



## Comprehensive Food Security & Vulnerability Analysis

# BURUNDI



December, 2008

# **Comprehensive Food Security & Vulnerability Analysis (CFSVA)**

## **Burundi December, 2008**

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## FOREWORD

It is with a great sense of pride and achievement that I write this foreword for the Comprehensive Food Security and Vulnerability Analysis (CFSVA) Study in 2008. This CFSVA is the second, following the first study conducted in 2004 and marks an important timing in the socio-political context of Burundi today.

Burundi, as a country has come a long way in nation building since the end of the conflict in 2003, but not without challenges. The food security situation in Burundi remains as precarious as ever as poverty levels rise. Recurrent climatic shocks such as droughts and floods are common. Global and regional developments including the financial crisis, high fuel and food prices and in-security in the Democratic Republic of Congo will undoubtedly take its toll on Burundi's fragile macro-and socio-economic status. The gains made by Burundi in the political, security and economic fronts set out in the Government's Poverty Reduction Strategy reinforced by the Burundi's Vision 2025 and other policy pronouncements are key instruments to put the country back in a path for sustainable development.

The CFSVA study serves as a useful reference document in deepening understanding of key issues related to food security and vulnerability for WFP's and other stakeholders engaged in the Food Security Sector. The Study looks at key variables related to livelihood types, assets, income sources, expenditures, food consumption, coping mechanisms, nutrition, etc. and proposes actions to help address the challenges. This Study, I believe will contribute significantly to the many efforts in the past, present and future to move Burundi back to food security as was in the pre-conflict era. I will urge that it is widely consulted in the design of interventions to enhance food security in Burundi

Last but not least I would like to recognize the many contributions that went into the realization of this Study. First and foremost my thanks go to the Government of Burundi, for the guidance and leadership; the entire donor community, sister UN agencies and the Non - Governmental Organizations for their participation and support. ISTEEDU (Institute des Statistiques et des Etudes Economiques du Burundi) was of particular support in providing and training enumerators, coordinating logistics, collecting the data in the field, entering and cleaning data. My deep appreciation also goes to the thousands of households that spared time to meet with the survey teams, without which support this survey would not have taken place. My thanks go to WFP Colleagues at Head Quarters, the Regional Bureau and the Burundi Country Office for their valuable contributions and to WFP Niger for allowing our colleague Lawan Tahirou to come on TDY to supervise the critical stage of the survey. This study will not be possible had it not been for the financial support of the Citigroup Foundation. I am extremely grateful to them. The Consultant - Mr. Patrick Vinck needs particular commendation for his high level of professionalism, diligence and commitment demonstrated throughout the period of this assignment. It was truly a worthwhile experience working with him.

I wish you good reading,



Jean Charles Dei  
WFP Country Director and Representative,  
Burundi

## ACRONYM

BMI	Body Mass Index
BIF	Burundi Francs
CFSVA	Comprehensive Food Security and Vulnerability Analysis
CSI	Coping Strategy Index
CsPRO	Censuses and Surveys processing Package
DFID	Department for international Development-UK
FCS	Food Consumption Score
FNL	Front De Libération National
GDP	Gross Domestic Product
HA	Hectare
HAZ	Height For Age Z- Score
HH	Household
HQ	Head Quarters
ISTEEBU	Institute des Statistiques et des Etudes Economiques du Burundi
MUAC	Mid Upper Arm Circumference
ODAN	Emergency Assessment Branch -WFP
OMXF	Food Security and Program Branch-WFP
OR	Odds Ratio
PCA	Principal Component Analysis
SDA	Secondary Data Analysis
SPSS	Statistical Package For Social Scientists
TDY	Temporary Duty
TLU	Tropical Livestock Unit
US	United States
USAID	United States Agency for International Development
VAM	Vulnerability Analysis and Mapping
WAZ	Weight For Age Z- Score
WFP	World Food Programme
WHO	World Health Organization
WHZ	Weight For Height Z- Score

## TABLE OF CONTENTS

<b>Foreword .....</b>	<b>3</b>
<b>Acronym .....</b>	<b>4</b>
<b>Table of Contents .....</b>	<b>5</b>
<b>Executive Summary .....</b>	<b>8</b>
<b>Introduction.....</b>	<b>15</b>
<b>CFSVA Objectives and Methodology .....</b>	<b>16</b>
Objectives.....	16
Conceptual Framework and Definitions .....	16
Methodology.....	18
Data Sources .....	18
Limitations .....	20
<b>Human and Social Capital .....</b>	<b>21</b>
Demographics.....	21
Education.....	22
Migration and Displacement.....	23
<b>Natural Capital .....</b>	<b>25</b>
Climate .....	25
Productive Land .....	25
Agricultural Production.....	26
Livestock Ownership .....	29
<b>Physical Capital.....</b>	<b>30</b>
Housing Conditions.....	30
Ownership and Housing Structure .....	30
Lighting and Cooking Energy Sources .....	30
Water and Sanitation .....	31
Asset Ownership and Wealth Index .....	32
Asset Ownership.....	32
Household Wealth Index .....	34
<b>Financial Capital and Livelihood Strategies .....</b>	<b>36</b>
Activities and Financial Capital .....	36
Activities .....	36
Distribution of Labor .....	37
Seasonality of the Activities .....	37
Access to Credit .....	38
Temporary Migration, Transfer and Remittances.....	39
Livelihood Strategy Groups.....	39
Expenditures .....	43
Food and Non-Food Expenditures.....	43
Credit, Cash and Exchange .....	45
Seasonality.....	45
<b>Livelihood Outcome: Food Consumption and Food Security .....</b>	<b>47</b>
Dietary Diversity and Food Sources.....	47
Household Food Consumption Profiles .....	49
Methodology .....	49
Food Consumption Scores.....	50
Food Consumption Patterns.....	51
Food Security Profiling .....	53

Multivariate analysis of Food Security Status .....	56
<b>Nutrition .....</b>	<b>58</b>
Health and Nutritional Status of Women .....	58
Health and Nutritional status of Children .....	58
Profiles and Multivariate Analysis of Malnutrition .....	60
<b>Risk and Vulnerability Context .....</b>	<b>64</b>
Risk and Vulnerability Approach .....	64
Critical Trends .....	64
Shocks .....	65
Hazards in Burundi .....	65
Capacity to Cope and Coping Strategy Index .....	68
Situation of Returnees .....	69
Food Assistance .....	70
Seasonal Cycles .....	70
<b>Conclusions and Recommendations .....</b>	<b>74</b>
Food Security and Vulnerability Summary profiles .....	74
Geographic Priorities .....	74
Livelihood Strategy Priorities .....	76
Other Priority Factors .....	77
Population Estimates for the Highly Food Insecure and Vulnerable Groups .....	77
Recommendations and Interventions .....	79

## List of Tables

Table A: Livelihood Strategy Groups Characteristics .....	11
Table 1: Household Sample Distribution and Map (number of households per commune) .....	19
Table 2: CFSVA – Demographic Characteristics of the Population .....	21
Table 3: Literacy and Education Level .....	22
Table 4: Net Primary Enrollment by Province .....	23
Table 5: Climate and Cropping Seasons Calendar .....	25
Table 6: Main Crops Cultivated by Provinces, season 2008A (% of households) .....	28
Table 7: Asset Wealth and Wealth Index Quintiles .....	35
Table 8: Main Activities by Province (% of Households) .....	36
Table 9: Distribution of Labor by Activity .....	37
Table 10: Among producers, Percentage of Production Reserved for Consumption (Season 2008A) .....	38
Table 11: Livelihood Strategy Groups Characteristics .....	40
Table 12: Characteristics of Livelihood Groups .....	42
Table 13: Mean Weekly Food Consumption (number of days) by Province, Livelihood and Asset Wealth .....	48
Table 14: Food Sources by Food Items Consumed .....	49
Table 15: Food Items, Groups and Weights for Calculation of the FCS .....	50
Table 16: Weekly Consumption (Average) by FCS .....	50
Table 17: Food Consumption Patterns .....	51
Table 18: Characteristics of Food Security (1) .....	54
Table 19: Characteristics of Food Security (2) .....	54
Table 20: Women's Health and Nutrition .....	58
Table 21: Nutritional Status .....	59
Table 22: Age and Malnutrition .....	59
Table 23: Children's Health .....	59
Table 24: Regional Distribution of Malnutrition .....	60
Table 25: Factors Associated with Low MUAC (Multivariate Analysis) .....	62
Table 26: Factors Associated with Wasting and Stunting (Multivariate Analysis) .....	63
Table 27: Reported Seasonal Cycles .....	72

Table 28: North-East Region Summary Profile.....	74
Table 29: North-West Region Summary Profile.....	75
Table 30: Central Region Summary Profile.....	75
Table 31: South and South-Eastern Region Summary Profile.....	76
Table 32: Population Estimates for Food Insecure and Vulnerable Groups - in thousands of households .....	78

