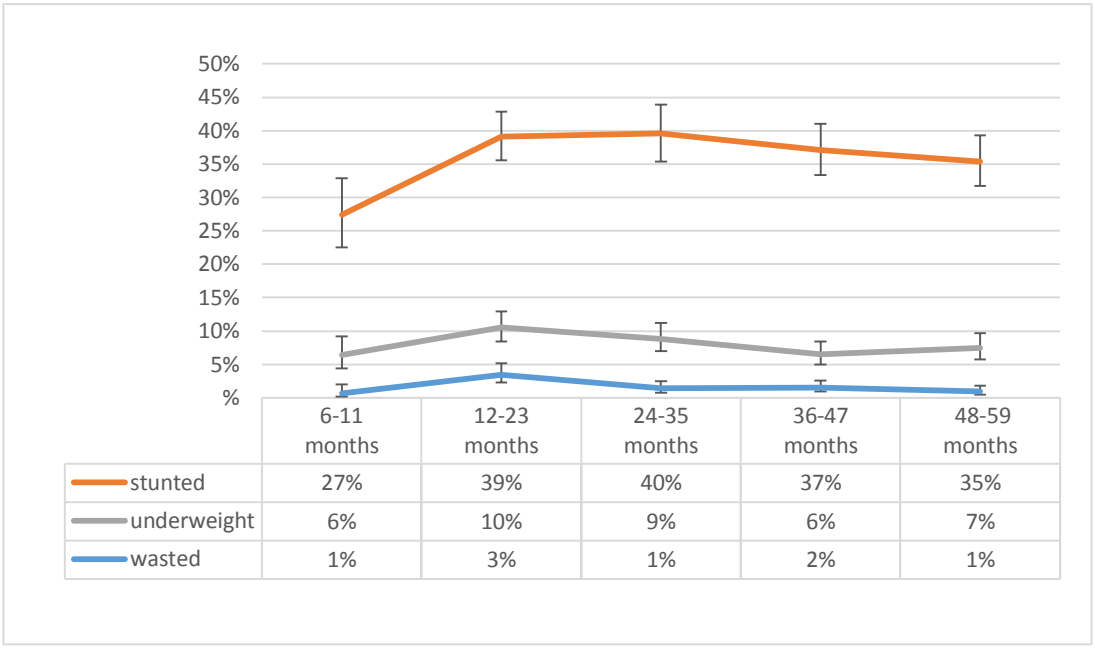
Table 14: Average birth weight by nutritional status of the child

	WASTING		STUNTING		UNDERWEIGHT	
	Birth weight in grams	**(95% CI)**	**Birth weight in grams**	**(95% CI)**	**Birth weight in grams**	**(95% CI)**
NORMAL	3383	(3356 - 3411)	3433	(3399 -3467)	3400	(3370 - 3430)
MALNOURISHED	3224	(2932 - 3516)	3290	(3245 - 3336)	3161	(3082 - 3240)

Source: CFSVA 2015

Differences in the prevalence of wasting and underweight are small when comparing children of different age groups over the first five years of life. Stunting is more prevalent in children over one year of age.

Figure 63: Percentage of children malnourished, by age of the child



	6-11 months	12-23 months	24-35 months	36-47 months	48-59 months
stunted	27%	39%	40%	37%	35%
underweight	6%	10%	9%	6%	7%
wasted	1%	3%	1%	2%	1%

Source: CFSVA 2015

8.1.3 CHILD ILLNESS

Among all children, 41 percent had been ill during the two weeks before the survey. The most common illnesses mentioned were fever and cough, both representing 34 percent of children suffering from illnesses, while 12 percent of children had had diarrhoea in the two weeks before the survey.

A higher percentage of children who had suffered from diarrhoea in the two weeks before the survey were found to be stunted compared with those that had not had diarrhoea (48 percent versus 35 percent respectively). As stunting is a nutritional status that develops over time, it is likely that the illness in the two weeks before the survey is a proxy for repeated episodes of diarrhoeal disease which can have an impact on the level of stunting in children. Diarrhoea can be an outcome of poor water and sanitation conditions.

8.2 Community and household level factors related to malnutrition

8.2.1 HYGIENE

In total, the vast majority of children (96%) were fed using hygienic practices. These children were either feeding themselves using utensils or after having washed their hands before eating, or were being fed by someone who had washed their hands before feeding the child. Among the few children that were fed with unwashed hands, 50 percent were found to be stunted compared with 36 percent of other children.

Women were asked at what times during the day they washed their hands. Almost all women said that they washed their hands before eating (93%), while 69 percent washed their hands whenever they were dirty and 65 percent washed their hands after visiting the toilet. A little more than half of all women said that they washed their hands before preparing a meal, and no more than 27 percent did so after cleaning a child who had been to the toilet.

8.2.2 WATER AND SANITATION

According to the EICV 4, in 2013/14 the share of the population with access to improved drinking water was 84.8 percent nationally, while access to improved sanitation facilities was 83.4 percent. These figures show a continued improvement compared with three years earlier when 74.5 percent of households had access to improved sanitation methods.[55] The target in the water and sanitation strategic plan, as well as the overall economic, development and poverty reduction strategy (EDPRS2), is to achieve 100 percent coverage of access to improved water and sanitation facilities by 2017.[56]

As shown in Table 15, the most common source of water nationally and in the Southern, Western and Northern Provinces is a borehole with pump. In the Eastern Province, it is more common to have a public tap and to fetch water from a pond, lake, river or stream, while in Kigali water is usually piped into the home.

Table 15: Percentage of households using different sources of water by province

	IMPROVED SOURCES					UNIMPROVED SOURCES			
	Borehole with pump	Public tap/ piped water	Water tap at home	Rain water	Protected dug well or spring	Pond, lake, river or stream	Unprotected well or spring	Vendor	Other
Kigali city	10%	29%	50%	0%	0%	2%	5%	3%	2%
Southern	60%	18%	7%	0%	1%	7%	5%	0%	0%
Western	37%	33%	6%	1%	1%	11%	11%	1%	0%
Northern	36%	33%	13%	1%	1%	7%	5%	4%	0%
Eastern	19%	33%	7%	1%	3%	29%	8%	0%	0%
RWANDA	34%	29%	14%	1%	1%	13%	7%	2%	0%

Source: CFSVA 2015

The majority of households walk to get their water, which takes on average 17 minutes. However, in the Eastern Province 15 percent of households have to walk for more than an hour. In Nyagatare District, 23 percent of households have to walk for more than an hour to reach their main water source.

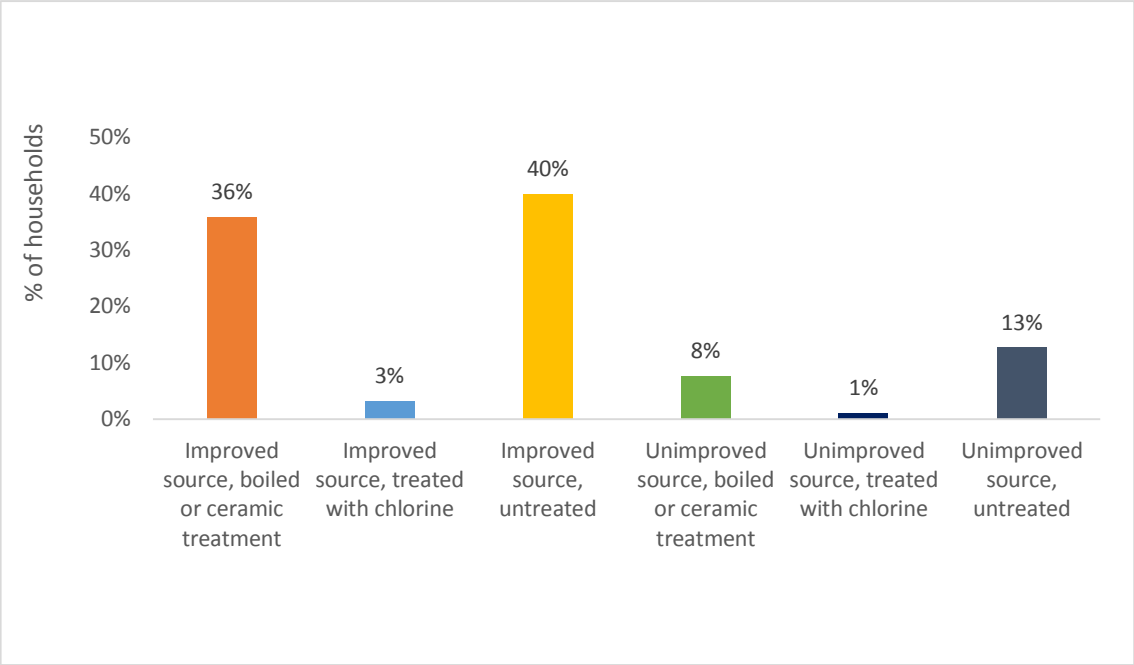
Most households (51%) do not treat water before using it, but among those that do, the most common water treatment method is boiling. As shown in Figure 64, the largest share of households consume untreated water from an improved source (40%), followed by treated water from an improved water source (36%).[57]

[55] National Institute of Statistics of Rwanda (NISR), Rwanda Poverty Profile Report, 2013/14, August 2015

[56] Ministry of infrastructure. Water and Sanitation Strategic Plan 2013/14 – 2017/18. June 2013.

[57] **Improved sources of water:** Public water tap/piped water, water tap at home, borehole with pump, rain water collection, protected dug well or spring. **Unimproved sources of water:** pond, lake, river or stream, unprotected well or spring, vendor.

Figure 64: Type of water source and treatment



Source: CFSVA 2015

The 2015 CFSVA found differences in children's malnutrition levels depending on the source and treatment method of water used in the household. Children in households where water comes from an improved source and is boiled or treated using ceramic filters have lower rates of stunting compared with those in households with untreated water or water from an unimproved source.

Similarly, children in households using a flush latrine or a constructed pit latrine with floor, walls and roof have lower rates of stunting (31 percent) compared children in households with other types of toilet (45 percent).

8.2.3 WEALTH AND FOOD SECURITY STATUS OF THE HOUSEHOLD

Children in food insecure and poor households are more likely to be stunted than those in food secure and wealthier households. While the stunting prevalence is similar for households in the three poorest quintiles - representing about 60 percent of all households in Rwanda - there is a significant difference between the stunting prevalence of households in the two wealthiest groups compared to the three poorest groups (Figure 66). As shown in Figure 65, while 56 percent of children in severely food insecure households are stunted, the percentage of stunted children in food secure households is significantly lower, indicating a relationship between food security and stunting levels. However, stunting remains relatively common in food secure households too, affecting 29 percent of children in food secure households.

These trends are similar for wasting and underweight, although for wasting no statistically significant trends can be confirmed.

Figure 65: Percentage of stunted children by household food security status

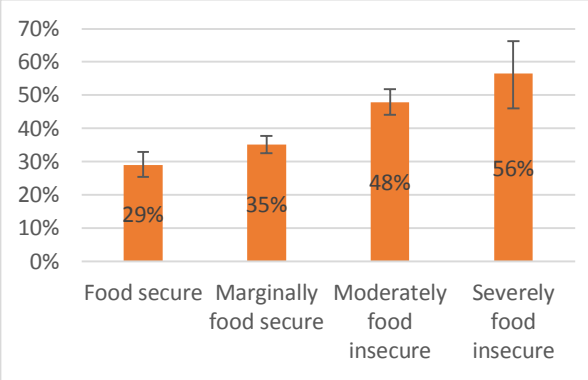
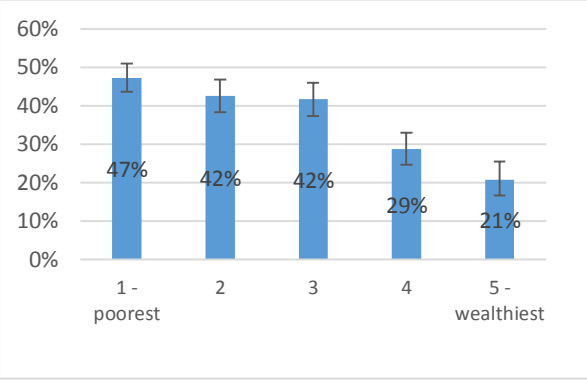


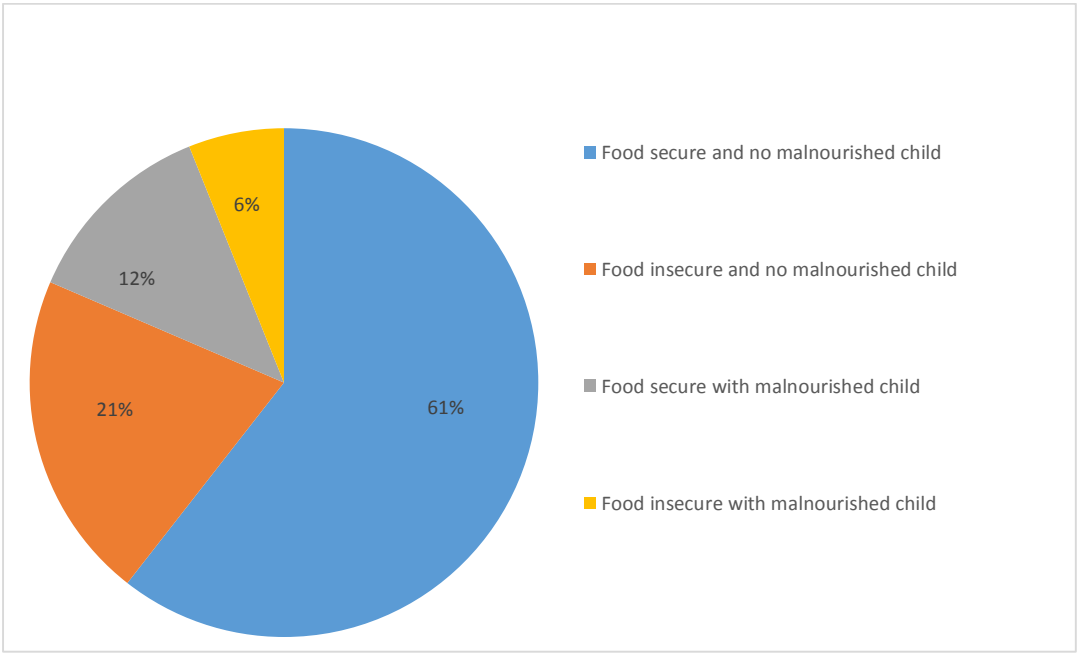
Figure 66: Percentage of stunted of children by household wealth status



Source: CFSVA 2015

In total, 18 percent of households included in the CFSVA had at least one malnourished child, while 6 percent of households were both food insecure and had a malnourished child and 12 percent of households were food secure and had a malnourished child.[58]

Figure 67: Percentage of households by food security status and presence of malnourished child



Source: CFSVA 2015

[58] This analysis excludes households with children under five that had invalid results in the anthropometric measurements

THE RELATIONSHIP BETWEEN NUTRITIONAL OUTCOMES AND HOUSEHOLD FOOD CONSUMPTION

Referring to the food security and nutrition framework, individual food intake and health status are the main two factors with a direct impact on the nutritional status of children. In the next layer, household food access, care/health practices and health and hygiene practices are the factors with an impact on individual food intake and health status.