## List of Figures

Figure 1: Food and Nutrition Security Conceptual Framework .....	17
Figure 2: Percentage of Return Over Time .....	24
Figure 3: Distribution of Households with < 0.25 ha Land Total .....	26
Figure 4: Average Livestock (TLU) per household by Province.....	29
Figure 5: Distribution of Households using Unsafe Water Sources (% of households) .....	31
Figure 6: % of Households Reporting Water Shortfall by months.....	32
Figure 7: Proportion of Households by Number of Assets Owned .....	33
Figure 8: prevalence of Asset Poor Households by Province (% of households).....	33
Figure 9: Household Characteristics and Asset Classes .....	34
Figure 10: Gender and Asset Wealth.....	34
Figure 11: Quintiles and Percentage of Households by Wealth Index Score .....	35
Figure 12: Wealth Distribution (% in Wealth Index Lowest Quintile) .....	35
Figure 13: Seasonal Distribution of Activities (% of Households) .....	37
Figure 14: Seasonal Distribution of Purchase and Sale of Agricultural Products.....	38
Figure 15: Seasonal Distribution of migration and Transfers.....	39
Figure 16: Contribution of Activities (in %) to Overall Livelihood by Livelihood Strategies .....	41
Figure 17: Contribution of Activities (in BIF) to Income by Livelihood Strategies.....	41
Figure 18: Geographic Distribution of Main Livelihood Groups (% Households).....	42
Figure 19: Food and non-Food Expenditures by Livelihood .....	43
Figure 20: Composition of Expenditures (Total) .....	44
Figure 21: Seasonality of Expenditures (% of Households).....	46
Figure 22: proportion of Households Eating Items 5 Days a Week or More.....	47
Figure 23: Weekly Consumption (Average) by FCS - detail.....	51
Figure 24: consumption Clusters and FCS – Clusters and Asset Wealth .....	52
Figure 25: Geographic Distribution of Poor FCS .....	53
Figure 26: Prevalence of Poor FCS Group by Administrative Levels.....	53
Figure 27: Food insecurity and Heads of Household's Education .....	54
Figure 28: Food Insecurity and Wealth.....	55
Figure 29: Food Security and Livelihood Strategy .....	55
Figure 30: Prevalence of Wasting among Children by Mother's Nutritional Status.....	61
Figure 31: Prevalence of Wasting among Children by Children's Health .....	62
Figure 32: Prevalence of Stunting by Mother's Education .....	62
Figure 33: Reported Shocks by Livelihood strategies .....	66
Figure 34: Geographic Distribution of Main Shocks.....	66
Figure 35: Evolution of Prices over Time.....	67
Figure 36: Frequency of Coping Strategies across Asset Classes .....	68
Figure 37: Average CSI by Food Consumption Group and Nutritional Status .....	69

## EXECUTIVE SUMMARY

Burundi has come a long way in terms of rebuilding the nation since the end of the 13 years civil war in 2003. Yet it is one of the poorest countries in the world (167th out of 177 countries).<sup>1</sup> Indeed the war has had a lasting negative impact on the economic and food security situation of the country.

Today's challenge is to rebuild the human, social and economic fabric of the country. The government has engaged in reforms and programs to spur economic growth and social changes, but economic growth has been slow (averaging only 2.7% between 2001 and 2006). **The food security situation remains precarious, as poverty is widespread and the country is prone to recurrent climatic shocks.**

To prepare a new Protracted Relief and Recovery Operation in the country, WFP Burundi conducted a Comprehensive Food Security and Vulnerability Analysis in June-July 2008. The CFSVA is based on the analysis of primary and secondary data. Primary data was collected from 5,011 sampled households, key informants and through focus group discussions. Information on health and nutrition was collected from 4,006 children below the age of five. A market survey was also conducted.

Since the timing of the survey coincided with the harvest season, it is likely that the reported prevalence of food insecurity may be lower than what would be experienced during the non-harvest seasons.

### How many people are food insecure?

**About 63,900 households representing 4.8 percent of the households were deemed food insecure.**<sup>2</sup> The diet of these food insecure households mainly consists of tubers or cereals supplemented with some vegetables and oil.

**About 302,700 households representing 23 percent of the households are moderately food insecure.** Their food consumption is classified as borderline with a diet similar to the food insecure group but made richer through the intake of pulses.

**Malnutrition:** The level of chronic malnutrition is high with 52.7 percent of children under the age of five being stunted and 8.4 percent wasted (acute malnutrition).

### Where are the food insecure households?

**The CFSVA identified the following priority provinces:** the North East (Cankuzo, Karusi, Muyinga, Ngozi and Kirundo) are the least food secure and the North West (Citiboke, Bubanza, and Bujumbura Rural) has the highest prevalence of poverty.

**65% of the food insecure households live in 5 provinces:** 16.8% in Ngozi, 14.3% in Muyinga, 13% in Karusi, 10.5% in Cibitoke and 10.5% in Bujumbura Rural.

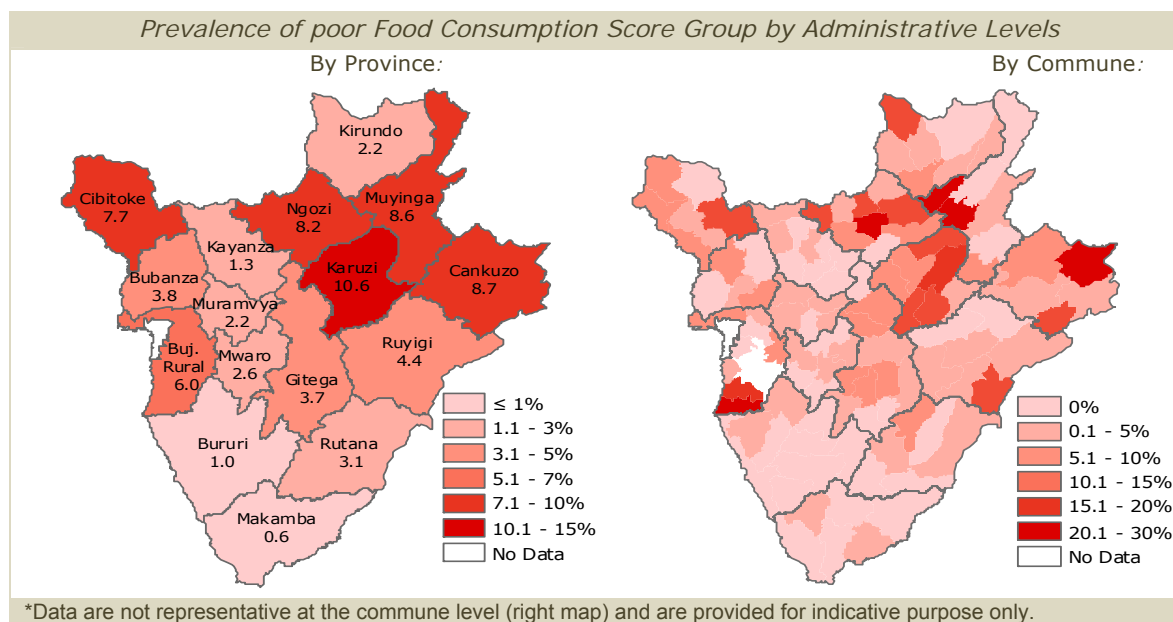
**Malnutrition prevails in every province of Burundi.** Acute malnutrition is most frequently

<sup>1</sup> Human Development Report, 2007/2008, UNDP.

<sup>2</sup> WFP uses the food consumption score as a proxy for food security. The score is based on the diversity of the diet and the frequency of food intake.



observed in Cankuzo and Rutana, while prevalence of chronic malnutrition is high throughout the country. The highest prevalence of stunting can be found in Ngozi, Citiboke, Mwaro, Kayanza, Muyinga. Out of 16 provinces, only five have stunting levels of less than 50 percent (Bubanza, Bujumbura, Cankuzo, Karusi, Makamba). However the stunting rate is above 45 percent in these provinces.



## Who are the food insecure households?

The majority of the population in Burundi is rural and almost all households are engaged in agricultural activities (99.4%). Household's food security is directly linked to wealth and asset ownership. Food insecure households have less access to land, use more often smaller plots and very seldom own the land. They rarely cultivate cash crops and they produce fewer overall varieties of crops.

The following four livelihood groups are considered priority and they account for 58.3 percent of the total population and 68.8% of the food insecure in all livelihood groups.<sup>3</sup>

- **Marginal Households** - 1.2% of the population (16,000 households) and 2.5% of all the food insecure: They are the smallest livelihood group yet the most prone to food insecurity. This group is characterized as isolated, uneducated, elderly head of households with a lowest average income relying on gifts and transfers to sustain their livelihoods. Their average income is the lowest of all livelihood groups, with 60% coming from pensions and transfers, and the remaining from production of both food-and cash-crops.
- **Labourers** - 14.7% of the population (195,000 households) and 29.6% of all the food insecure: They are also highly vulnerable to food insecurity as they largely depend on labour (manual and seasonal) opportunities which account for 84% of their income. They have few assets and limited access to land. They depend on markets to access food and spend a large share of their incomes on

<sup>3</sup> The livelihood group is not a sufficient criterion to target food insecure. Additional vulnerability factors including poverty and access to land must be taken into account. Other livelihood groups are: the agro-sellers, the agro-labourers, the agro-traders, agro-exploiters, and the employees. The first four groups are generally better off as they complement their agricultural activity by other activities such as daily labour, wood sale, fishing, mining, trade, etc. See the report for a description of all the livelihood groups.

food. This limits their ability to save and invest in economic assets, trapping them in a poverty cycle.

- **Agro-Brewers** - 2.5% of the population (33,000 households) and 5% of all the food insecure: This is a small group which specializes in brewing and wine-making. About 65% of their annual income comes from brewing activities which the remaining is derived from the agricultural production. They have the third highest proportion of food insecure (9.6%).
- **Agriculturalists** - 34% of the population (442,500 households) and 31.7% of all the food insecure: These households have the highest dependency on agricultural production for their livelihood (90%). Their annual income is almost half of the national average income.

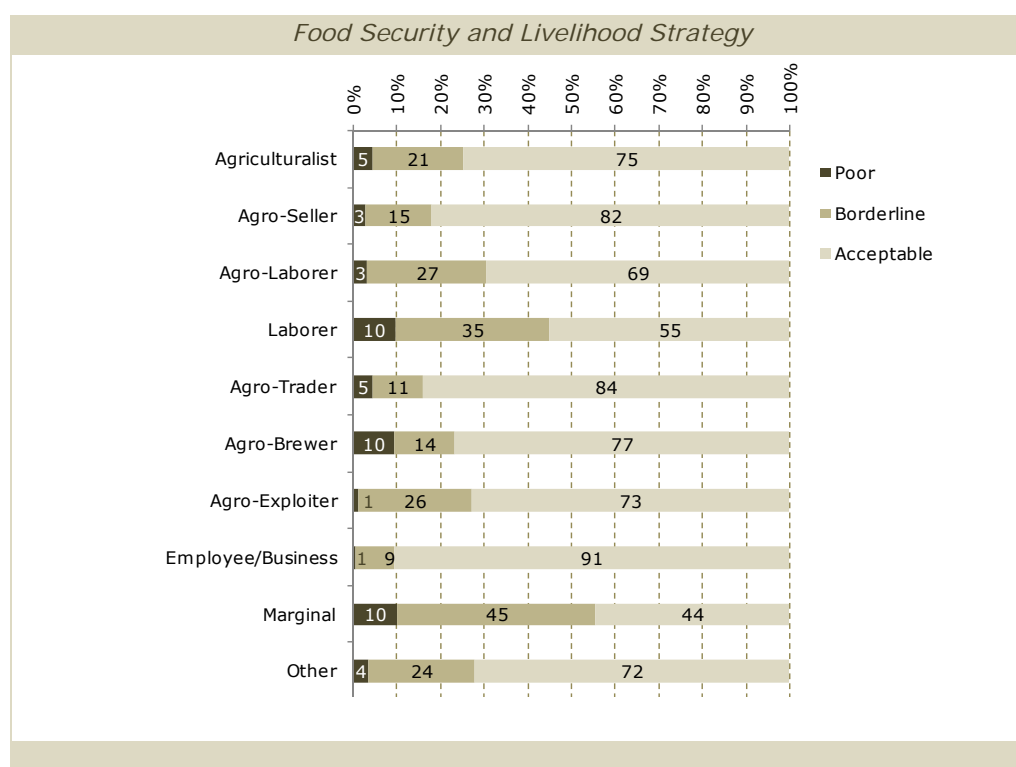
**Malnutrition:** Labourers have the highest prevalence of wasting (11.3%) compared to Agro-Labourers (9.7%), Agriculturalists (8.0%) and Agro-Sellers (7.6%). The prevalence of stunting is the highest among Agro-Labourers (55.2%), followed by Agriculturalists (53.6%), Labourers (53.0%) and Agro-Sellers (49.2%).

Additional criteria considered as vulnerability factors include:

- Household size: Households with two or less members
- The gender of the household head: female headed households are more likely to be vulnerable to food insecurity.

A table showing estimates of the number of household by priority groups is provided in the report.

The figure below presents the levels of food insecurity for each livelihood group. Table A below provides the main characteristics of each livelihood group.



**Table A:** Livelihood Strategy Groups Characteristics

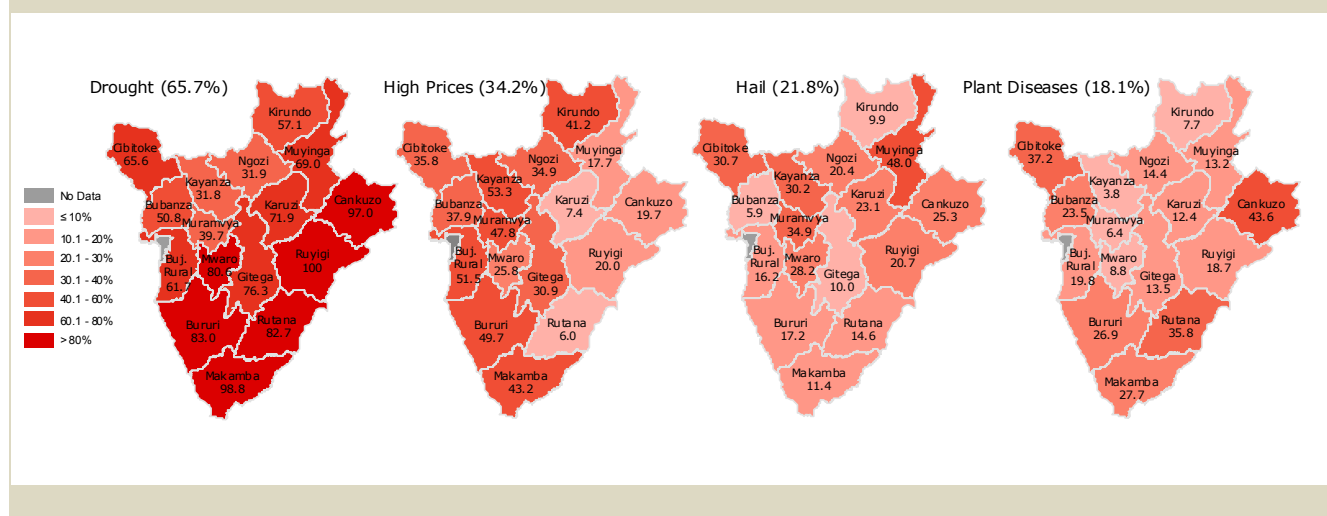
Livelihood Group N (%)	Description (based on average characteristics of the group)	% Lowest Wealth Quintile	% Asset Poor
<b>Agriculturalists</b> 1,781 (33.9)	Households with the highest dependency on agricultural production for their livelihood (90%). Low average annual revenue of 195,000 BIF mainly coming from agriculture	16.3	24.1
<b>Agro-Sellers</b> 934 (17.6)	Households dependent on agriculture (food) production for their livelihood (62%) with an additional contribution coming from cash crop (20%) and average annual revenue of 380,000 BIF. Two subgroups: <i>mostly cash-crop</i> (2%), with 67% of the livelihood from cash crop and <i>mostly food-crop</i> (16%), with 14% of the livelihood coming from cash crop	10.0	15.3
<b>Agro-Laborers</b> 1,066 (20.8)	The main livelihood activity remains agriculture (62%) with added contribution from manual/daily labor activities (34%). The average income is low, at 240,000 BIF, mainly from the manual labor activity (65%)	23.9	30.2
<b>Laborers</b> 668 (14.7)	Same as Agro-Laborers, but stronger dependency on labor (manual and seasonal) which accounts for 74% of the livelihood and 84% of the income. Agriculture still accounts for 21% of the livelihood. The average income is 250,000 BIF	40.1	48.1
<b>Agro-Traders</b> 196 (4.6)	Households with an average 52% of their livelihood generated by petty/small trade, the rest coming predominantly from agriculture (33.6%). The average income is high, at 765,000 BIF mainly generated from trade (63%), agriculture (19%) and artisan production (10%). Two subgroups: the <i>agro-artisans</i> (0.6% of the sample) with 73% of the livelihood coming from artisan work and the <i>agro-traders</i> (4.0%), with 59% of the livelihood from trade.	11.9	17.1
<b>Agro-Brewers</b> 113 (2.5)	Small group with specialized activity in brewing and wine making contributing to an average 39% of the livelihood, in addition to an average 53% coming from agriculture. The average annual income is 265,000 coming mainly from the brewing activity (65%).	6.5	13.8
<b>Agro-Exploiters</b> 44 (1.2)	This group regroups three profiles living of agriculture and additional exploitation of natural resources. The first sub-group (0.6%) depend on fishing for an average 63% of their overall livelihood; the second sub-group (0.2%) depends partially on mining (49%) and the third one (0.4%) depends on wood sale (51%). The group average income is 360,000 BIF generated predominantly by the exploitation of natural resources.	32.2	10.9
<b>Employees / Business</b> 98 (2.3)	This group generates high income of 1,170,000 BIF on average and depends predominantly of their revenue or large business profit for their livelihood and income, although they also continue some agricultural production which accounts for 22% of their livelihood on average.	1.7	6.6
<b>Marginal Households</b> 61 (1.2)	Small group of households living of pension (5%) and/or transfers (79%), with some contribution of agriculture (12%) to the livelihood. The average income is the lowest, at 90,000 BIF coming for 60% from pensions and transfer, and the rest from both food-agriculture and cash-crops.	39.7	76.0
<b>Others</b> 48 (1.2)	This groups lives of other unspecified activities, with an average revenue of 2300,000 and some dependency on agriculture (accounts for 18% of the livelihood)	24.2	31.0

## Shocks and Coping Strategy

The CFSVA survey asked the respondents to report the three main shocks they experienced over the 12 month period prior to the interview. Nationally, 65.5% of the respondents reported drought among their three main shocks. Other frequently reported shocks include inflation (high prices), hail, and pests and plant diseases.

Climatic shocks were generally less frequently reported among groups with less dependence on agricultural production to sustain their livelihoods: Laborers, Agro-exploiters, Employees/Business and Marginal households. Reporting price increase (inflation) was most frequent among Laborers, Agro-brewers, Agro-Exploiters and Employees-Business.

*Geographic Distribution of Main Shocks*



Households are frequently resorting to coping strategies. Over half the households limit quantities at meals (88.8%), consume less preferred/cheaper food (88.7%), reduce adults' meal size for children (65.0%), reduce the number of meals (60.3%), purchase food with credits (58.9%), and borrow (52.2%). Resorting to coping strategies is highest among laborers (67.9), marginal households (58.3%) and agro-exploiters (56.1).

## Why are households food insecure?

The high population density, the high dependency ratio and high population growth rate combined with the current structure of the economy (heavy reliance on limited natural resources) contribute to the population's vulnerability to food insecurity.

Food insecurity is due to:

- **Declining agricultural productivity** due to environmental factors (climate, erosion and loss of soil fertility). In addition, wood is the main source of energy for 96.7% of the households, leading to deforestation and land degradation.
- **Small land holdings.** While access to land is widespread, often the plot sizes are very small (between 0.25 and 0.5 ha) for 42.1% of households. In addition, the high population growth (2.8%) causes diminution of the sizes of food-producing plots.