The food consumption score reflects food intake at the household level and is closely related to household food access. This means that household food consumption contributes to the explanation of the nutritional status of household members.

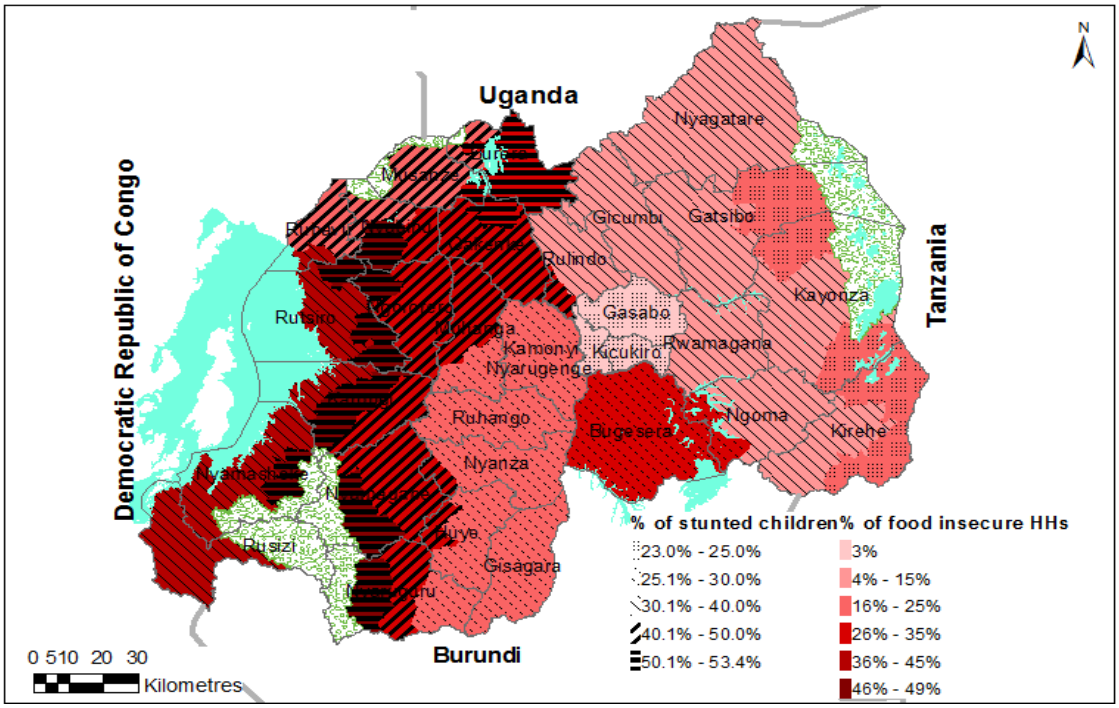
In the 2015 CFSVA, food consumption was found to be lower than in 2012, although stunting levels improved. Some explanations for these seemingly contradictory results are:

- Household food consumption is only one factor with a potential impact on the nutritional status of children. Hygiene and care practices are also important factors.
- The food consumption score measures household food consumption, but not the intra-household distribution of food. If children are prioritized in a household with a generally inadequate diet they can still have acceptable consumption.
- While the food consumption score measures the current food security situation of the household and can change from week to week depending on external factors such as seasonality and food prices, stunting develops over time.
- While anthropometric measures are quantitative, questions relating to food items consumed in the past week are more qualitative and susceptible to the human bias of the interviewer and the respondent, such as recall bias.

8.3 Overlap of food insecurity and stunting by livelihood zone

Both food insecurity and stunting are most commonly found in the western and south-western parts of the country, while the eastern and south-eastern parts of the country are generally doing better both in terms of food security and nutrition.

Map 11: Distribution of food insecurity and stunting

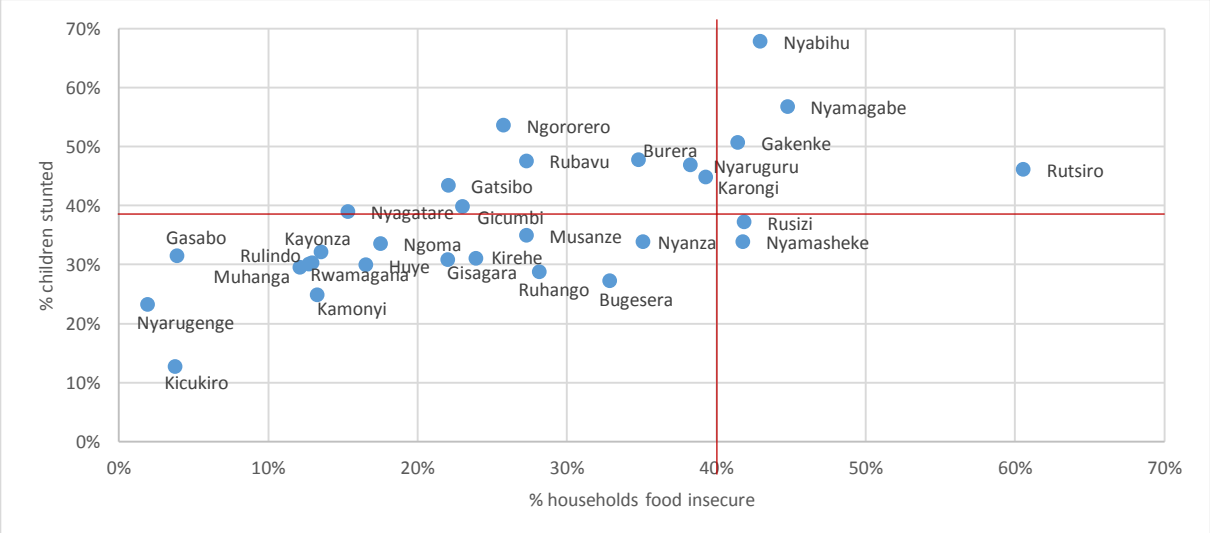


Source: CFSVA 2015

8.3.1 CONVERGENCE OF FOOD INSECURITY AND MALNUTRITION BY DISTRICT

Districts with a higher share of food insecure households have a higher percentage of children suffering from stunting. While most districts have both food insecurity and stunting levels below 40 percent, Nyabihu, Nyamagabe, Gakenke and Rutsiro Districts have levels of both above 40 percent. Rusizi and Nyamasheke have high food insecurity levels but stunting levels below 40 percent. A number of districts (Ngororero, Burera, Rubavu, Nyaruguru, Karongi and Gatsibo) have stunting levels above 40 percent, but lower rates of food insecurity. Figure 68 below shows this convergence.

Figure 68: Convergence of food insecurity and malnutrition by district



Source: CFSVA 2015

9. Shocks and household vulnerability to food insecurity

KEY MESSAGES

- 27 percent of all households had experienced a shock in the year before the survey that affected their ability to provide for household members or to eat in their accustomed manner.
- Households with unstable sources of income more often experience shocks.
- Shocks are mainly weather related, such as irregular rains or prolonged dry spells, followed by serious accidents or illness of a household member.
- Households in the eastern part of the country are more vulnerable to rainfall deficits.

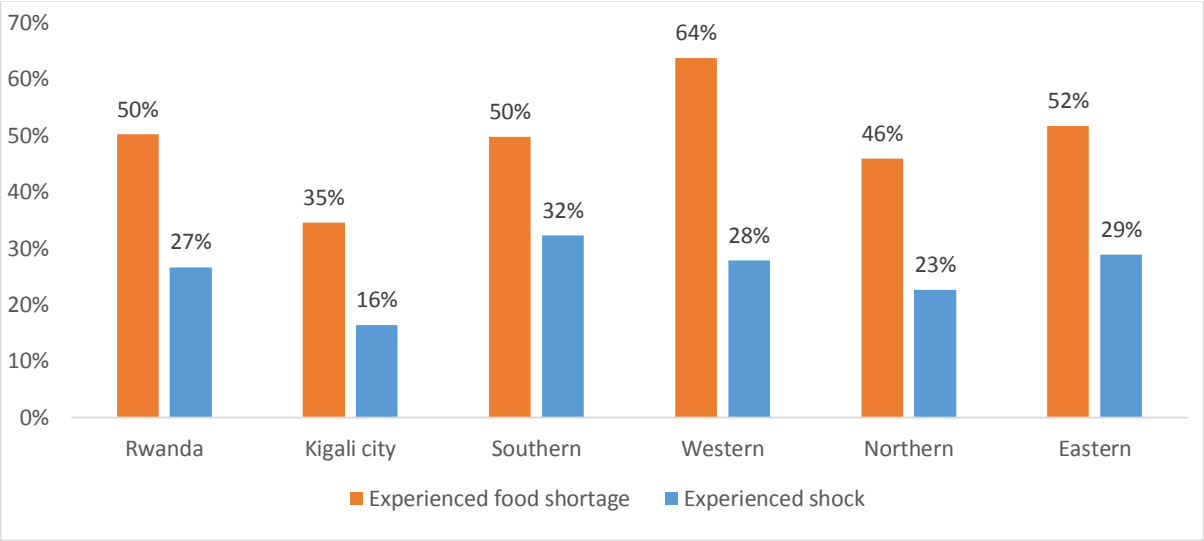
9.1 Shocks affecting the food security situation

Households that had experienced a food shortage over the past 12 months were also asked if they had experienced any unusual situation during this period that had affected their ability to provide for household members to eat in their usual manner, or affected what they own. If this were the case, the household was classified as having experienced a 'shock'.

In total, 50 percent of households had experienced a food shortage and about half of these households had also experienced a shock. The highest percentage of households suffering a food shortage was in the Western Province, while the highest percentage of households that had experienced a shock was in the Southern Province, suggesting that the majority of households that experienced a food shortage in the Western Province believed this situation was not caused by a shock (Figure 69).

Districts with the highest percentages of households that experienced a shock were Nyanza (72%), Rubavu (47%), Ruhango (46%), Musanze (44%) and Gisagara (43%).

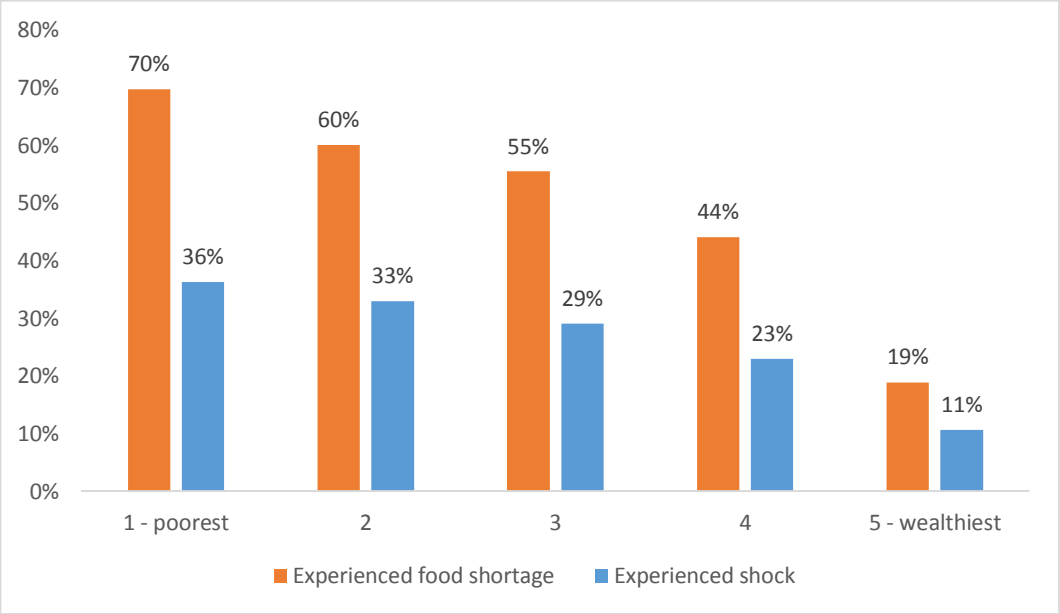
Figure 69: Percentage of households that experienced a food shortage and percentage that experienced a shock



Source: CFSVA 2015

Among the different livelihood groups, households engaged in agricultural daily labour experienced the most shocks (44%), followed by unskilled daily labourers (34%), low-income agriculturalists (31%) and those relying on external support (30%). This indicates that poorer households and those with more unstable sources of income more often experienced food shortages and were more often affected by unusual situations that impacted their ability to provide for household members. Figure 70 below shows that poorer households were more likely to experience food shortages and shocks.

Figure 70: Percentage of households that experienced food shortages and percentage of households that experienced a shock, by wealth group



Source: CFSVA 2015

9.1.1 TYPE OF SHOCKS AFFECTING HOUSEHOLDS IN RWANDA

According to Rwanda's national disaster risk management plan, the main risks to people in the country are droughts, fire, floods, earthquakes, landslides, heavy rain with strong winds, lightning and thunderstorms, traffic accidents, diseases and epidemics that disrupt people's lives and livelihoods, destroy the infrastructure and interrupt economic activities and slow development.[59]

Food security related risks in Rwanda are closely linked with agricultural production. Although systemic agricultural sector risks at the national level are low, shocks at the local level and for specific crops can cause major losses. The main risks for agricultural producers are weather related, as well as pests and diseases that affect crops both in the field and in storage, with increased mono cropping only accentuating this latter risk.

According to the 2015 CFSVA, the two most common shocks experienced by households were drought/irregular rains and serious illness or accident of a household member (Figure 71). These shocks were reported by about 9 percent of all households, but with significant differences across provinces and districts.

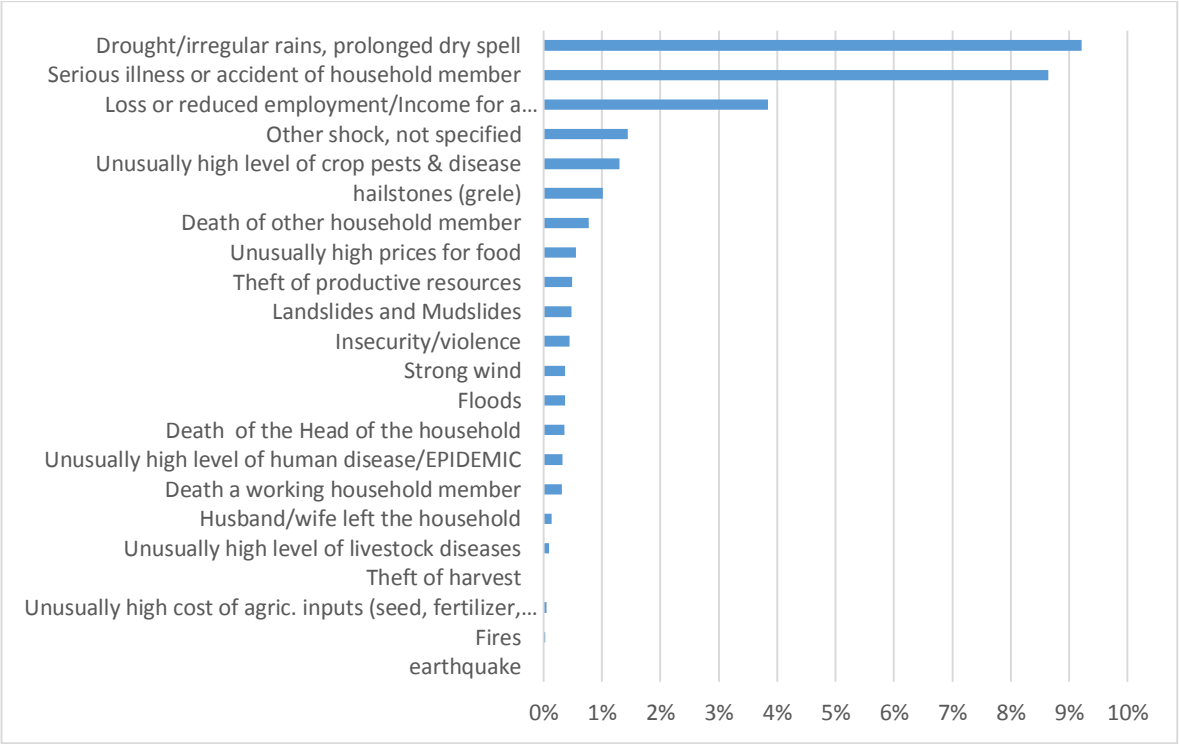
[59] Ministry of Disaster Management and Refugee Affairs (MIDIMAR). National Disaster Risk Management Plan. 2013.