- **Poor storage conditions and ability to preserve food.** Households sell what they cannot consume just after the harvest when prices are low and buy in the lean season when prices are high. The ability to preserve and store food is a significant component of the household vulnerability.
- **Nearly half (45%) of the population is aged 15 or less** which is a factor for lower economic growth. Furthermore, each additional child in a household means an average contraction in per capita consumption by 25 percent.
- **26.9% of households were considered as asset poor.** Asset poor households usually have less access to natural resources, no cash crop, none or few animals, less facilities of water and sanitation. Asset poor households are then maintained in an endless cycle of poverty.
- **Poor transportation networks.** It impacts the accessibility to goods and raises prices. It limits households' access to markets and to the supply of food items beyond the local level.
- **Natural disasters.** 65.5% of households experienced a drought in the last 12 months, and 21.7% experienced hail.
- **High food prices.** It is reported as a main shock by 34 percent of households. The price of beans increased by 55 percent between June 2007 and June 2008. The price of cassava and rice increased by 20 percent and 29 percent respectively over the same period.

**Malnutrition:** acute malnutrition may be due to poor hygiene practices and the use of unsafe source of water. Chronic malnutrition is linked to poverty.

## Recommendations

The following recommendations are made for the national policy level.

- **Include food security-centered programs in national poverty reduction strategies:** Addressing poverty and food insecurity in Burundi will require a broad multi-sector approach. Investments are needed in infrastructure, agricultural productivity, education and health sectors.
- **Integrate food security and health programs in a national nutrition strategy:** An improvement in health and sanitation services is needed to tackle malnutrition.
- **Further develop food security monitoring and intervention monitoring and evaluation:**
  - *Support the development of a food security monitoring system (FSMS).* In the South region, food security monitoring should focus on and/or take into consideration the impact of droughts; in the North-West, on poverty and prices and; in the North East, on food availability, prices and trade. The system should focus on the lean seasons (February - March and September - October).
  - *Integrate impact evaluation in food security interventions,* especially interventions that potentially lead to major changes in livelihood strategies to move them away from vulnerability such as promotion of cash-crops and interventions aimed at increasing trade and market exchanges.

Chief amongst the CFSVA recommendations targeted at the identified food insecure groups:

- **Stabilize supply and market prices, monetize rural areas. Target: households who depend on markets to access food (for example labourers)**
  - *Invest in storage and transformation:* better storage conditions would help households to sell what they cannot consume when prices are high. Similarly transformation into products with longer shelf-life and/or better conservation characteristics will similarly contribute to stabilizing supplies over time, and prices.
  - *Invest in transportation infrastructure:* The free-flow of goods and controlled costs of transportation will help to stabilize market supplies and, therefore, food prices.

- **Increase agricultural output.** *Target: food insecure agriculturalists.* The availability of adapted and improved seeds and other inputs, including fertilizers, should be prioritized. Seed fairs and private (for-profit) seed distribution networks, practices to control erosion and loss of fertility must be promoted. Model gardens and demonstration plots may be useful. Such programs must address specific local conditions.
- **Develop vocational skills and capacities.** *Target: labours and agriculturalists.* These groups need to develop alternative livelihood strategies to supplement their own production. Interventions to consider include: vocational training, Food-for-Training, investment in adult training programs and school feeding.
- **Invest in export-oriented markets.** *Target: agriculturalists and agro-brewers.* The North-East region is strategically near the Kigali market in Rwanda and to Tanzania, which could provide market opportunities for goods exported from Burundi. Measures to be considered include trade agreements, investment in infrastructure and support to private initiatives.
- **Food aid distributions:** Aside from specific target groups including refugees and marginal households, the need for assistance depends on agricultural conditions and harvested quantities. Contingency plan for emergency distribution should be informed by the FSMS.
- **Establishment of a formal social support system.** *Target: Household with a Marginal livelihood strategy.* This group needs food assistance on a permanent basis. Only local networks and organizations have the ability to provide long term support to those households.

## INTRODUCTION

Three years after the 2005 communal, parliamentary and presidential elections were held in Burundi, the country is still at a crossroad. The elections marked the end of the transition period initiated by the 2000 Peace and Reconciliation Accord, ending a civil conflict that claimed 300,000 lives and displaced over 1.2 million people. However, it is not until September 2006 that a ceasefire was reached with the Front National Liberation, FNL. Disarmament, demobilization and reintegration programs only started in 2008 amidst renewed tensions.

Among the main challenges still faced by Burundi is the rebuilding of the human, social and economic fabric of the country. Between 1993 and 2003, the GDP per capita fell from US\$180 to US\$83, one of the lowest in Africa.<sup>4</sup> Poverty is widespread and most development indicators are well below the regional average (e.g. literacy rate, infant and maternal mortality). The government has engaged in reforms and programs to spur economic growth and social changes, but economic growth remains slow (average 2.7% between 2001 and 2006).

Against the backdrop of the transition period (2002-2005), WFP conducted in July-August 2004 a Comprehensive Food Security and Vulnerability Assessment (CFSVA).<sup>5</sup> The 2004 research was the basis for a similar CFSVA conducted from June to July 2008. This report presents the findings of the 2008 CFSVA.

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<sup>4</sup> WorldBank data

<sup>5</sup> WFP, Analyse de la sécurité alimentaire et de la vulnérabilité, Burundi (WFP, December 2004)

## CFSVA OBJECTIVES AND METHODOLOGY

### OBJECTIVES

The overall objective of the Comprehensive Food Security and Vulnerability Analyses (CFSVA) is to analyze the food security and vulnerability conditions of population groups and communities, and to provide baseline information to WFP decision makers and other actors focusing on food insecurity.

- Who are the people at risk of food insecurity?
- How many are they?
- Where do they live?
- Why are they food insecure?
- How can food assistance and other interventions make a difference in reducing poverty, hunger and supporting livelihoods?

The specific objectives of the Burundi CFSVA where to:

- Identify geographic and socio-economic groups that are food insecure or vulnerable to food insecurity;
- Identify the nature and causes of food insecurity among each group;
- Identify the major risks and constraints to improving food security;
- Evaluate assistance needs at the short, medium and long range;
- Support the development of an appropriate targeting system;
- Better define the role of WFP and its partners in promoting food security strengthening programs.

### CONCEPTUAL FRAMEWORK AND DEFINITIONS

The CFSVA analysis is based on a particular understanding of food security and vulnerability. The Vulnerability and Food Security Conceptual Framework presented in Figure 1 informs not only the selection of indicators for analysis and use in targeting, but also the design of field assessment instruments.

This report follows the logic of the Food and Nutrition Security Conceptual Framework. First the human, social, natural, physical and financial capital / assets are introduced. Second, the livelihood strategies are explored and third the livelihood outcomes are analyzed with a focus on food security outcomes (food consumption). The following two chapters of the analysis deal with the general vulnerability context (i.e. context and exposure to shocks) and finally, food utilization. The different components are then analyzed to identify determinants of food insecurity. Those determinants are summarized in food security and vulnerability profiles to answer the following key questions: Who are the food insecure, where are they, how many are they, and why are they food insecure? Lastly, recommendations are provided for WFP and its partners to strengthen food security programmes (i.e. implications for programming).

**Food security** exists when “all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”.<sup>6</sup> It is understood as a multidimensional function of:

1. **Food availability:** the amount of food physically available to a household (micro level) or at the national level (macro);
2. **Food access:** the physical (e.g. road network, market) and economical (e.g. own production, exchange, purchase) ability of a household to acquire adequate amounts of food; and

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<sup>6</sup> World Food Summit, 1996

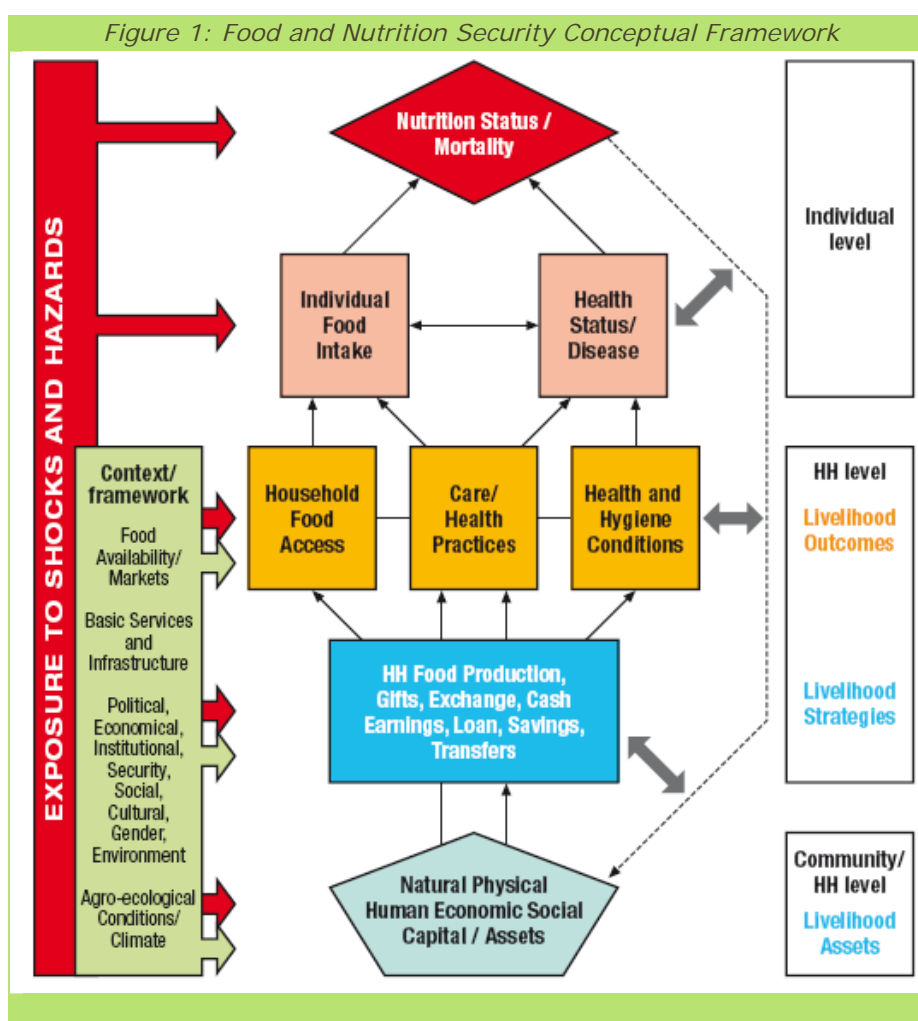


3. **Food utilization:** the intra-household use of the food accessible and the individual's ability to absorb and use nutrients (e.g. function of health status).

Food security is an outcome of the **livelihood strategies** adopted by a household. It includes the activities required for a means of living. The livelihood strategies are based upon the **assets** or capital available to the household, which include its human, social, natural, physical and financial resources. A livelihood strategy is **sustainable** when "it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base."<sup>7</sup>

**Vulnerability** is "the probability of an acute decline in access to food, or consumption, often in reference to some critical value that defines minimum levels of human well being".<sup>8</sup> It is a function of:

1. **Exposure to risk:** the probability of an event that, if it did materialize, would cause a welfare loss (e.g. drought); and
2. **Risk management:** the ability to mitigate the possible consequences of a probable event. This can in turn be divided into ex-ante risk management (preparedness) and ex-post risk management (ability to cope). The ability to cope is the response after an event occurred; it can be negative and affect the resource base of the household, such as the selling of assets, or positive (non-negative response such as migration). The ability to cope is undermined by the intensity of the event itself but also by poor structural and societal conditions such as poverty.



<sup>7</sup> DFID (1999) *Sustainable Livelihoods Guidance Sheet*, Department for International Development

<sup>8</sup> World Food Programme (2002) *VAM Standard Analytical Framework*

## METHODOLOGY

Data collection for the 2008 CFSVA took place from June 03, 2008 to July 14, 2008. Three instruments were used for primary data collection: a household survey administered to randomly selected households, a community survey administered to key informants, focus groups in selected communities and a market price survey. In addition, a review of secondary data was conducted and included in the discussion of the results.

Data collection for the surveys was conducted by the national institute of statistics, the *Institut de Statistiques et d'Etude Economique du Burundi* (ISTEEBU) under the supervision of the World Food Programme (WFP). A total of 10 teams each composed of four enumerators and one team leader conducted the field work. The teams participated in a four days training course prior to data collection, including field testing. An additional two-days training course was organized after the first week to correct any systematic errors in completing the questionnaires. Data entry was conducted by ISTEEBU on CPro. For the household questionnaire, data were entered twice, separately (double-entry). Comparison on the two entries was performed in CPro and any discrepancies were corrected by a check on the original paper questionnaire. All the analysis and final cleaning of the survey data were performed with SPSS.

### Data Sources

#### Household Survey

The household questionnaire is composed of 11 sections: (1) demographics, (2) circumstances of the household, (3) housing structure and amenities, (4) assets, (5) land and agricultural production, (6) livelihood activities, (7) household expenditures, (8) food consumption, (9) exposure to shocks, (10) coping mechanisms, and (11) maternal health and nutrition. The last section included anthropometric data and was only administered to women of reproductive age (15-49) and children less than five years, in the sampled households. Unless otherwise specified, the questionnaire used an open-ended interview format. Pre-coded answers were included on the questionnaire to facilitate the recording of the responses, but were never read to the participants. The teams used height boards, MUAC measure band and Salter scales to collect the anthropometric data.

Burundi is administratively divided in provinces, communes, collines and sous-collines. For the purpose of the 2008 CFSVA, only rural areas were considered. A separate study was conducted in three urban areas and is discussed in this report for comparison with the rural areas.<sup>9</sup> The country has also been divided in 11 natural regions. The 2008 CFSVA sought to provide statistically representative results at the province level and by natural regions, with the possibility to provide indicative (non-statistically significant) estimates at a lower administrative level (the commune). To achieve this, a stratified two-stage cluster sampling strategy was used, with a minimum target sample size of 300 households by province. The primary sampling unit (cluster) was the sous-colline. There are 9,915 sous-collines in Burundi, the lowest administrative unit. A minimum of 25 sous-collines were sampled in each province, with at least one sous-colline per commune. In larger provinces the number of clusters was increased to ensure a good spatial distribution. Sous-collines were selected using a systematic random procedure adjusting for population size within the cluster. A total of 433 sous-collines were sampled. Within each sous-colline, a sample of 12 households was randomly selected from list of all the households in the sous-colline. The final expected sample size was 5,196 households.

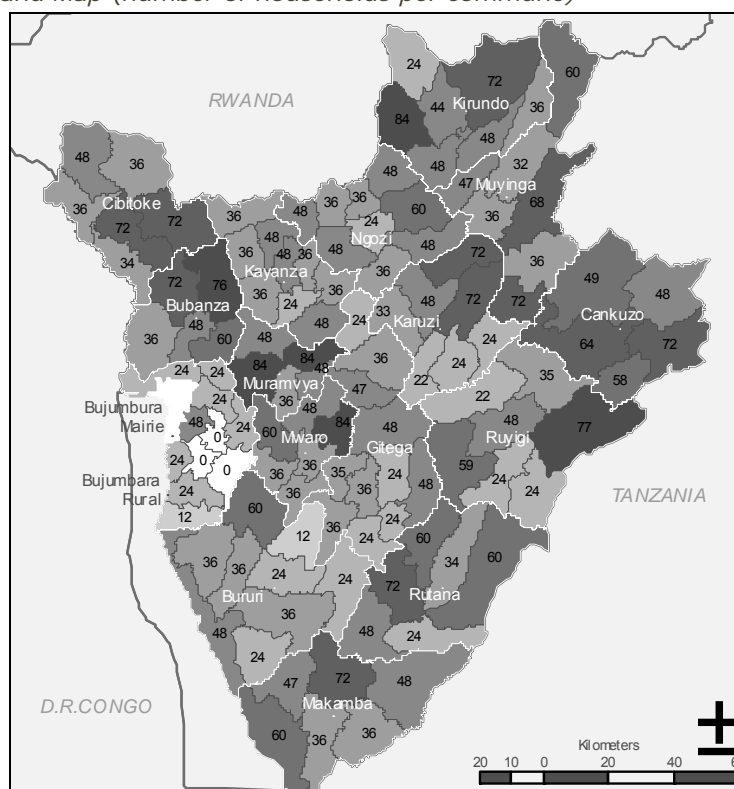
In the end, a total of 5,011 interviews were conducted in 11 provinces, 114 communes, 422 collines and 422 sous-collines. Data collection had to be put on hold in 11 sous-collines of Bujumbura Rural due to insecurity at the time of the survey. Only 19 sous-collines were surveyed in that province instead of the planned 30. The figure below provides a map and detail of the sample distribution. The number of sampled

<sup>9</sup> WFP (July 2008), *Vulnerability and Food Insecurity in Three Urban Areas of Burundi: An Assessment of the Impact of High Prices on Households in Bujumbura Mairie, Ngozi and Gitega Cities*. World Food Programme

households is provided by commune. Darker shade indicates a larger number of sampled households. Weights were computed for each sampled households.<sup>10</sup>

Table 1: Household Sample Distribution and Map (number of households per commune)

Province	Sampled Communes	Sampled Collines	Sampled Sous-Collines	Sampled Households (unweighted N)
Bubanza	5	25	25	292
Bujumbura Rural	9	19	19	228
Bururi	9	25	25	300
Cankuzo	5	25	25	291
Cibitoke	6	25	25	298
Gitega	11	32	32	382
Karusi	7	25	25	295
Kayanza	9	29	29	348
Kirundo	7	30	30	356
Makamba	6	25	25	299
Muramvya	5	25	25	300
Muyinga	7	30	30	351
Mwaro	6	25	25	300
Ngozi	9	32	32	384
Rutana	6	25	25	298
Ruyigi	7	25	25	289
TOTAL	114	422	422	5011



## Community Survey and Focus Groups

In addition to the household survey, survey teams conducted key informant or community questionnaires in sampled sous-collines. The community questionnaire covered questions on (1) community demographics, (2) roads and transportation, (3) education infrastructure and access, (4) health infrastructure and access, (5) market infrastructures and access, (6) agricultural calendar, (7) impact of the conflicts, and (8) exposure to shocks. Out of 422 sampled sous-collines, only 286 questionnaires were completed due to time constraint. To gain a better understanding of the context, focus groups were organized in 5 provinces generally considered as most food insecure: Rutana (3 focus groups in 3 communes), Muyinga (6 focus groups in 6 communes), Ruyigi (3 focus groups in 2 communes), Gitega (4 focus groups in 4 communes), and Ngozi (4 focus groups in 4 communes). The focus groups used a common guideline and aimed at identifying the main components of-, threats to- and responses to food insecurity. The information gathered is used to inform the discussion of the household and community surveys.

## Secondary Data

In February 2008, WFP Burundi commissioned a secondary data analysis (SDA) to consolidate information and data relevant to food security from a variety of sources.<sup>11</sup> Where possible, findings from the SDA were used to provide context and discussion for the 2008 CFSVA.

<sup>10</sup> Weights were computed as  $1/\text{probability of selection}$ . The probability of selection was equal to the probability of selection of the cluster multiplied by the probability of selection within the cluster. The weights were normalized using the national probability of sampling of a household.

<sup>11</sup> De Bonis V (March 2008), *Burundi, A secondary Data Analysis on Food Security and Vulnerability*, World Food Programme

## Limitations

All possible steps were taken to ensure that the results accurately represent the food security context and situation in Burundi. However, some limitations must be acknowledged.