At the provincial level, the Southern and Eastern Provinces had the highest percentage of households that had experienced drought or irregular rains (15 and 14 percent respectively). At the district level, almost half of all households (49%) in Nyanza mentioned that they had experienced rainfall conditions that affected their ability to provide for themselves, while this was also the case for 34 percent of households in Gisagara and 23 percent of households in Kirehe. In terms of livelihood groups, low-income agriculturalists were most likely to claim a rainfall related shock hindered their ability to provide for their household (15%).

The percentage of households that experienced a serious illness or accident also varied by district, with Ruhango and Nyabihu showing the highest percentages at 23 percent and 19 percent respectively. In addition, some livelihood groups were more affected: 18 percent of agricultural daily labour households and 17 percent of households relying on external support reported experiencing this shock.

The percentage of households that experienced a loss of employment was more equally distributed across districts with up to 8% of households reporting this shock, with the exception of Musanze where 16 percent of households reported this shock. Households engaged in agricultural daily labour and unskilled daily labour were most likely to report a loss of employment as a shock affecting their ability to provide for themselves.

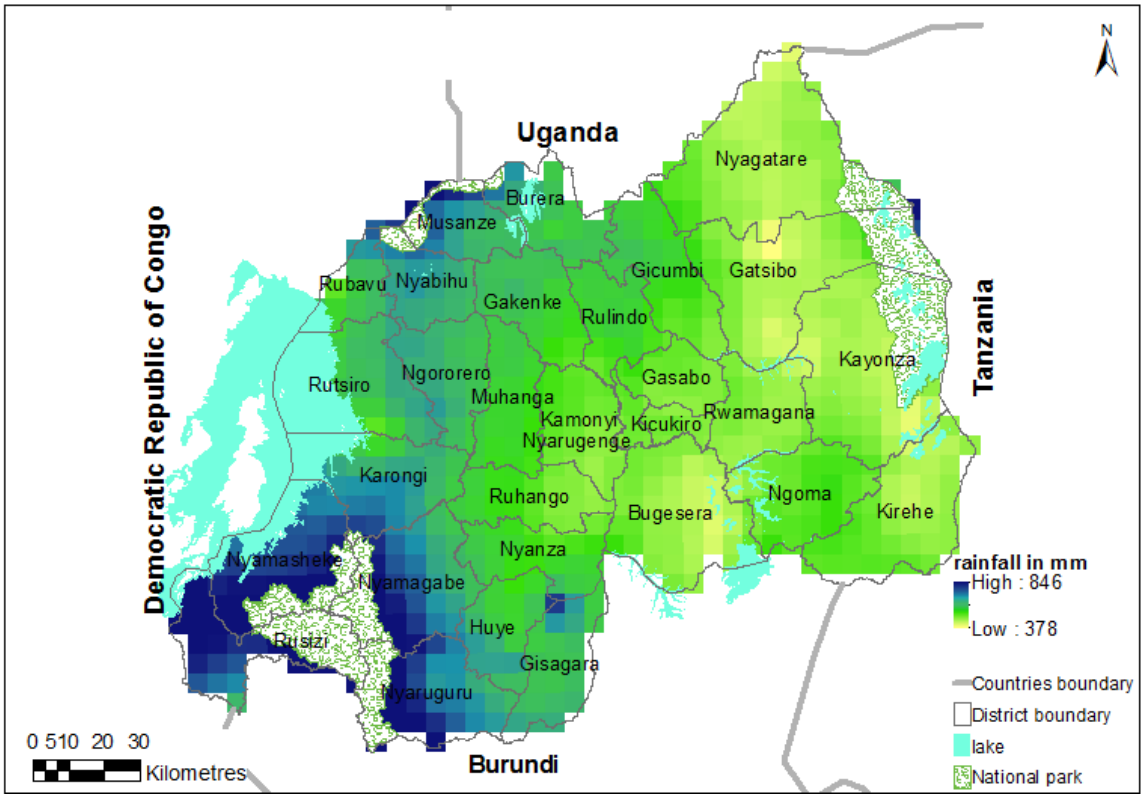
Figure 71: Most common shocks affecting households



Source: CFSVA 2015

An analysis of average rainfall shows that low rainfall is mainly an issue in the eastern part of the country (Map 12).

Map 12: Average rainfall season A (1994-2014)

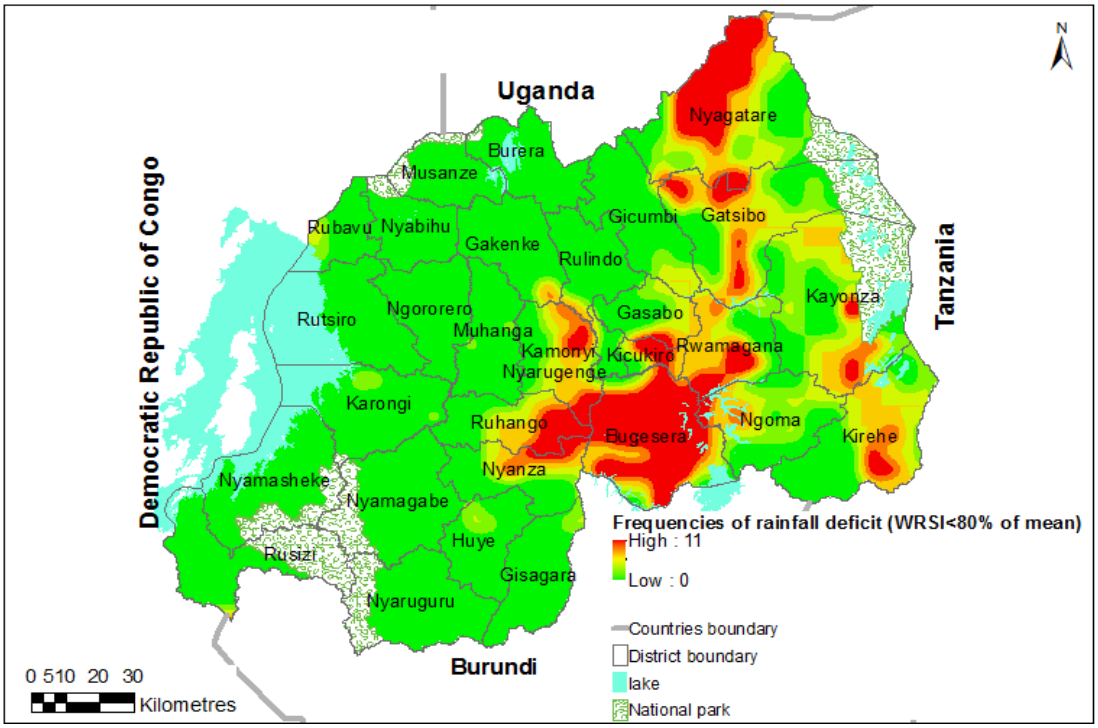


Source: WFP-VAM Analysis, 2015

The risk of drought was analysed using a historical dataset of the Water Resource Satisfaction Index (WRSI) for the maize crop for season A from 1994 to 2014.[60] The WRSI for maize is used as a proxy indicator for drought prone areas by computing frequencies of WRSI<80%. The analysis found that areas most vulnerable to rainfall deficits (severe and medium) are located in all districts of the Eastern Province as well as the Ruhango, Nyanza, and Kamonyi Districts in the Southern Province (Map 13).

Map 13: Frequencies of rainfall deficit for maize season A (1994-2014)

[60] Detailed WRSI methodology is presented in annexes.



Source: WFP-VAM Analysis, 2015

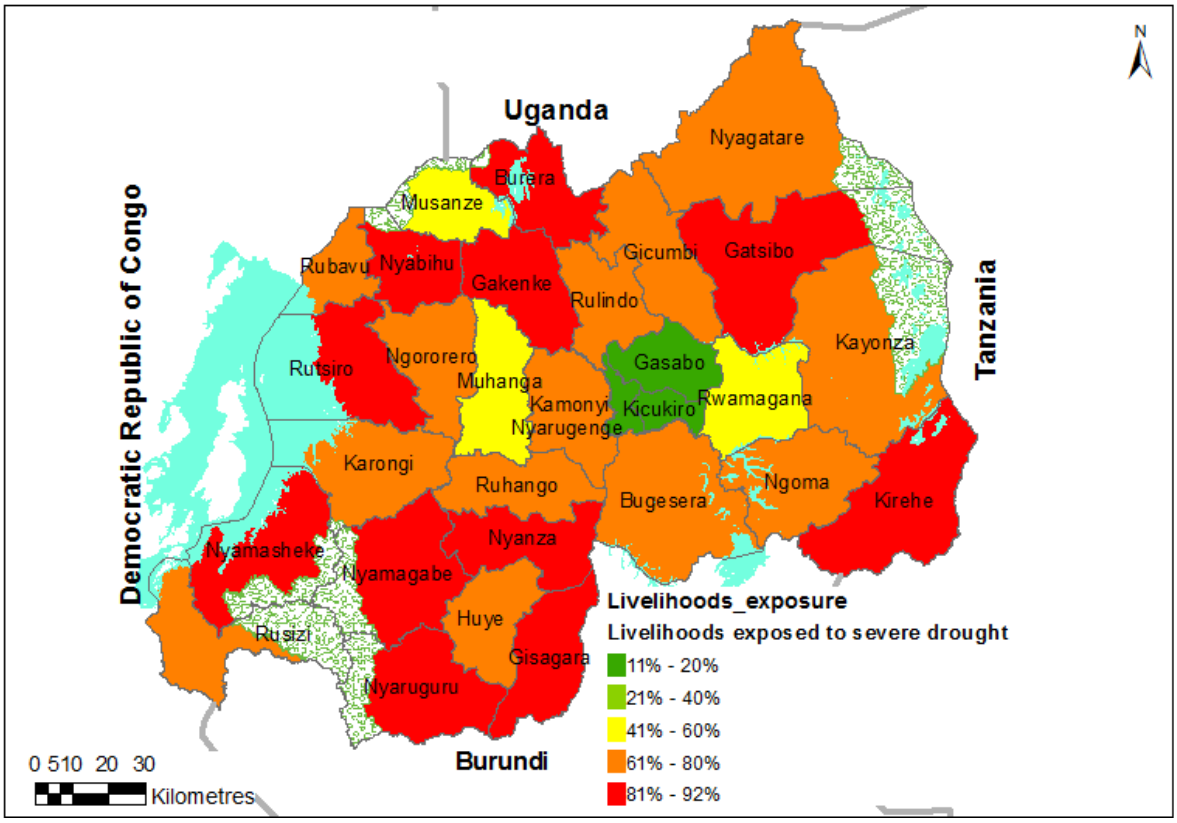
The risk analysis also ascertains the potential impact of a moderate or severe drought on household food security. In this context, the contribution of agriculture, agricultural casual labour and livestock rearing to the household livelihood defines the household's level of exposure to rainfall deficit, given that households that are less dependent on agriculture are not as likely to be affected by a drought as those that heavily depend on it. The following table outlines the different levels of dependence on agriculture used to identify households' levels of exposure to drought:

Table 16: Household exposure to moderate or severe drought

ACTIVITY	CONTRIBUTION TO LIVELIHOOD	LEVEL OF EXPOSURE
Related to agriculture or livestock	≤20%	Very low
	>20% - ≤ 40%	Low
	>40% - ≤ 60%	Medium
	>60% - ≤ 80%	High
	>80% - ≤100%	Very high

Households highly exposed to being severely impacted if there is a drought (with more than 80 percent of livelihoods likely to be affected) are found in all provinces except Kigali City, and are most common in the districts of Nyagatare and Kayonza in the east, Nyanza, Gisagara, Nyaruguru and Nyamagabe in the south, Nyamasheke, Rutsiro and Nyabihu in the west, as well as in Gakenke and Burera in the north (Map 14).

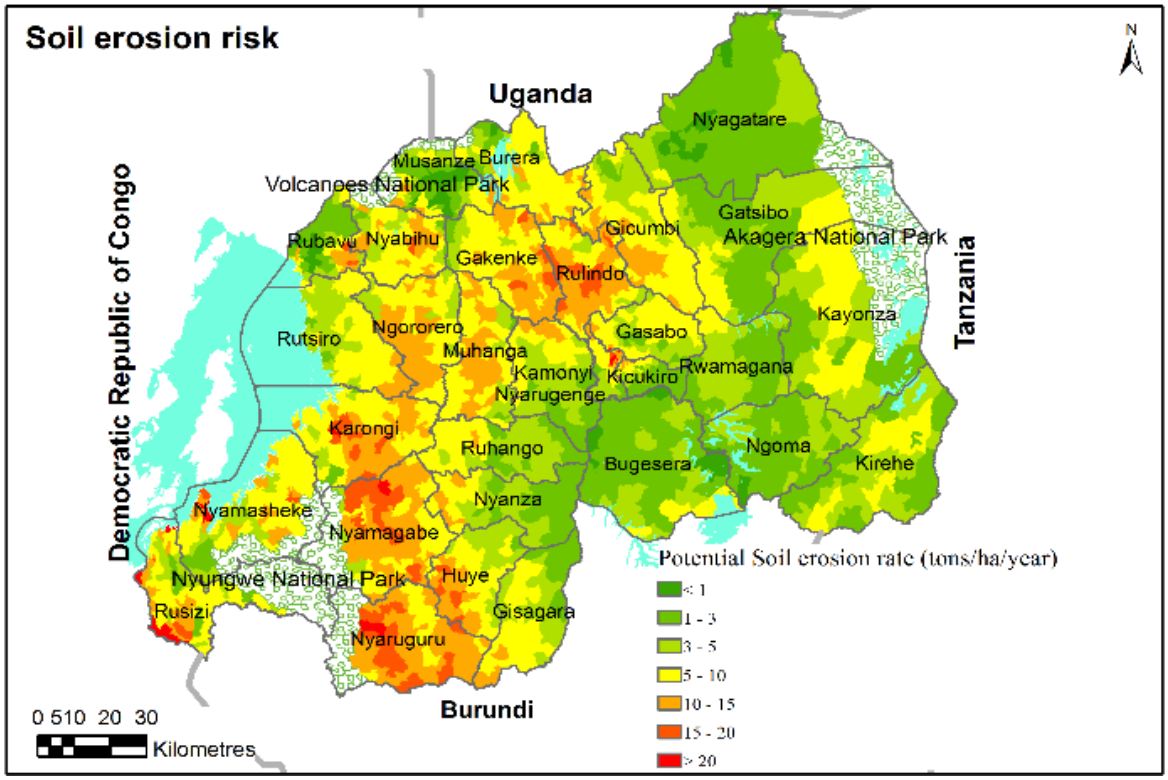
Map 14: Average contribution to livelihood from activities related to agriculture