- The results represent the geography and timing of the survey. Urban locations including Bujumbura Mairie were not included in the sample. The results therefore only represent rural populations of Burundi. A separate urban study was conducted simultaneously and is referenced to for comparison purpose. Results are representative at the provincial level (16 provinces) and by natural regions (11 regions). The survey took place during or just after the 2008 season B (February to July) harvest, resulting in good food availability. The results represent a snapshot of the food security for that period. However, the survey instrument includes items with a recall period of up to one year to provide a broader context.
- Insecurity led enumerators to stop collecting data in the province of Bujumbura rural. For that province, data collection was completed in 19 sous-collines instead of the 30 originally sampled. It is unknown whether respondents from the 11 sous-collines excluded from the sample would have differed significantly from the rest of the sample.
- Inaccurate recall and quantitative estimates may affect the validity of the findings. The enumerators were trained to facilitate such recall and to collect accurately anthropometric data. It is also possible that expectations for ulterior benefits influenced the results. However respondents were explained that no ulterior benefits were to be expected and that the questionnaires were anonymous.
- The questionnaires were developed in French and administered in French and/or Kirundi. Careful training was conducted to reduce individual variations on how enumerators interpreted the questionnaire and understood the questions.
- Food security and vulnerability are complex concepts to measure. This report focuses on food consumption as a proxy measure of food security. The measure has the advantage to be reproducible and comparable over time and location.

## 2008 CFSVA RESULTS

### HUMAN AND SOCIAL CAPITAL

The human capital concerns the characteristics that influence the amount and quality of work available to the individual or household. These include demographic characteristics such as the household size and composition, as well as the skill level (education), etc. The amount and quality of human labour force available in turns influence the livelihood strategies and ultimately food security of the household. In this section we also include the social capital which concerns the social resources (i.e. networks, relationships, civil society) on which the household can draw to achieve its livelihood. However, the importance of social capital is more closely examined in relation to response to shocks later in this report.

### DEMOGRAPHICS

Estimates of population size for Burundi vary according to sources, with an average projected figure of 8.3 million people in 2008, an annual population growth rate ranging from 3.1% to 3.9% and a population density over 300 inhabitants per square kilometer.<sup>12</sup> A national census will be completed by the end of 2008. At the current rate, the population of Burundi is projected to be over 11 million by 2015. Two factors combined with the high population density contribute to the vulnerability of the population to food insecurity and poverty: the high dependency ratio and the low urbanization rate. First, nearly half (45%) of the population is aged 15 or less, constraining household and state resources. According to the Burundi PRSP, the presence of an additional child in the household is reflected in an average contraction in per capita consumption of 25 percent, in rural and urban areas alike. The presence of an additional adult in the household also results in lower consumption, but in smaller proportion (10 percent). Second, with 90% living in rural areas, the population of Burundi is putting pressure on land and other natural resources. Environmental degradation results from the cultivation of marginal lands (e.g. on high slopes) and non-sustainable environmental practices used to sustain livelihoods.

Household composition data collected by the 2008 CFSVA are consistent with existing data: According to the composition reported by the CFSVA, children aged 0-13 constitute 45.4% of the population (19.9% below 5 and 25.6% aged 5-13); adults aged 14-59 form 50.5% of the population, and elderly aged 60 or above are just 4.1% of the population. Overall, women constitute a slight majority, at 51.5% of the population. In Kirundo and Cankuzo, children below 14 formed over half the total population (51.0% and 50.1% respectively). The lowest share of children in the population was found in Mwaro (37.9%) and Gitega (40.1%). Across provinces, the proportion of women in the population ranged from 48.6% in Ruyigi to 54.6% in Bururi.

Table 2: CFSVA – Demographic Characteristics of the Population

Average Household Size	Average Age, head household (years)	Female-Headed Household (%)	Household Composition (%)						Caring for Orphans (%)
			Males Aged 0-13	Females Aged 0-13	Males Aged 14-59	Females Aged 14-59	Males Aged >60	Females Aged >60	
5.3	43.8	18.0	22.3%	23.2%	24.2%	26.3%	2.0%	2.1%	11.6

According to the 2008 CFSVA, the average household size is 5.3, ranging from 4.8 in Muyinga to 6.3 in Bururi. A dependency ratio was computed as the average ratio of dependents (children aged 0-13, elderly aged over 60) to the number of active adults (14-59).<sup>13</sup> The national average dependency ratio is 0.98. It

<sup>12</sup> World Bank, WHO and UNDP data

<sup>13</sup> The dependency ration was calculated using aggregated values, not at the household level.

was highest in Cankuzo (1.17), Ruyigi (1.13) and Muyinga (1.12); it was lowest in Gitega (0.78) and Mwaro (0.79). Nationally, 15.4% of the households host an average 1.1 adults (15-60) with a physical or mental handicap that prevented them to work in the last three months. Some households host orphans (11.6%), with an average of 1.6 orphans, and some households (9.2%) host an average 1.7 non-permanent residents. Most households are headed by a male (82.0%). The households are usually headed by a couple, either married (62.2%) or in a partnership (16.2%). The other households are single-headed (21.6%), including 16.0% of widow(er), 1.9% of divorced/separated and 1.6% of single who were never married. The average age of the household head is 43.8 years old, while the spouse of the household head averaged 35.5 years old.

## EDUCATION

The 2008 CFSVA assessed literacy and education level among the sampled households. Nationally, 54.4% of the households heads reported being able to read and write a simple message in any language. There was a marked gender difference: 60.8% of the male head of household could read and write a simple message, compared to only 25.1% of the women head of household. The difference was statistically significant (O.R. 4.5, 95%CI 3.8-5.3,  $p < 0.001$ )<sup>14</sup>. Reported literacy among household heads was lowest in Mwaro (43.8%), Kayanza (48.9%) and Karusi (49.2%).

With regards to education achievements, 30.3% of the household heads reported not having attended any educational system and 27.0% reported attending only informal services such as literacy and catechism. One third of the household heads (38.7%) had primary education and very few had higher than primary education, including secondary education (3.6%) and university level education (0.3%). Again differences existed based on the gender of the household head: among male head of household, only 26.1% reported having no education compared to half of the female head of households (49.9%). Female heads also more frequently had only informal education (31.0%) compared to male (26.1%).

*Table 3: Literacy and Education Level*

	Household Head			Head's Spouse
	Male	Female	Total	
Can read and write simple message	60.8	25.1	54.4	--
Education : None	26.1	49.9	31.0	33.6
Informal (literacy, catechism)	26.1	31.0	27.0	34.8
Primary	43.7	16.1	38.7	29.9
Secondary	3.7	2.8	3.6	1.7
University	0.1	0.1	0.3	0.0

Data on household composition and number of children attending primary school were used to compute the net primary school enrollment rate.<sup>15</sup> Nationally, 72.2% of the boys in age to attend primary school (5-13) indeed attended primary school, and 69.2% of the girls did. The average rate was 70.7% for both sexes. The rate varied across provinces with net primary school enrollment lowest in Ngozi and Ruyigi (respectively 58.2% and 59.8%). To compare the gender balance in primary school enrolment the ratio of male to female net primary school enrollment rate was computed. A ratio above one indicates a situation where the net enrollment rate is higher among boys compared to girls. Inversely, a ratio below 1 indicates that the net enrolment rate among girls is higher than that of boys. The most unequal gender balance was found in Cibitoke and Bubanza, in both cases in favor of boys.

<sup>14</sup> O.R. indicates Odd Ratios: it indicates that male head of households were 4.5 times more likely to be able to read simple messages compared to female head of households.

<sup>15</sup> The Net Primary School Enrollment rate is the ratio between the total numbers of children in age of attending primary school enrolled in primary school to the total number of children in age of attending primary school. The rate was computed at the aggregate level, not as the average of the enrolment rate at the household level.

Table 4: Net Primary Enrollment by Province

Province	Primary Net Enrollment (%)			M/F
	Male	Female	Total	Ratio
Bubanza	83.7	70.9	77.1	1.18
Bujumbura Rural	80.4	90.7	85.6	0.89
Bururi	78.9	80.9	80.1	0.98
Cankuzo	70.3	67.6	69.0	1.04
Cibitoke	85.0	57.6	71.0	1.47
Gitega	75.6	75.2	75.4	1.01
Karusi	66.1	64.3	65.1	1.03
Kayanza	72.2	62.7	67.4	1.15
Kirundo	66.5	63.3	64.8	1.05
Makamba	85.8	76.4	81.0	1.12
Muramvya	75.4	76.2	75.8	0.99
Muyinga	58.6	60.9	59.7	0.96
Mwaro	76.2	87.1	81.4	0.87
Ngozi	59.2	57.1	58.2	1.04
Rutana	68.1	69.1	68.6	0.99
Ruyigi	66.0	53.2	59.8	1.24
TOTAL	72.2	69.2	70.7	1.04

Nationally, among households with school-age children,<sup>16</sup> one-third (31.4%) of the households had children of age who never attended school. The proportion was highest in Muyinga (49.8%), Kirundo (45.9%) and Bubanza (39.1%). Girls represented 51.6% of the school-age children who never attended school. Overall, the most frequent reasons cited for children not to attend school were the cost (21.3%), refusal of the child (12.9%), sickness (11.1%) and domestic work (10.2%). However, 39.4% of the households provided other unspecified reasons. This is likely to include distance or lack of school facilities in the area. The reasons for children not to be schooled differed for boys and girls. Among girls, domestic work was more frequently mentioned (15.5%) compared to boys (4.4%). Inversely, refusal of the child to go to school was more frequent among boys (17.0%) compared to girls (9.2%). According to the community questionnaire, only 28% of the sous-collines had a school on location. In sous-collines where no school was on location, it took an average 36 minutes on foot to reach the school.

In addition to households with children who never attended school, 8.6% of the households with school-age children reported having children who were absent from school for at least a week since the beginning of the year. A majority of the children who were absent from school were boys (55.4%). The most frequent reasons to abandon school were sickness (48.0%), followed by refusal to go (21.3%) and the cost of education (10.5%). Among boys, refusal to go was more frequent (27.9%) compared to girls (14.3%).

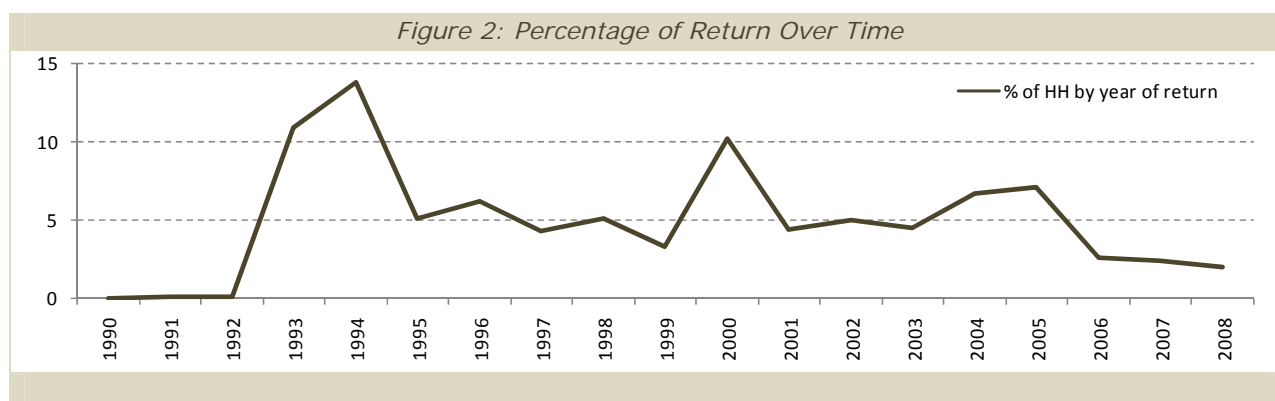
## MIGRATION AND DISPLACEMENT

Although insecurity remains a problem throughout Burundi, the situation has improved since the signing of the peace agreement in 2003. With improved security, displaced people have started to return to their home of origin. The CFSVA asked the selected households a series of questions on displacement. Nationally, 41.5% of the households identified themselves as households of 'returnees', regardless of the cause and dates of displacement and return. Most of them were internally displaced (58.9%) and refugees (38.6%). Over two-thirds of the households identified themselves as returnees in Bubanza (71.6%), Bujumbura Rural (71.4%) and Cibitoke (68.9%). Inversely, returnee households were least frequent in Mwaro (7.9%) and Gitega (15.0%). Looking at the year of return, three peaks of returns can be identified: 1994, 2000, and 2005. The figure below illustrates the percentage of returns over time. The dark line represents the average while the thinner lines represent data for individual provinces. As the data suggest, there are important differences across provinces. In Kirundo, Muyinga and Ngozi, a majority of the returns

<sup>16</sup> School-age children are children who are between the age of 5 and 13 years old, that is in age to attend primary school



took place in 1993-1994. In Bubanza and Bujumbura Rural, the main peak of return was in 2000-2001. After 2003 and up to 2005, the provinces of Bururi, Cankuzo, Gitega, Makamba, Mwaro and Ruyigi experienced a peak in returns.



Despite the improving security situation, instances of armed robbery and upsets caused by armed groups especially in Bujumbura Rural and Bubanza continue to create displacement. The CFSVA assessed recent trends over a two year period. Ten percent of the households reported having at least one household member that was displaced for some time during the two year period prior to the survey. They were twice as many in Bubanza (21.5%) and Kirundo (27.4%). The main cause of displacement, however, was economic, with 73.2% saying the displacement was related to finding work. Insecurity was mentioned by 14.8% of the households and was most frequently identified in Bujumbura Rural (89.0%), Bururi (100%) and Cankuzo (75.9%). In Bubanza, 60.9% of the households reported economic reasons for the displacement and 28.6% mentioned insecurity. Displacement was generally over quite a distance, with only 20.8% staying in the same commune, while 61.6% moved to outside of the commune to rural areas (29.4%) or urban areas (32.2%) in Burundi. The rest (21.2%) moved abroad, generally not in refugee camps (16.6%). Moving abroad was most frequent in Rutana (54.6%), Muyinga (47.8%) and Kirundo (40.6%). Among households who had displaced members over the last two years, 73.8% saw them return, on average 6 months prior to the survey. Among returned households, few reported receiving food assistance for the return (11.1%) or other forms of assistance (5.3% - most frequently for housing). Those who returned since 5-years ago reported more frequently having received food (13.9%) and other assistance (12.3%).



## NATURAL CAPITAL

### CLIMATE

Burundi's climate is divided in four seasons: two wet seasons: from October to December (short) and from February to May (long), and two dry season: from January to February (short) and from June to August (long). Agricultural production is planned to correspond to the climatic conditions, with Season A taking place from September to December (short) and Season B taking place from February to July (long). A third season (season C) can take place in irrigated land (marshland) between June and October. Although the cropping season's calendar is similar for all of Burundi, the rainfall varies between 1300 and 1600 mm a year though the Ruzizi Plain in the West and between 700 and 1000 mm in the northeast. The average temperature is mild, ranging from 16 °C to 25 °C, with higher temperatures recorded in the West.

Table 5: Climate and Cropping Seasons Calendar

Month:	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.
Climate:												
	Short Wet			Short Dry		Long Wet			Long Dry			
Season A: (39.7%)												
Season B: (50.2%)												
Season C: (10.2%)												
	Planting			Harvesting			(...%) Contribution of Season to Total Production					

Using the 2008 CFSVA results, the contribution of each season to a household agricultural production was estimated. Season A contributed on average to 39.7% of the production, season B to 50.2% of the production and season C to 10.2%. This is consistent with the general 35%-55%-10% distribution found in the literature.<sup>17</sup> However, the CFSVA suggest differences across provinces: In Bubanza, Bujumbura Rural and Cibitoke, Season A contributes to more than 50% of the production (respectively 54.4%, 52.7% and 52.6%), and subsequently the Season B plays a less significant role.

### PRODUCTIVE LAND

With a mostly rural population, access to land is a key factor in determining livelihood strategies and output. According to existing data, three quarter (74.4%) of the households own land and over 85% of the households have access to land (86.7% among returnee households and 89.2% among the non-returnee group) with Cibitoke reporting the lowest percentage of land ownership (50.8%) and plot size being on average smallest in Rutana (0.85 ha) and Kirundo (0.94 ha) Food crops occupy a large proportion of agricultural land (28 percent of the total land area and 85 percent of the total cultivated surface).

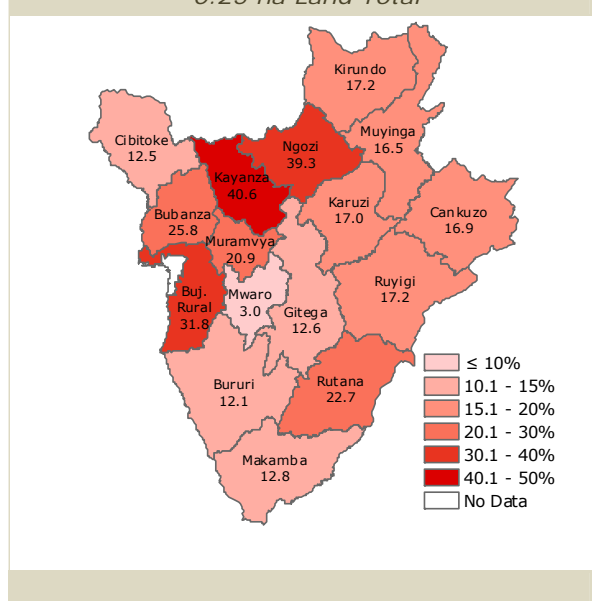
The 2008 CFSVA confirms the widespread access to land in rural areas and the importance of farming. Overall, 95.2% of the households said they had access to land and, among them, about all the households (99.4%) said they were engaged in agricultural activities. Marshlands are important because they allow households to have a third, irrigated, agricultural season during the long dry season from June to August. Nationally, 52.3% of the households had access to marshlands with the highest percentages found in Mwaro (72.3%), and Ruyigi (71.6%) and the lowest percentages found in Bubanza (18.0%) and Bujumbura rural (19.2%).

<sup>17</sup> De Bonis V (March 2008), *Burundi, A secondary Data Analysis on Food Security and Vulnerability*, World Food Programme

Nationally, 94.1% of the households with access to land reported owning some land, 42.5% rented some against payment in cash and 5.4% rented land against payment in kind; 7.1% also borrowed land. On average, households owned 76.0% of the land they cultivated; 50.9% of the households owned the totality (100%) of their cultivated land. The remaining surfaces were rented either with cash (20.1%) or in kind contribution (1.7%) or simply borrowed (2.1%). The lowest share of the cultivated land that is owned by an average household is found in Bubanza (49.8%), Bujumbura Rural (59.7%), Cibitoke (65.9%) and to a lesser extent Bururi (70.1%) and Muyinga (71.5%). Some households keep land uncultivated (15.3%), generally because they are put in fallow (35.1%), because they are not fertile enough (18.2%) or because the household lacks the labor force (17.9%). The proportion of household with uncultivated land is lowest in Bubanza (2.2%), Kayanza (4.7%), Kirundo (8.7%) and Muyinga (9.0%). Overall this means that land is rarely put in fallow, which may impact its productivity.