Source: WFP-VAM Analysis, 2015

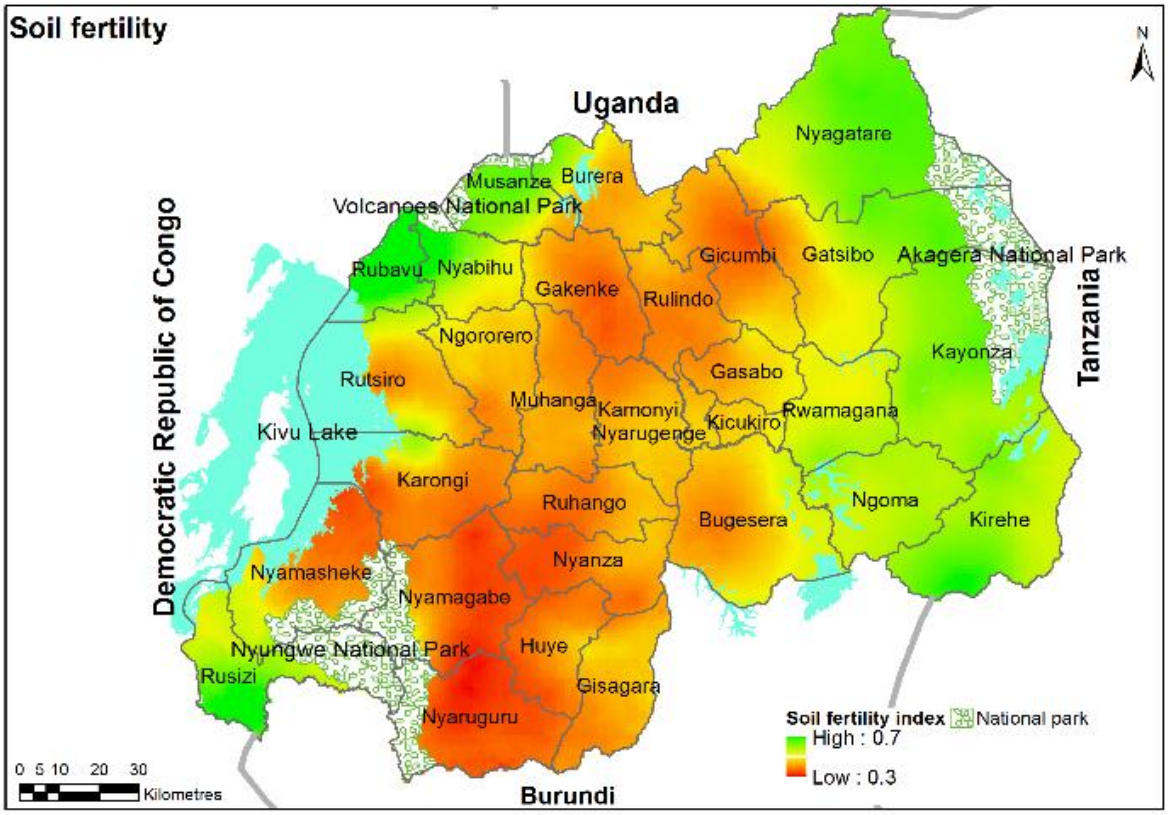
Due to households' high level of reliance on agricultural activities to sustain their livelihoods, factors such as soil erosion and soil fertility will have an impact on households' income and food security. As shown in Map 15, the soil erosion risk is highest in the western part of the country as well as through the more central areas to the north. Soil fertility follows the same pattern and is generally better in the eastern part of the country where the food security situation is better (Map 16).

Map 15: Soil erosion risk



Source: CFSVA 2015

Map 16: Soil fertility



Source: CFSVA 2015

9.1.2 SHOCK IMPACT AND RECOVERY

In almost all cases, shocks experience by households caused a reduction in income (96 percent of cases) and in the majority of cases caused a reduction in assets (77%). At the time of the survey, most households that had experienced a shock were still suffering from its effects. For instance, 55 percent of households said that they had partially recovered, while 36 percent said that they had not recovered at all. This means that at the time of the survey, 24 percent of all households were still recovering from one or more shocks that had affected their ability to provide for themselves.

9.1.3 HOUSEHOLDS' STRATEGIES TO COPE WITH SPECIFIC SHOCKS

Households that had experienced one or more shocks were asked what they did to cope with the specific shocks they experienced. The most common response was for households to increase their casual labour (21% of cases). Other common strategies were to rely on less expensive or less preferred food (16%), reduce the number of meals eaten per day (14%) or to borrow money (10%).

For households that suffered drought, the most common coping strategy reported was to rely on less expensive or less preferred foods (24%), followed by increased casual labour (23%). For households affected by illness or accident in the households, the most common strategy was to increase casual labour (17%) followed by borrowing money (16%). For households reporting a loss of employment, the most common coping strategy was also to increase casual labour (19%), followed by reducing the number of meals eaten in a day (15%).

9.2 Reduced coping strategies index

The reduced coping strategies index (rCSI) focuses on coping strategies related to changing food consumption patterns used by households when they face food shortages. Households were asked if in the past seven days there had been times when the household did not have enough food or money to buy food. If the household said yes, they were asked how many times in the previous week they had used coping strategies from a list of five different coping strategies.[61] Based on these questions the reduced coping strategies index was calculated.

All households that had used one or more coping strategies were divided into three equally large groups (terciles) depending on their coping strategy index (CSI) score.[62]

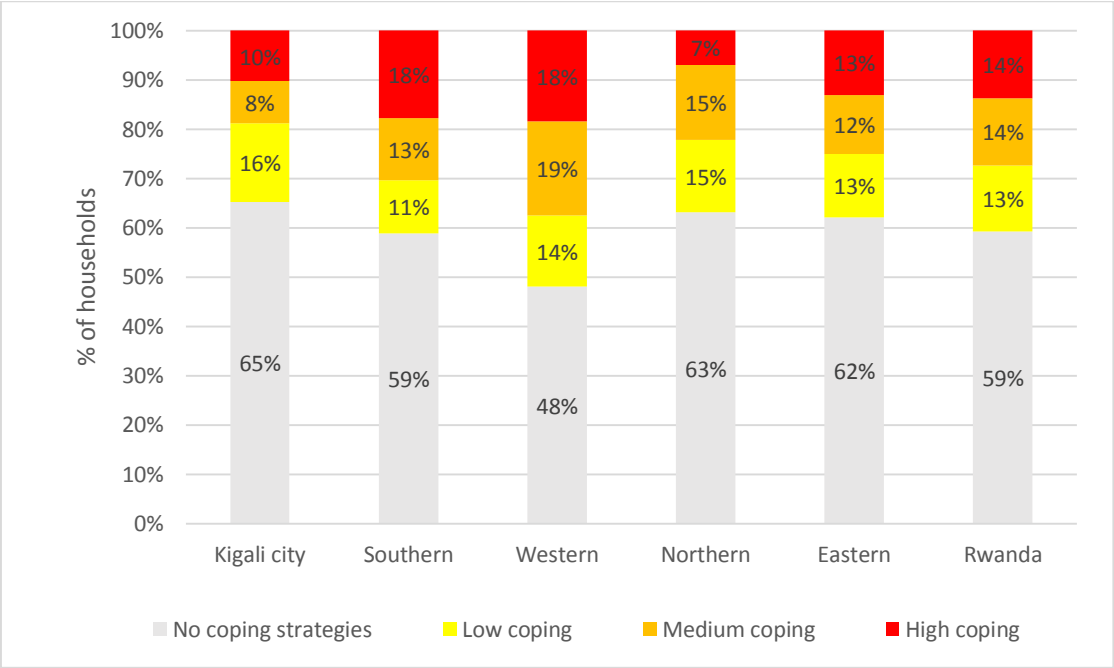
In total, 41 percent of households in Rwanda had experienced a time during the week before the survey when the household did not have enough food or money to buy food. In line with other measures of food security measures, the province with the largest proportion of households using one or more coping strategies was the Western Province, where more than half of all households had to cope with food shortages in the week before the survey (Figure 72).

The most common coping strategies used by households were to rely on less preferred and less expensive foods, to limit portion sizes and to reduce the number of meals eaten in a day. The restriction of adults' consumption so that children can eat and borrowing food were less commonly employed strategies.

[61] The five coping strategies: 1) rely on less preferred and less expensive food, 2) borrow food or rely on help from a friend or relative, 3) limit portion size at meal time 4) restrict consumption by adults in order for small children to eat, 5) reduce the number of meals eaten in a day.
[62] The cut-off points for the terciles are CSI score 10 and 18

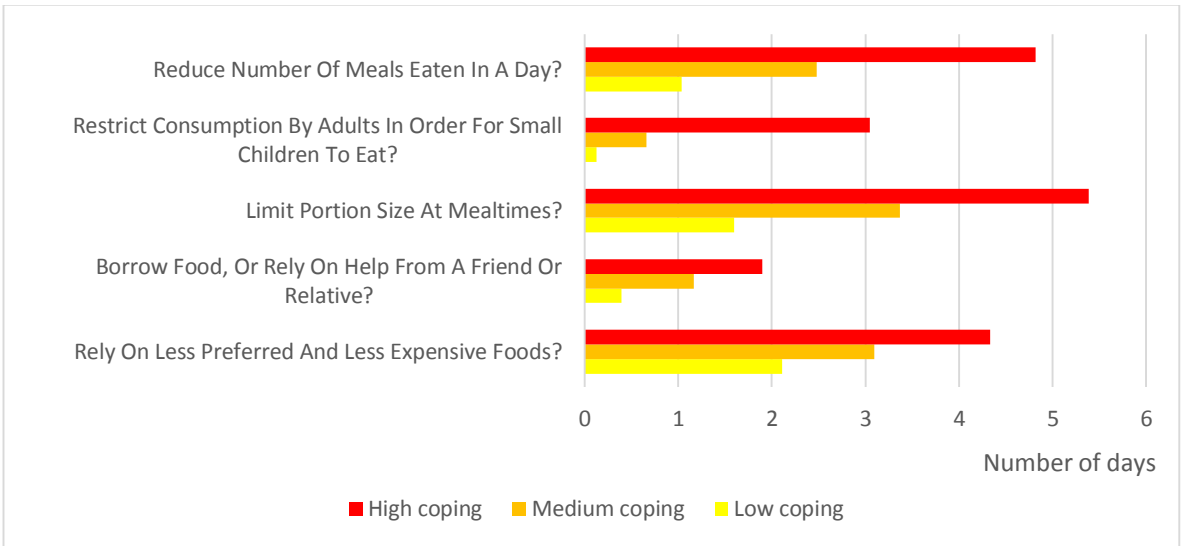
As shown in Figure 73, households with a high coping strategy index rely on several different coping strategies several times a week, while households with a low coping index tend to rely on less preferred and less expensive foods and to limit portion sizes at meal times.

Figure 72: Percentage of households by CSI tercile (low, medium, high coping)



Source: CFSVA 2015

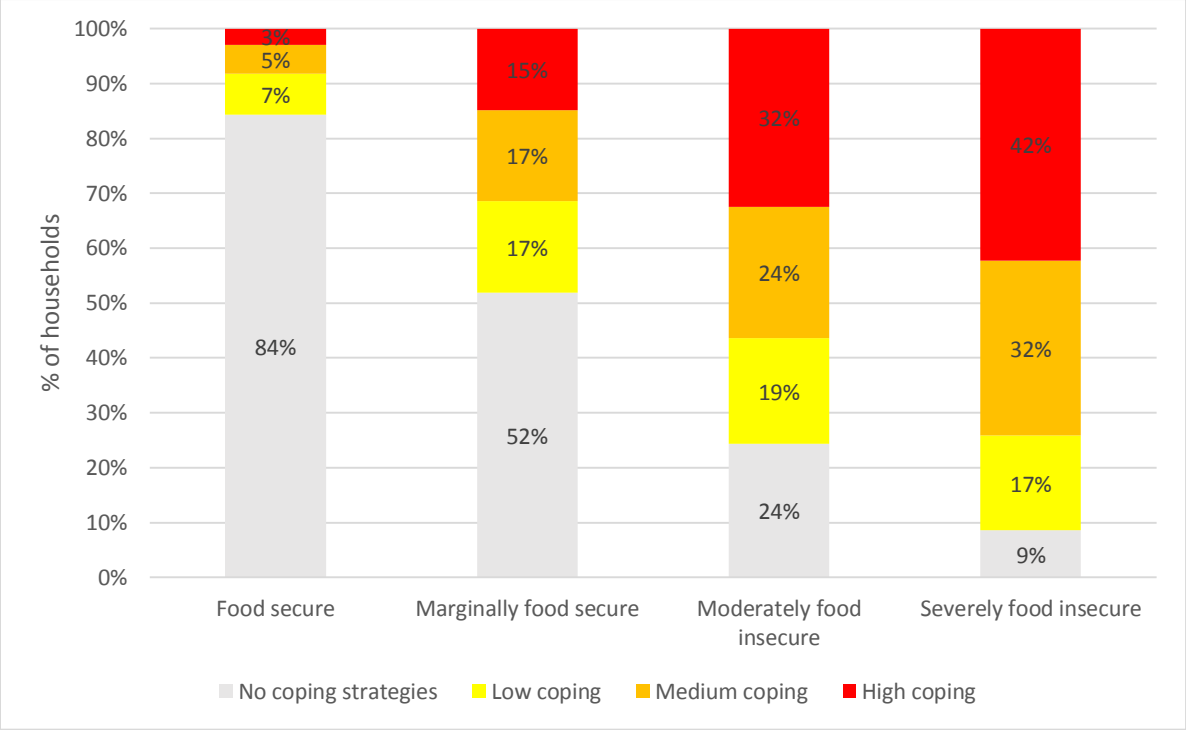
Figure 73: Number of days in a week coping strategies were employed, by CSI terciles



Source: CFSVA 2015

While few food secure households used any coping strategies related to food consumption in the week before the survey, most moderately and severely food insecure households did resort to consumption related coping strategies.

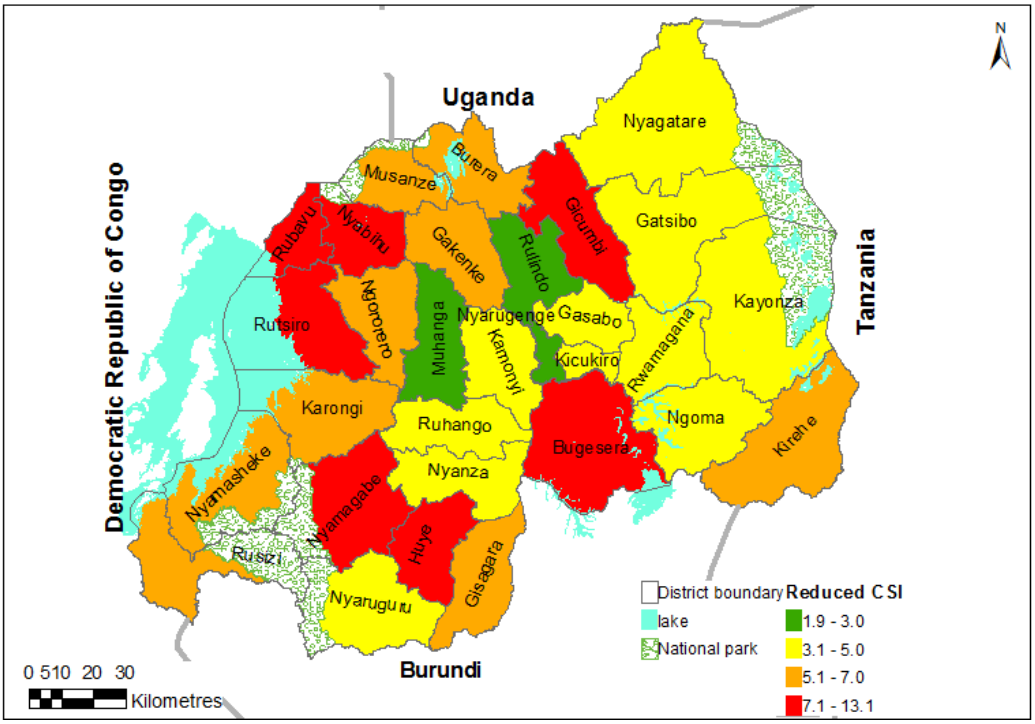
Figure 74: CSI terciles and food security status



Source: CFSVA 2015

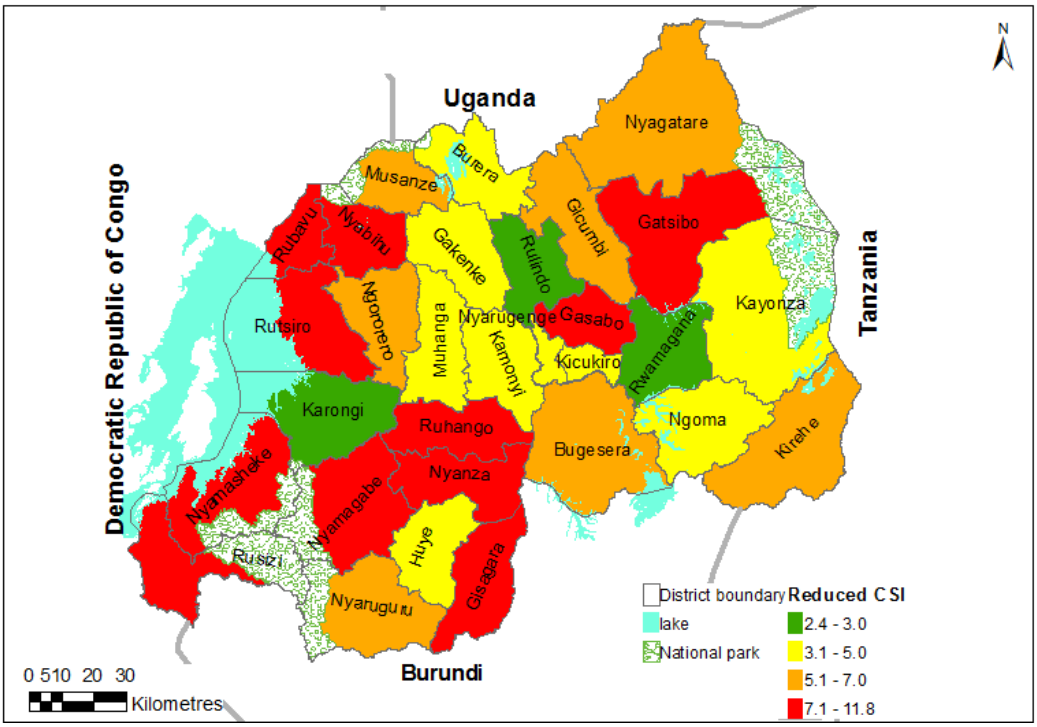
A comparison results of the 2012 and 2015 CFSVAs reveals a deterioration over the last three years, with households on average using a greater number of and more severe coping strategies as a result of food shortages in all provinces except the Northern Province.

Map 17: Average CSI by district in 2012



Source: CFSVA 2012

Map 18: Average CSI by district in 2015



Source: CFSVA 2015

9.3 Asset depletion and livelihood coping strategies

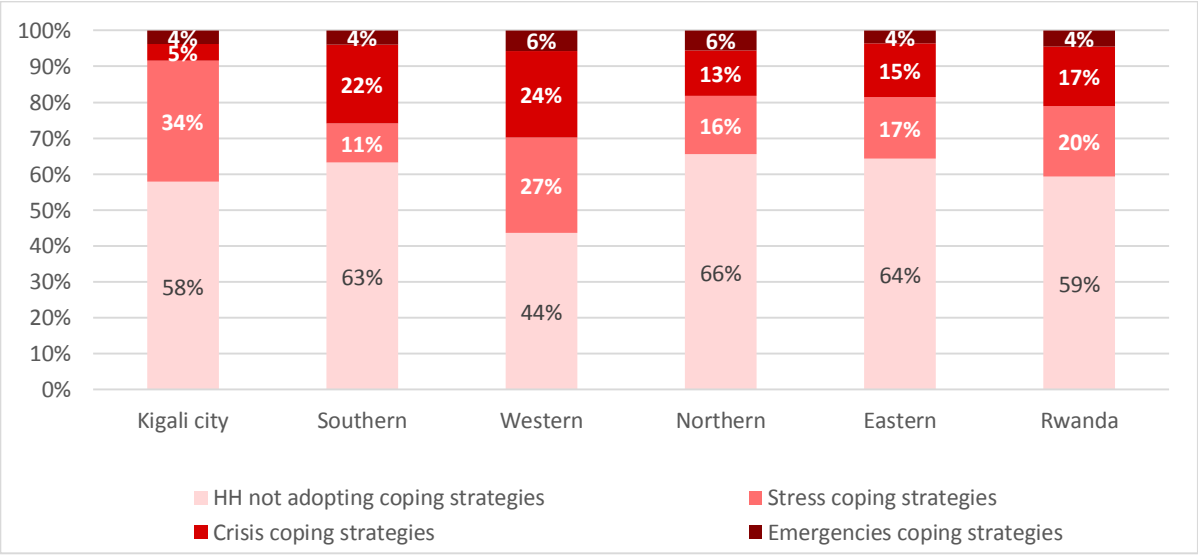
Some coping strategies used by households to deal with shocks deplete households' current assets and reduce their ability to cope with future shocks. Households were asked if, during the past 30 days, anyone in the household had had to engage in any of the behaviours listed in Table 17 below due to a lack of food or lack of money to buy food. These coping strategies are classified as stress, crisis or emergency strategies depending on the severity of the strategy and its impact on households' future coping capacity.

Table 17: Asset depletion and livelihood coping strategies classified by severity

Stress	Crisis	Emergency
Sold household assets	Harvested immature crops	Sold last female animals
Sold more (non-productive) animals than usual	Consumed seed stock that were to be saved for the next season	Entire household migrated
Spent savings	Decreased expenditure on fertilizer, pesticide, fodder, animal feed, veterinary care, etc.	Begging
Purchased food on credit or borrowed food		

As shown in Figure 75, 41 percent of households in Rwanda used one or more of the asset depletion and livelihood coping strategies in the month before the survey. At the provincial level, the Western Province had the greatest proportion of households using these strategies (66%). Although Kigali city is the most food secure province, it had the highest percentage of households that used "stress" strategies, indicating that many face difficulties in buying food from time to time regardless of their household food security level.

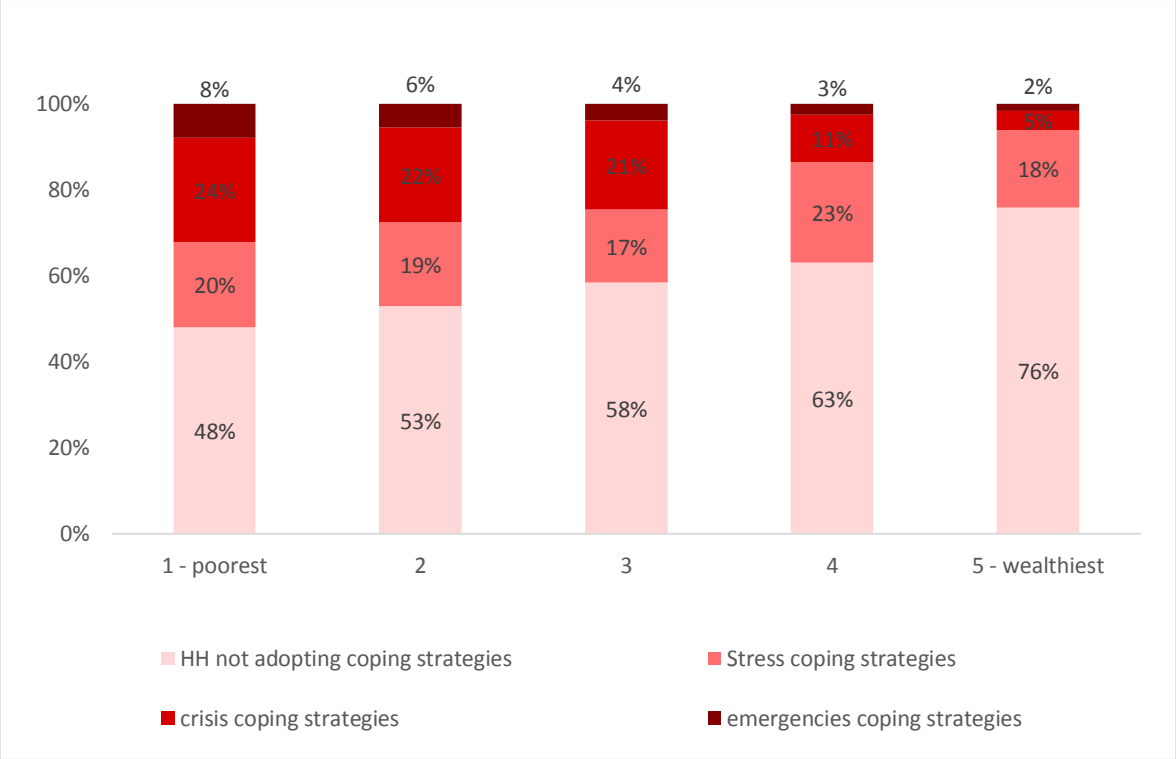
Figure 75: Percentage of households using livelihood or asset depletion coping strategies of different severity, by province



Source: CFSVA 2015

The poorer the household, the more likely they were to use crisis and emergency livelihood coping strategies, while the use of stress strategies was equally distributed across household wealth groups. The coping strategies in the "stress" category could be more difficult for poorer households to use since they might not have savings to spend or own assets or animals to sell.

Figure 76: Percentage of households using livelihood or asset depletion coping strategies of different severity, by wealth group



Source: CFSVA 2015

10. Assistance

KEY MESSAGES

- 22 percent of households have received some type of assistance, most commonly medical services or financial aid.
- Households receiving assistance are relatively well targeted, with food insecure and poorer households receiving more assistance than other households.
- The main provider of assistance is the government.

Through its overall strategy for economic development and poverty reduction (EDPRS), Rwanda has made great progress in reducing poverty levels and improving the lives of its people. This section of the report describes some of the main policies and programmes related to social protection and social safety nets under the EDPRS2 that aim to further protect and improve the situation of the poorest people.

10.1 Social protection policy

The social protection sector strategy[63] contributes to a range of EDPRS2 objectives, with a particular focus on the poorest in the population. The mission of the social protection sector strategy is to ensure that the poor and vulnerable are guaranteed a minimum standard of living and access to core public services, while the goal of the policy is to *"contribute to reduced poverty and vulnerability and to promote equitable growth".*

Some of the social protection sector priorities are: to increase the coverage of social protection programmes among the extremely poor and vulnerable; to build an effective, efficient and harmonized social protection sector; to build a sustainable social protection system; measuring and communicating social protection results and impacts; and to respond to climate related risks.

10.2 Social protection programmes

The Vision 2020 Umurenge Program (VUP) is one of the main social protection programmes in Rwanda. The VUP was launched by the Rwandan government in 2008 in response to the high poverty levels in the country at the time.

The objectives of the programme are to:

1. Contribute to the reduction of extreme poverty
2. Stimulate changes in the effectiveness of poverty eradication (coordination, interconnectedness of services, mind-set change)
3. Ensure that economic growth is pro-poor and that the majority of the population have improved their living conditions as a result of GDP growth

[63] Government of Rwanda. EDPRS 2 Social Protection Strategy. July 2013.

The programme has three components: (1) direct support through cash transfers to those among the poorest who are unable to work; (2) public works offered seasonally to the poorest households with the aim of building productive community assets; and (3) financial services such as microcredits and training for the start-up of small businesses.

In 2012, an intermediate impact assessment was carried out to better understand the impact and the sustainability of the VUP .[64] The assessment analysed the impact of the VUP across four dimensions - demographic, economic, social and institutional. The impact assessment found that the public works programme has had a positive impact on Rwanda's infrastructure, especially in creating anti-erosion measures such as the digging of ditches. There are, however, possible issues related to targeting, since a number of the households carrying out the public works are not the poorest households. The impact assessment found that direct support was better targeted in households with the elderly, disabled, chronically ill, no adults at all or household members still in school compared to other types of VUP. Although seen as highly relevant, the financial service support part of the VUP has had some challenges with low repayment rates and recipients' poor financial knowledge resulting in poorly implemented business plans.

Over the first five years of the VUP programme, there was a positive trend with the share of people in the two poorest VUP categories decreasing from 63 percent to 45 percent. In addition, during the period of the implementation of the programme, both rates of poverty and extreme poverty fell. However, it is difficult to make a concrete link between the programme and reduced poverty levels.

Another important social protection programme is the participatory Ubudehe programme,[65] in which local communities identify development priorities to tackle poverty in their community. It was launched in 2001 as a partnership between the Ministry of Finance and Economic Planning and the Ministry of Local Government. One part of the programme is the Ubudehe credit scheme, where the beneficiary signs a contract to repay the loan to the community so that others can also benefit from the credit scheme.

Under the Ubudehe programme households are categorized by their communities into categories based on household poverty status. The classification of households takes several aspects of poverty into account, but is most strongly linked to resources and assets available in the household, such as land and livestock and the ability of the household to sustain their livelihoods.

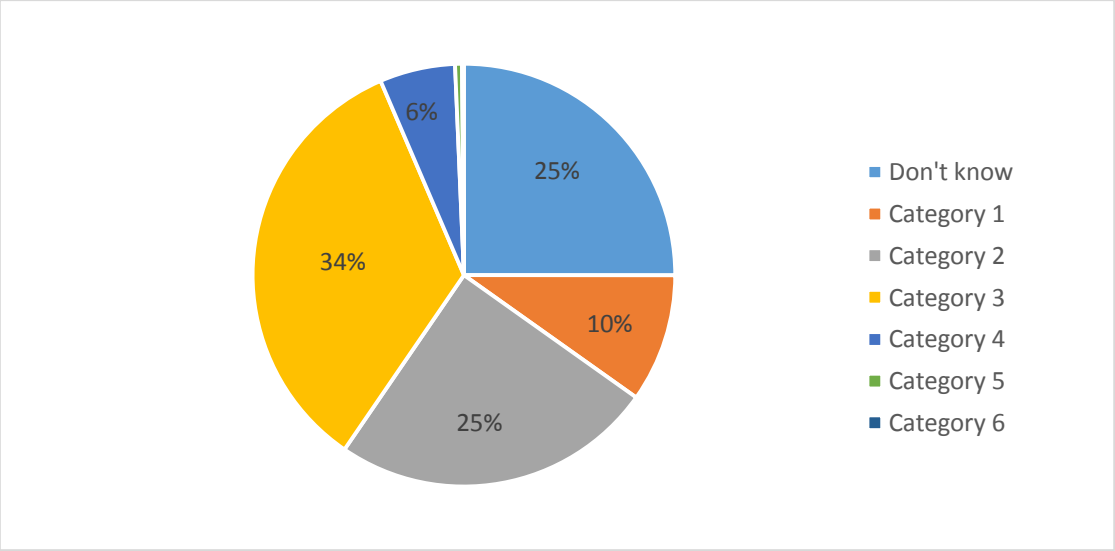
Since the previous CFSVA was conducted in 2012, the Ubudehe system has been restructured to reduce the number of categories from six to four. In the 2015 CFSVA survey, households were asked if they knew both their old and new Ubudehe status: 75 percent of households said that they knew their old status and 77 percent said they knew their new status.

According to the CFSVA 2015 results, the new Ubudehe category one is mostly made up of households that were previously in category one or two; the new category two is made up of households previously in category two or three; the new category three is mostly made up of households in the previous category three, with some additions from category two and four; and the new category four is mostly made up of households that were previously in category five or six.

[64] Republic of Rwanda. Rwanda Local Development Support Fund. Vision 2020 Umurenge Programme Intermediate Impact Assessment 2008-2011. July 2012.
[65] Rwanda Governance Board website: http://www.rgb.rw/governance-innovations/ubudehe/

Under the new categorisation system, category two is the largest group with almost half of all households. The analysis in this report is based on the old Ubudehe categories as the new categories are still under revision. Figure 77 shows that category three is the largest category, followed by category two.

Figure 77: Percentage of households in each Ubudehe category (where category 1 is the poorest and 6 the wealthiest)



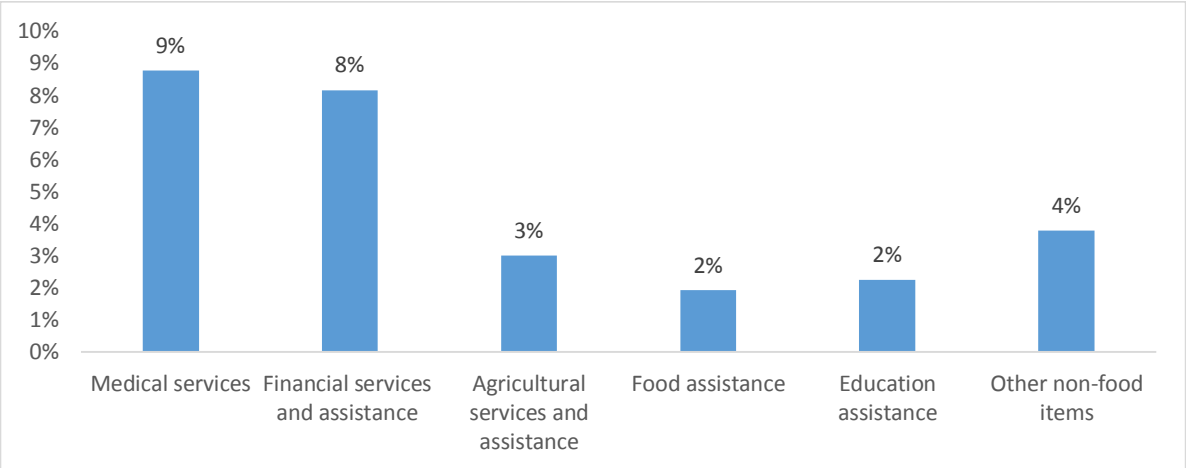
Source: CFSVA 2015

10.3 Assistance received by households

Households were asked if they had received different types of assistance in the 12 months preceding the survey. Types of assistance included were: food assistance, financial services assistance, agricultural services assistance, education assistance, medical services, and other non-food assistance.

Among all households, 22 percent mentioned that they had received some type of assistance during the past year. Medical services and financial assistance were the most commonly mentioned (Figure 78).

Figure 78: Percentage of households that have received assistance by type of assistance



Source: CFSVA 2015

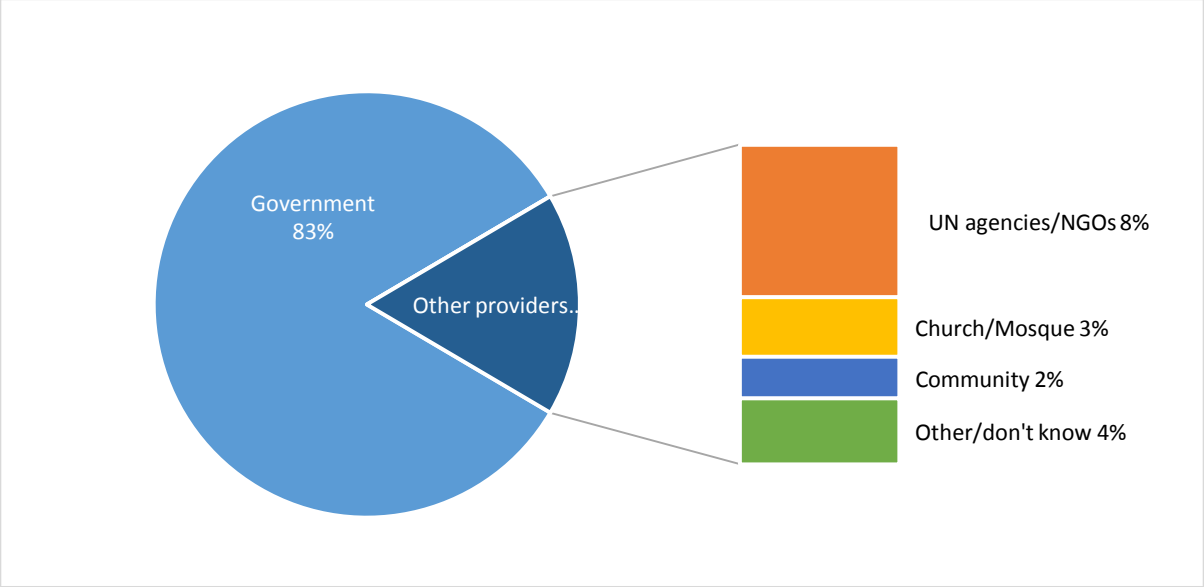
Among the sampled villages, VUP schemes were applied in 63 percent of the villages. In most cases, the households were selected to participate in these programmes through community selection (61%), or through Ubudehe category (39%). According to the CFSVA results from the village questionnaires, the targeting of households was seen as fairly good in most cases (69%), although in an average of 26 percent of villages the selection process was seen as bad and with many exclusion errors.

Of the VUP programmes and the Ubudehe credit scheme, participation in VUP public works was the most frequently mentioned assistance received with 4 percent of all households participating in this activity. However, this figure should not be seen as representative as sampling was not done based on VUP locations.

10.3.1 PROVIDERS OF ASSISTANCE

The main provider of support to households in Rwanda is the government (Figure 79), which provides 83 percent of non-food assistance and 38 percent of food assistance in addition to the government-led VUP programmes. Other providers of non-food assistance are NGOs, churches and mosques, the community and UN agencies. Although few households receive food assistance, the main providers besides the government are communities, churches and mosques, NGOs and UN agencies, including WFP.

Figure 79: Providers of non-food assistance (not including VUP and Ubudehe financial schemes)

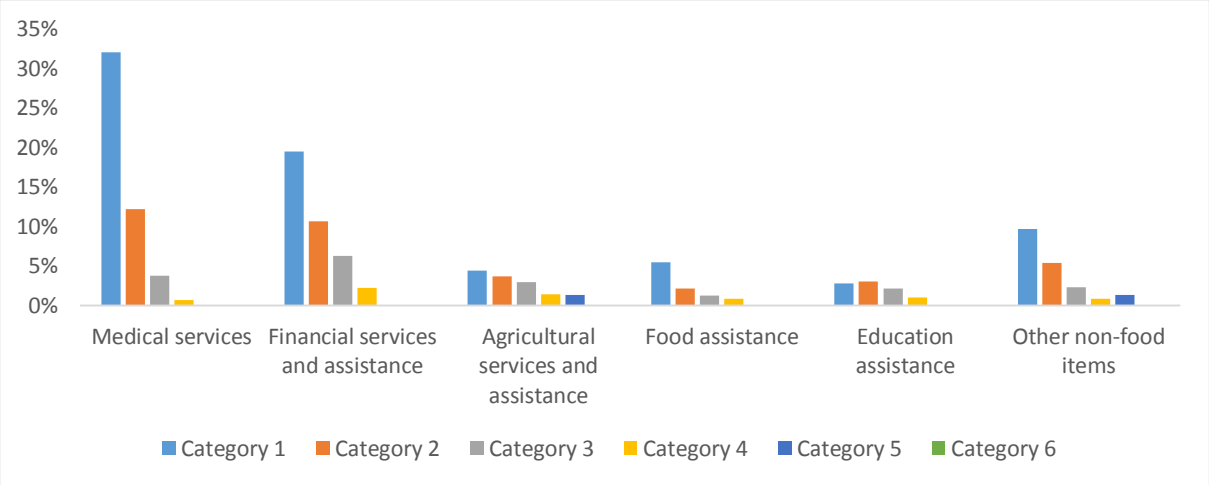


Source: CFSVA 2015

10.3.2 HOUSEHOLDS TARGETED FOR ASSISTANCE

As expected, the largest percentage of households receiving assistance is found among the poorest households in Ubudehe category one, those in abject poverty. In this category, more than half of all households receive some type of assistance. In category two, the very poor, 29 percent of households receive assistance, while in category three, the poor, 16 percent of households receive some kind of assistance. Medical services are the most common type of assistance received by households in category one and two, while financial services are the most common type of assistance in category three and four (Figure 80).

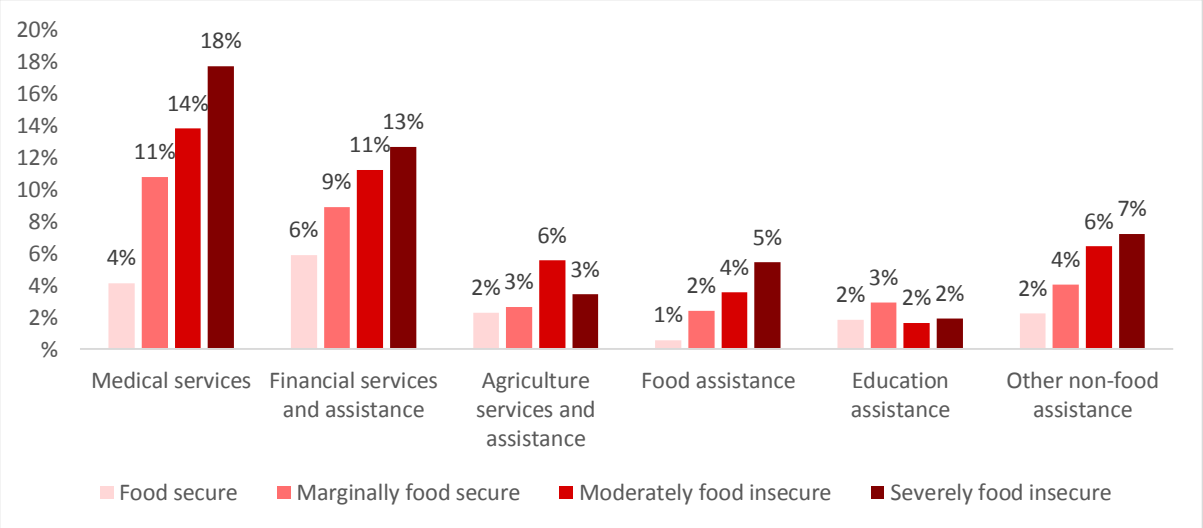
Figure 80: Percentage of households receiving assistance by reported (old) Ubudehe category



Source: CFSVA 2015

Households in all food security groups receive assistance, but with a higher percentage found among food insecure households. Food assistance tends to be more prevalent among the food insecure, although it is not common in any food security group. For example, only 5 percent of severely food insecure households receive any food assistance.

Figure 81: Percentage of households receiving assistance by food security status



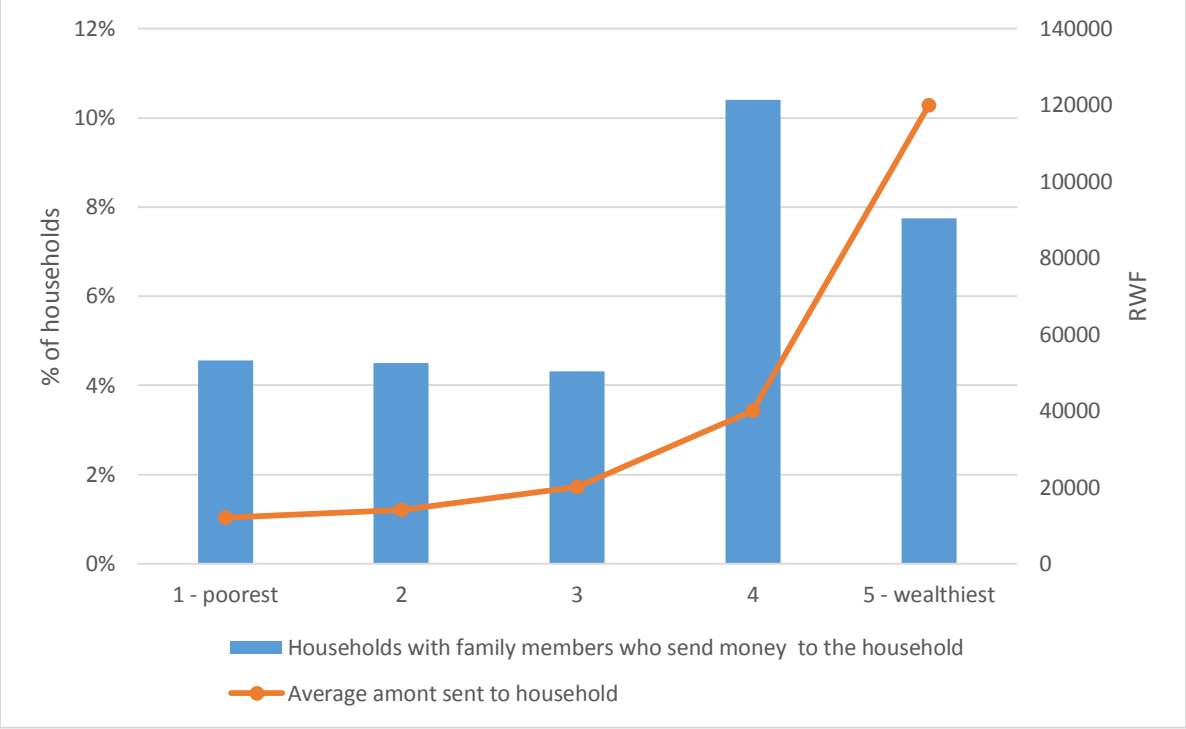
Source: CFSVA 2015

10.3.3 ASSISTANCE FROM FRIENDS AND RELATIVES AND REMITTANCES

In addition to the assistance mentioned above, households commonly receive support from relatives and family. For example, 2.4 percent of households said they were getting free food from relatives and friends, more than the total number of households receiving food assistance from any other actor.

Households were also asked if they had one or more family members working away from home and sending money back to the household. This was the case in 6 percent of households, with a higher percentage of households and a larger amount of money being sent to the wealthier groups of the population, as shown in Figure 82.

Figure 82: Percentage of households with household members working away from home and sending money and average amount sent, by wealth quintile



Source: CFSVA 2015

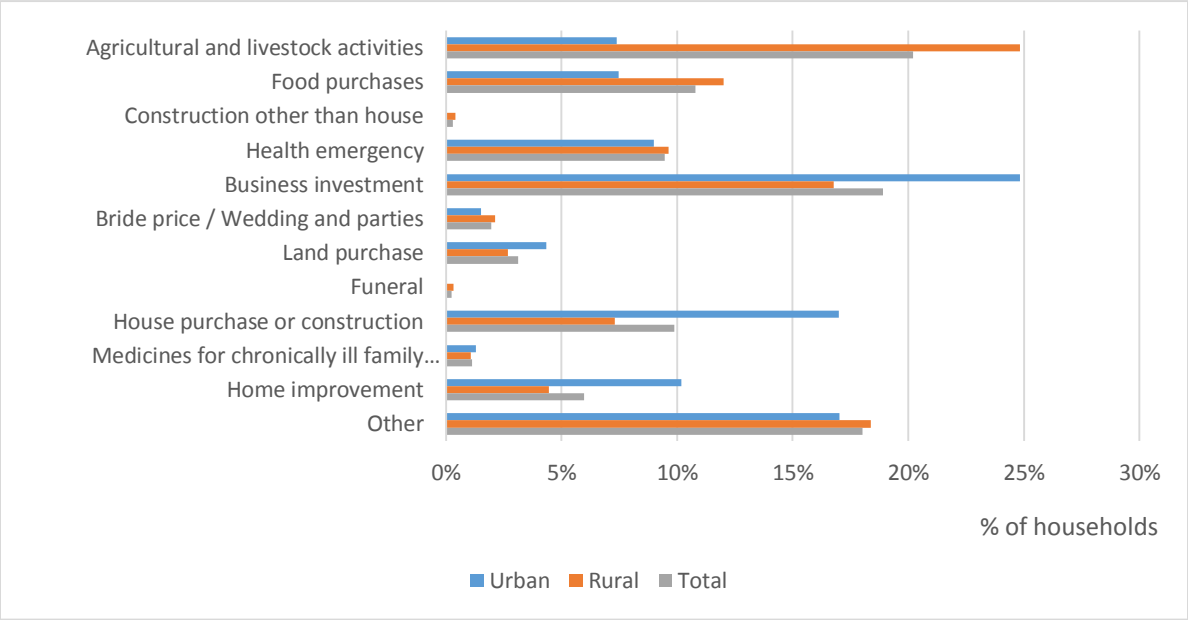
10.3.4 LIKELIHOOD OF HOUSEHOLDS TAKING LOANS

In total, 22 percent of households had requested and been granted a loan. This percentage is similar across urban and rural areas, but was higher among wealthier households. More than one third of wealthier households had been granted a loan compared to only 14 percent of households reliant on low-income agriculture or agricultural daily labour.

In rural areas, loans are mainly used for agriculture and livestock activities (25%), while in urban areas they are used chiefly for business investments (25%).

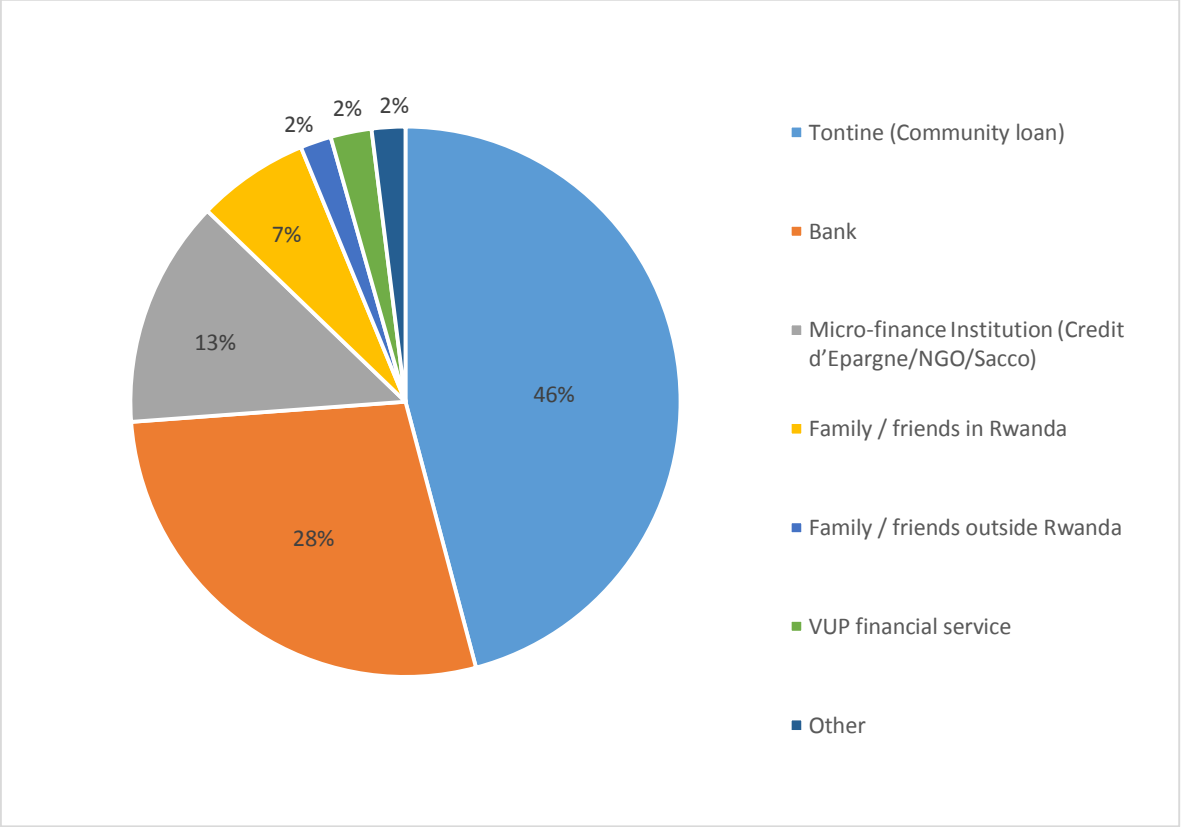
Tontines, which are loans provided through the community, are the most common type of loan, followed by loans from banks and micro-finance institutions (Figure 84).

Figure 83: Main use of loans taken



Source: CFSVA 2015

Figure 84: Sources of main loans



Source: CFSVA 2015

11. Conclusion

Since the last CFSVA was conducted in 2012, Rwanda has seen continued economic growth coupled with progress in social development in a number of areas. Rwanda is one of the countries to have achieved most of the Millennium Development Goals, and has done particularly well in reducing the number of people living in poverty as well as in improving indicators related to education and health.

In spite of these positive developments, food insecurity and stunting continue to pose a challenge to many households. These issues have been recognised and included in the development of national policies and strategies. In the current Economic Development and Poverty Reduction Strategy (EDPRS2), food security and nutrition are highlighted as long-term foundational issues for priority attention.

According to the CFSVA findings, 80 percent of all households are food secure and 20 percent are food insecure. These proportions do not appear to have changed significantly since 2009, which is corroborated with findings from periodic rounds of food security and nutrition monitoring exercises during this period. The nutritional value of food consumed by food insecure households remains a concern, especially when it comes to consumption of protein rich food and food containing hem iron.

At the same time, the nutritional status of children under five years has improved, with fewer children found to be wasted, stunted and underweight than in 2012. Stunting, which is the main nutritional issue in Rwanda, has decreased from 43 percent in 2012 to 37 percent in 2015. Continued efforts are needed to maintain this positive trend. For example, child diets are poor with only 15 percent of children between 6 and 23 months meeting the requirements for a minimum acceptable diet based on dietary diversity and meal frequency. The nutritional status of women shows that the majority of women have a normal BMI, although an increasing percentage are overweight, especially in urban areas.

Several different factors are important in explaining the high levels of stunting in children. Results from the present survey confirm previous findings that the mother's nutritional status and education level are important factors associated with child malnutrition. At the individual level, male children, children with low birth weight and children who had suffered from diarrhoea in the two weeks before the survey (which can be seen as a proxy for repeated bouts of diarrhoea and perhaps a result of poor sanitation and hygiene) were more often found to be stunted than other children. At the household level, the water and sanitation situation can have an impact on the nutritional situation of the child: it was found that the majority of households use untreated water but from an improved source. Lastly, the food security status and wealth status of the household are important factors related to malnutrition in children. Together, these factors show that malnutrition in children should be tackled at the individual as well as household and community level.

The larger part of food consumed in households is sourced from the market, and food is generally available in markets all year around. Still, half of all households have reported food access issues, most often seasonal difficulties in accessing food. Households with low purchasing power have difficulties in accessing food even when prices are stable. In addition, households' high reliance on the market makes them more vulnerable to fluctuations in food prices. Food access issues are exacerbated by the fact that market prices increase at the same time household food stocks are depleted.

The general price trend for main commodities, such as beans and maize, shows that prices increase towards the end of the year before the season A harvest while a smaller price increase happens in April/May before the season B harvest. This is also the time of the year when households experience most difficulties in accessing food.

In addition to seasonal and chronic difficulties in accessing food, 27 percent of all households had experienced one or more shocks that affected their ability to access food. Poorer households and those with more unstable sources of income were more likely to have experienced food shortages and shocks. Shocks are chiefly weather related, such as drought, irregular rains or prolonged dry spells. At the time of the survey, 24 percent of households were still recovering from one or more shocks.

Food insecure households are often poor and on average have a lower number of adult members who can contribute to household income. The gender, marital status and education level of the household head are also associated with the food security status of the household. Female-headed households are more often found to be food insecure than male-headed households: this may be explained by the fact that female heads of household are more commonly widows, have fewer adult household members and have lower education levels.

The majority of Rwandan households are engaged in livelihood activities related to agriculture. The way in which households sustain their livelihoods is closely related to their food security status, with the most food insecure livelihood groups being agricultural daily labour, external support, low-income agriculturalists and unskilled daily labour. It was found that women are more often engaged in agricultural production and agricultural labour than men, and rarely work in non-agricultural unskilled labour or skilled labour, transport, salaried work or their own business. This trend disadvantages women as the livelihood activities that they more often engage in generate less income.

Among households involved in agriculture, food insecure households are less likely to own livestock, have less land, grow fewer crops, depleted their food stocks sooner, consume a higher share of their own production in the household and are less likely to have a kitchen garden.

Food insecurity levels are highest in the western and northern parts of the country, especially the Western Congo Nile Crest Tea Zone and Lake Kivu Coffee Zone along Lake Kivu in the West and the Northern Highland Beans and Wheat Zone in the north. The livelihood zones with the highest rates of stunting are the Western Congo-Nile Crest Tea Zone (53%) and Northern Highland Beans and Wheat Zone (51%), indicating an overlap with the most food insecure livelihood zones.

Similar to the findings of previous assessments, the Western Province shows the highest rates of food insecurity, with more than a third of all food insecure households residing in this province. Malnutrition rates are also highest in the Western Province, which is a change from 2012 when the highest rates of stunting were found in the Northern Province. Households in rural and more remote areas are more likely to be food insecure, and children in these households are more likely to be malnourished.

There are a number of social safety net programmes in place for the poorest in the population. In total, 22 percent of all households have received some kind of assistance. The most common types of assistance are medical services and financial assistance through either the VUP or loans or credit schemes. Households targeted for assistance are mostly the poorest households in Ubudehe category one and two, although some category three and four households also mentioned that they had received assistance. However, only a small proportion of households in the poorest categories are receiving assistance, and efforts are needed to reach the poorest households that otherwise risk remaining in poverty and food insecurity.

Table 18: Overview of main food security indicators by province and district

	CARI FOOD SECURITY INDICATORS				HEAD HOUSEHOLD		LIVELIHOODS		WEALTH INDEX
	Moderately/ Severely food insecure	Poor/ borderline food consumption	Very high food expenditure (>75%)	Crisis/ emergency coping	Household head without education	Female headed households	Contribution: Agriculture and livestock	Own land smaller than 0.5ha	Households in two poorest wealth quintiles
RWANDA	**20%**	**26%**	**21%**	**20%**	**31%**	**27%**	**58%**	**67%**	**41%**
PROVINCE									
Kigali city	**3%**	**3%**	**10%**	**8%**	**15%**	**25%**	**57%**	**12%**	**9%**
Southern	**23%**	**28%**	**28%**	**26%**	**35%**	**30%**	**59%**	**78%**	**47%**
Western	**35%**	**43%**	**25%**	**29%**	**34%**	**28%**	**63%**	**77%**	**51%**
Northern	**17%**	**29%**	**19%**	**17%**	**28%**	**25%**	**58%**	**68%**	**42%**
Eastern	**14%**	**22%**	**18%**	**18%**	**34%**	**25%**	**53%**	**76%**	**43%**
DISTRICT									
Nyarugenge	**2%**	**2%**	**9%**	**5%**	**19%**	**30%**	**60%**	**16%**	**7%**
Gasabo	**3%**	**3%**	**11%**	**10%**	**15%**	**21%**	**50%**	**11%**	**12%**
Kicukiro	**4%**	**4%**	**9%**	**8%**	**10%**	**28%**	**63%**	**11%**	**7%**
Nyanza	**33%**	**36%**	**29%**	**31%**	**39%**	**33%**	**69%**	**89%**	**62%**
Gisagara	**20%**	**24%**	**33%**	**20%**	**39%**	**35%**	**68%**	**91%**	**52%**
Nyaruguru	**36%**	**45%**	**22%**	**32%**	**43%**	**22%**	**67%**	**92%**	**77%**
Huye	**16%**	**18%**	**40%**	**18%**	**32%**	**43%**	**41%**	**62%**	**40%**
Nyamagabe	**43%**	**44%**	**32%**	**69%**	**38%**	**24%**	**72%**	**85%**	**64%**
Ruhango	**26%**	**31%**	**20%**	**36%**	**28%**	**30%**	**67%**	**79%**	**27%**
Muhanga	**10%**	**16%**	**27%**	**9%**	**34%**	**27%**	**34%**	**59%**	**40%**
Kamonyi	**11%**	**16%**	**23%**	**4%**	**32%**	**26%**	**47%**	**79%**	**29%**
Karongi	**35%**	**42%**	**30%**	**25%**	**32%**	**25%**	**46%**	**79%**	**39%**
Rutsiro	**57%**	**62%**	**28%**	**51%**	**43%**	**23%**	**82%**	**88%**	**66%**
Rubavu	**26%**	**28%**	**22%**	**30%**	**31%**	**34%**	**66%**	**61%**	**35%**
Nyabihu	**39%**	**47%**	**24%**	**28%**	**34%**	**38%**	**72%**	**82%**	**59%**
Ngororero	**23%**	**32%**	**27%**	**11%**	**38%**	**27%**	**61%**	**71%**	**65%**
Rusizi	**36%**	**44%**	**24%**	**35%**	**23%**	**23%**	**80%**	**77%**	**46%**
Nyamasheke	**34%**	**48%**	**21%**	**26%**	**39%**	**23%**	**36%**	**90%**	**53%**
Rulindo	**8%**	**11%**	**23%**	**17%**	**22%**	**22%**	**37%**	**71%**	**28%**

	CARI FOOD SECURITY INDICATORS				HEAD HOUSEHOLD		LIVELIHOODS		WEALTH INDEX
	Moderately/ Severely food insecure	Poor/ borderline food consumption	Very high food expenditure (>75%)	Crisis/ emergency coping	Household head without education	Female headed households	Contribution: Agriculture and livestock	Own land smaller than 0.5ha	Households in two poorest wealth quintiles
Gakenke	23%	46%	21%	14%	37%	25%	56%	84%	51%
Musanze	20%	33%	16%	14%	26%	24%	78%	49%	39%
Burera	27%	41%	16%	14%	37%	22%	79%	90%	67%
Gicumbi	13%	24%	22%	25%	27%	34%	51%	64%	40%
Rwamagana	11%	13%	21%	13%	19%	27%	40%	57%	18%
Nyagatare	11%	19%	7%	16%	40%	22%	48%	73%	40%
Gatsibo	15%	24%	28%	32%	38%	24%	73%	90%	57%
Kayonza	11%	16%	16%	12%	34%	22%	52%	78%	51%
Kirehe	16%	29%	21%	28%	32%	29%	68%	88%	51%
Ngoma	9%	18%	17%	7%	37%	27%	38%	76%	60%
Bugesera	29%	35%	23%	14%	29%	28%	44%	74%	28%

Source: CFSVA 2015

12. Recommendations

This section compares findings from the 2012 and 2015 CFSVA surveys, and updates the recommendations provided in 2012, focusing on refining safety nets and social protection targeting, improving household living conditions, improving agricultural production at household level, improving community resilience, improving the nutritional content of food consumed and nutritional outcomes, strengthening monitoring and analysis.

1. Improve coverage and targeting of assistance and social protection safety nets				
Main finding 2012	**Suggested intervention 2012**	**2015 CFSVA findings**	**2015 Recommendation**	**Primary target group**
Food insecure and malnourished households are relatively well captured by the Ubudehe classification system: 70 percent of households with unacceptable food consumption and 58 percent of households with malnourished children are in the lowest three Ubudehe categories.	The current Ubudehe system can be built upon and serve as a targeting tool for expanded social safety nets. Refine the targeting criteria allowing for more inclusion of the most vulnerable, poor food consumption and nutritionally insecure households in the Ubudehe classes.	About 73 percent of households with poor/borderline food consumption are captured by the three lowest Ubudehe categories.	Capture the most food insecure and vulnerable households in new Ubudehe classifications, and target households for assistance primarily among the poorest and most food insecure households.	The whole country.
Reported assistance is reaching 27 percent of households with unacceptable food consumption and 25 percent of households with chronically malnourished children under 5 years.	Expand social safety nets to reduce the exclusion of malnourished and food insecure households, and continue to increase key social protection instruments' coverage of the extreme poor and vulnerable by taking the geographical distribution of food insecurity and malnutrition into account in scale-up plans.	Assistance (of any type) is reaching 31 percent of households with unacceptable food consumption, 32 percent and 34 percent of moderately and severely food insecure households respectively, and 25 percent of households with a malnourished child under 5 years of age.	Continue to expand social safety nets to include the poor, the food insecure and households with malnourished children.	Poor and food insecure households and households with malnourished children.

20 percent of all households reported seasonal problems in accessing food in the 12 months preceding the survey.	Scale up and implement seasonal interventions (e.g. seasonal safety nets, off-farm employment opportunities) to help those households experiencing seasonal food insecurity and ensure that transfer programmes take seasonal peaks of food insecurity into account.	26 percent of all households reported seasonal food access issues, particularly in the months of October, November and April.	Continue to scale up and implement seasonal interventions to help households experiencing seasonal food insecurity, and ensure that transfer programmes take seasonal peaks of food insecurity into account.	The whole country.
2. Improve household living conditions, livelihood strategies and tackle poverty				
Main finding 2012	**Suggested intervention 2012**	**2015 CFSVA findings**	**2015 recommendation**	**Primary target group**
Statistical analysis shows that household level poverty is associated with both food insecurity and child stunting.	Reduce poverty by all possible means, through well-targeted and designed safety nets and pro-poor growth initiatives.	The 2015 confirms that poverty and food insecurity are closely related. The highest percentages of poor households (defined using the wealth index) are found in the Southern and Western provinces. A higher percentage of households with a very high food expenditure share is found in the Southern Province.	Scale-up and improve safety nets and pro-poor growth initiatives, such as VUP, with a main focus in the south and west.	Households in areas with high levels of poverty, mainly the Western and Southern provinces.
Rural households struggling with food insecurity often live in villages that are further away from roads, schools, markets and health centres.	Rural infrastructure development, especially in areas with high food insecurity.	Households in rural and more remote areas further away from services, such as health care and markets, are more often found to be food insecure.	Continued rural infrastructure development to increase the accessibility of services such as markets and health care.	Remote rural villages.

Households relying on more diversified activities, and especially urban households not involved in agricultural production, are better off in terms of food security. On the contrary, households relying only on subsistence agriculture and farming small plots (<0.5ha) of fragile land are more vulnerable to food insecurity.	Promote alternative livelihood development programmes, develop and diversify livelihood opportunities, especially non-agricultural employment where possible.	Households employed in urban areas are doing better in terms of food security and wealth, while poor households engaged in agriculture and those with unstable sources of income are the most food insecure. Rates of food insecurity are highest among agricultural daily labourers, households reliant on external support, low-income agriculturalists and unskilled daily labourers. It was confirmed that households with small plots are more often food insecure.	Promote alternative livelihood development programmes providing more stable sources of income, and develop and diversify livelihood opportunities. Given the limited size of land plots among poor smallholder farmers, promote non-agricultural employment where possible.	Poor households with unstable sources of income.
No main finding in 2012.	No recommendation in 2012.	Female-headed households are more often found to be food insecure. These households have fewer adult members and are often headed by widows. Women are more likely than men to be engaged in agricultural production and agricultural labour, and are less likely to be engaged in unskilled labour (non-agricultural), skilled labour, transport, salaried work and their own business.	Interventions targeted towards women to increase opportunities for income generation that are aimed at getting women into livelihood activities which are less associated with poverty and food insecurity, such as small scale agriculture.	Women, especially in rural areas.

3. Improve and diversify agricultural production				
Main finding 2012	**Suggested intervention 2012**	**2015 CFSVA findings**	**2015 Recommendation**	**Primary target group**
Households that still had food stocks at the time of the survey had better food consumption. Own production contributed on average to 30 percent of the food consumed in the household.	Support productivity at household level so as to increase the time household food stocks last and maximize benefits for small landholders.	On average among all households, 24 percent of food consumed comes from own production, and among agricultural households 31 percent of food is sourced from own production. Stocks of food last longer in food secure households than in food insecure households. Seasonality may impact the food consumption score of the poorest households with small plots and limited production opportunities	Continue to support productivity at the household level through efforts such as increased irrigation in order to increase the time household food stocks last, and improve storage capacity and food processing technology so farmers can store food for longer periods. The poorest and most food insecure households should be supported with highly productive seeds and counter-season farming to ensure intensive and continuous production and consumption of food.	Farming households.
Statistical analysis shows that kitchen gardens, higher crop diversity and livestock ownership are associated with greater household food security.	Encourage kitchen gardens, diversity in crop production and support appropriate livestock rearing.	It was confirmed by the current analysis that higher crop diversity, vegetable gardens and livestock ownership are factors associated with better household food security.	Continue to encourage vegetable gardens and higher crop diversity, and scale up programmes already in place that are aimed at promoting livestock rearing.	Farming households.

On average and for all crops produced, households sell 23 percent of their production and consume 71 percent. Wealthier farmers who also rely on sales of agricultural products have better food security.	Increase local agricultural production as well as sales of agricultural produce and marketing to stimulate farmers' incomes. Encourage local purchases of surplus maize and/or other commodities by government and food aid agencies.	Among agricultural households, on average only 19 percent of food production is sold while 73 percent is consumed directly. In food insecure households, a higher share of own production is consumed directly within the household. Wealthier households sell a larger part of their production.	Increase marketing opportunities for agricultural products to increase income in farming households.	Farming households.
Poor soil fertility, soil erosion, and steeps slopes characterize areas with higher levels of unacceptable food consumption and stunting.	Promote best productive and sustainable practices (e.g. soil fertility enhancement and anti-erosion measures).	Soil fertility and soil erosion mostly affect the western and southern parts of the country. The western part of the country is also where the most food insecure households and malnourished children are found.	Continue to promote best productive and sustainable practices (e.g. soil fertility enhancement and anti-erosion measures).	Households in areas with poor soil fertility and soil erosion.
4. Improve community resilience to food and nutrition insecurity				
Main finding 2012	**Suggested intervention 2012**	**2015 CFSVA findings**	**2015 Recommendation**	**Primary target group**
Low education and illiteracy are among the underlying causes of food insecurity and malnutrition in Rwanda.	Education beyond primary level and continuation of country-wide programme to bring education and literacy to all people.	It was confirmed that education level of the head of household and food security status are related. In addition, the mothers' level of education is an important factor in explaining malnutrition in children.	Continue promoting education beyond primary level and continue country-wide programme to bring education and literacy to all people.	Lowly educated people and poor households.

Women (especially heads of households) are lagging behind in literacy and education. This puts them at a disadvantage in ensuring food and nutrition security for themselves and their families.	Provide basic adult literacy classes for illiterate women and continue to improve educational outcomes for girls.	Female heads of household have lower education levels than male heads of household and are more often found to be food insecure.	Continue to provide basic adult literacy classes for illiterate women and continue to improve educational outcomes for girls.	Women, especially in rural areas.
Rainfall deficit (in Rwanda perceived as drought) is one of the main shocks to food security in the country. If a major rainfall deficit were to affect the east (which happens every 4-5 years) an additional 170,000 households would become food insecure.	Enhance community resilience to rainfall deficit.	More than a quarter of all households had experienced one or more shocks that affected their food security situation. The most common shock mentioned was related to rainfall performance, such as drought, irregular rains or prolonged dry spells.	Build community resilience to rainfall deficits through efforts such as increased irrigation.	Areas prone to rainfall deficit.
Markets are an important source of food, providing on average 65 percent of the food consumed by a household.	Monitor food price inflation and consider putting in place safety nets in the event of a price crisis.	The majority (70%) of food consumed in Rwandan households comes from cash purchases, making households vulnerable to changes in food prices.	Continue monitoring food price inflation and increase preparedness by making sure safety nets are in place in the event of a price crisis.	Government decision makers, donors, UN agencies.
5. Improve nutritional content of food consumed and nutritional outcomes				
Main finding 2012	**Suggested intervention 2012**	**2015 CFSVA findings**	**2015 Recommendation**	**Primary target group**
Inadequate child food intake is one of the causes of child stunting.	Advocate for better child nutrition, encouraging intake of animal proteins (milk, eggs) as well as fortified foods.	Infant and young child feeding practices of children aged 6-23 months are poor, with only 15 percent meeting the requirements for a minimum acceptable diet.	Advocate for better child nutrition, encouraging a higher diversity of food items consumed and a higher frequency of meals. Ensure the availability and accessibility of key food items required for proper child nutrition.	Care takers of infants and young children.

No main finding in 2012.	No recommendation in 2012.	The nutritional value of food consumed in food insecure households is very poor, particularly the protein and iron content of the food.	Efforts to increase the nutritional content of food items consumed, through nutrition education and increased accessibility of food rich in nutrients, with a focus on food rich in proteins and iron.	Food insecure population.
No main finding in 2012.	No recommendation in 2012.	An increasing percentage of women are overweight, especially in urban areas where currently 40 percent of women are overweight.	Increase awareness of nutritional issues that cause weight gain and promote healthy diets, especially in growing urban areas.	Urban areas.
No main finding in 2012.	No recommendation in 2012.	Children that had suffered from diarrhea in the two weeks before the survey were more often found to be stunted.	Interventions to prevent diarrhea: safe drinking water, use of improved sanitation and hand washing with soap	Countrywide, with specific focus on areas with high levels of stunting.
6. Food security and nutrition monitoring and analysis				
Main finding 2012	**Suggested intervention 2012**	**2015 CFSVA findings**	**2015 Recommendation**	**Primary target group**
Monitoring of the food security and nutrition situation is required. It will also improve understanding of seasonal food insecurity patterns.	Continue regular monitoring of household food insecurity across regions and seasons.	The FNSMS has shown seasonal changes in food consumption, but no overall improvement. The percentage of households with acceptable food consumption decreased from 79 percent in 2012 to 74 percent in in 2015.	Continue regular monitoring of household food insecurity across regions and seasons, and explore the reasons behind the decreasing percentage of households with acceptable food consumption.	Rwanda.

Rainfall deficit, high food prices and floods can affect household food security and nutrition in Rwanda.	Continue monitoring rainfall excess and deficit and its effect on crop production as well as prices in Rwanda to anticipate possible shocks at household level.	With the high reliance on the market for food and rainfall deficit being the most common shock, changes in food prices and rainfall deficits can have a negative impact on households' food security situation.	Continue monitoring rainfall excess and deficit and its effect on crop production and food prices to anticipate possible shocks at household level, and improve preparedness for shocks.	Rwanda.
The impact of transition in the agricultural sector (such as the CIP) and of social protection initiatives on livelihood strategies, food security and nutrition is not well known.	Monitor the impact of transitions in the agricultural sector and of social protection initiatives on livelihoods, food security and nutrition.	Although the percentage of food secure households (measured by CARI) is 80 percent, the proportion of households with acceptable food consumption is lower at 74 percent. At the same time levels of stunting are decreasing and several programmes are in place to respond to food insecurity and malnutrition.	Evaluate programmes and interventions, especially nutrition interventions in the north, and investigate other factors related to nutritional status in children to better understand the underlying factors of the improving stunting rates and the links with food security.	Rwanda.
Analysis of links between food security, nutrition and reported household Ubudehe categories should be confirmed with the actual Ubudehe categories.	Re-analyse links between food security, nutrition and reported household Ubudehe categories when updated categories are available.	New Ubudehe categories are currently under revision. The link between these new categories and food security is unknown.	Renewed efforts to investigate the links between the new Ubuhede categories and food security are needed. Re-analyse links between food security, nutrition and reported household Ubudehe categories when the revised categories are available.	Rwanda.
No main finding in 2012	No recommendation in 2012	The period of data collection affects the comparability of findings from different rounds of the CFSVA as most food security indicators are influenced by seasonality.	Ensure funds are mobilised on time to allow data collection for future rounds of the CFSVA to be conducted between April and May.	MINAGRI, WFP and NISR.

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14. Annexes (Included in the CD-ROM)

1. Detailed survey methodology
2. Definitions and computation of main indicators
3. Detailed type of assistance received
4. Detailed tables with key indicators
5. Questionnaires
6. WRSI Method

MINAGRI

NISR
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