The CFSVA asked respondents to estimate the plot size of the land they accessed: 42.1% of the households who had access to land owned a plot of 0.25 ha or less, 21.4% owned a plot of 0.25 to 0.50 ha, 13.8% owned a plot of 0.50-0.75 ha, 7.7% owned a plot of 0.75 to 1.00 ha and 9.1% had a plot of more than 1.00 ha; 5.9% did not own any plot. With regards to the land that is rented and borrowed, most plots were 0.25 ha or less. Among the 42.5% households that rented land for cash, 69.0% rented a plot of 0.25 ha or less, 19.0% rented a plot of 0.25 to 0.50 ha and 11.9% rented land of over 0.50 ha. Among those who rented land against payment in kind (5.4%) or borrowed it (7.1%), over 80% of the plots were 0.25 ha or less. In 8 out of 16 provinces, over half the households did not own any land or owned less than 0.25 ha, and most frequently so in Bubanza (78.1%), Muyinga (61.4%), Kayanza (60.7%) and Bujumbura Rural (60.6%).

*Figure 3: Distribution of Households with < 0.25 ha Land Total*



Finally, when combining all sources of land, 21.3% of the households disposed of 0.25 ha or less. There were differences across provinces with a larger proportion of households with 25 are or less in Kayanza (40.6%), Ngozi (39.3%), Bujumbura Rural (31.8%) and Bubanza (25.8%). Among the rural population, having access to limited land is a vulnerability factor. The CFSVA data showed that 33% of the female headed households had 0.25 ha of total land or less compared to 18.6% of male headed households. In other words, female headed households were twice more likely to have 0.25 ha of land or less compared to male headed households. The difference was statistically significant (O.R. 2.18, 95%CI: 1.84-2.57,  $p < 0.001$ ).

## AGRICULTURAL PRODUCTION

Rural households in Burundi depend on their own agricultural production to sustain their livelihood. When asked about the two main cereals they produce (regardless of the agricultural season), households identified most frequently corn (68.5%), and to a lesser extent sorghum (20.5%), rice (15.9%) and wheat (5.5%); 17.4% of the households produced no cereals. Looking at pulses, beans were cultivated in nine out of ten households (89.3%). Other pulses were much less frequent, including groundnuts (18.2%), peas (10.0%), niebe (3.3%), soy (1.4%) or other pulses (3.0%). For the two main tubers, household most frequently reported cultivating sweet potato (88.2%) and cassava (72.7%). Only 3.6% of the households reported cultivating no tuber. Other cultivated tubers include irish potato (7.8%),

taro/colocase (2.0%), igname (0.3%) or other tuber (0.2%). Cassava mosaic has greatly affected production of the tuber in the last years.

The distribution of crop production varied greatly across provinces. Results are summarized in the following table. Households cultivate cereals least frequently in Bujumbura Rural and Ngozi. Sorghum is most frequently cultivated in Cankuzo and Ruyigi, while corn is least frequent in Kirundo, Muyinga and Ngozi. Rice and wheat were seldom among the main cereals cultivated, but more frequently so in Karusi and Ngozi for rice and Muramvya for wheat. Looking at pulses, beans were cultivated most frequently in all the provinces. Groundnuts were more frequent in Cankuzo, Rutana and Ruyigi. Households in Bururi cultivated noticeably less frequently pulses, with 11.7% of the households reporting no pulses. Finally, looking at tuber, most households cultivated cassava, except in Gitega and Mwaro. Irish potato however, was more frequent in those two provinces, as well as the provinces of Bururi and Muramvya.

Households who had access to land were further asked what cash crop they cultivated. The production or cash generated by the crops were not assessed. Nationally, 18.7% of the households reported cultivating no cash crop. Households in Bururi (41.4%), Bujumbura Rural (34.5%), Makamba (33.2%) and Ruyigi (32.7%) most frequently reported no cash crops. The most frequent answers were plantain/beer banana (48.5%) and coffee (34.0%). Cassava (16.4%) and Sweet/Irish potato (16.1%) also played a role in generating cash. Coffee was frequently found in Kayanza (71.8%), Ngozi (55.0%) and Karusi (52.1%). Plantain/Beer banana was most frequently found as a cash crop in Gitega (70.8%), Kayanza (65.6%), Karusi (64.2%), Muramvya (63.9%) and Mwaro (63.0%). Rice and Sunflower were mentioned as a cash crop by respectively 21.4% and 22.6% in Kirundo, and less frequently elsewhere. Few households mentioned corn, sorghum or vegetables as cash crop except in Cankuzo.

The CFSVA further asked respondents about their production during the last agricultural season. The CFSVA assessed production of 11 crops. During the 2008A season, about all (95.4%) of the households cultivated tubers, including sweet potato (86.9%), cassava (57.3%), cooking banana (65.9%), irish potato (14.1%) and plantain (imizuzu - 4.4%). Most (90.9%) households also cultivated pulses, including beans (89.8%) and groundnuts (10.1%). Finally, fewer, but still a majority (73.2%) cultivated cereals, including 62.5% who cultivated corn, 14.5% who cultivated sorghum, 13.5% who cultivated rice, and 3.0% who cultivate wheat.

Seed sources were assessed for the main crops. The results show that households heavily rely on the market to obtain seeds for cereals and pulses. For corn, 67.9% of the households purchased seed for the last season (2008A), while 23.6% used their own stock. Figures were similar for rice and sorghum, but households used their own stock more frequently for wheat (40.1%). Reliance on the market was even more frequent for beans (74.5% purchase) and groundnuts (75.7%). Households, however, depended little on the market to acquire planting material for tubers, with the exception of irish potato, for which (62.1% purchase). Rather, households more frequently relied on their own production (68.9% for sweet potato, 52.2% for cassava) or on borrowing planting material (21.5% for sweet potato, 31.7% for cassava). At the time of the survey, only 12.1% of the households said they had sufficient seed for the next agricultural season (2008B). However, as pointed out above, households rely on the markets to acquire seeds and the survey was conducted three months before the next planting season (excluding Season C). The availability of improved seeds, however, remains limited. Their production and distribution stopped during the conflict and is still in a recovery phase.

Table 6: Main Crops Cultivated by Provinces, season 2008A (% of households)

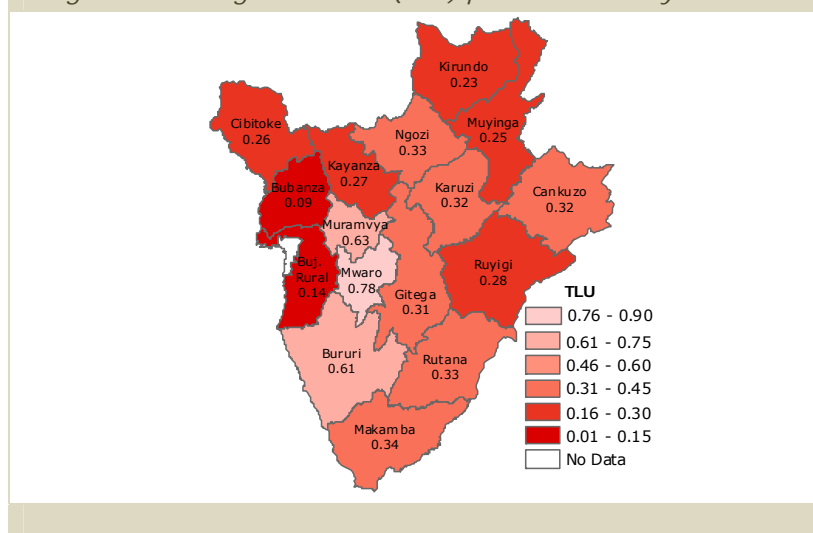
Province	Cereals				
	Corn	Wheat	Rice	Sorghum	No cereals
Bubanza	77.1	1.2	14.8	4.7	14.9
Bujumbura Rural	54.3	7.0	4.2	1.2	45.7
Bururi	76.8	11.6	4.0	0.9	20.6
Cankuzo	77.8	11.0	5.4	71.7	4.1
Cibitoke	78.9	0.3	17.7	1.3	19.2
Gitega	96.0	0.2	3.7	7.0	3.8
Karusi	74.8	4.7	44.5	22.6	5.7
Kayanza	70.6	9.1	10.7	4.5	22.3
Kirundo	40.8	0.4	29.8	40.4	17.9
Makamba	93.3	9.9	10.6	1.6	2.3
Muramvya	90.6	24.9	0.0	3.8	6.6
Muyinga	46.6	3.0	17.5	44.1	21.6
Mwaro	93.7	7.2	0.2	0.7	5.9
Ngozi	31.3	0.3	31.8	18.3	39.5
Rutana	90.0	5.6	16.0	43.0	0.9
Ruyigi	74.8	6.5	19.9	65.8	4.6
TOTAL	68.5	5.5	15.9	20.5	17.4

Province	Pulses					Tubers			
	Ground-nuts	Beans	Peas	Niebe	No pulses	Cassava	Sweet potato	Irish Potato	No tuber
Bubanza	18.8	90.8	0.0	3.7	3.9	82.7	74.3	0.0	6.4
Bujumbura Rural	23.1	77.3	4.6	15.5	2.8	68.2	62.4	7.6	19.8
Bururi	5.8	83.1	16.9	2.8	11.7	63.0	87.1	27.6	1.3
Cankuzo	49.9	84.5	0.2	3.8	4.8	82.1	84.3	1.4	3.6
Cibitoke	25.8	85.7	2.2	0.8	8.0	93.4	74.1	1.5	1.9
Gitega	11.0	94.7	21.0	4.2	0.8	31.6	93.5	16.8	2.1
Karusi	12.8	95.6	2.9	1.9	2.2	74.3	90.7	4.9	1.9
Kayanza	8.5	93.0	19.7	0.0	7.4	83.8	96.0	2.4	1.6
Kirundo	4.3	96.1	2.1	0.0	1.1	80.7	93.6	2.2	3.6
Makamba	34.2	84.7	8.2	1.4	2.4	85.9	91.5	7.6	0.3
Muramvya	4.2	97.7	47.5	0.2	0.2	65.0	98.5	22.1	0.8
Muyinga	15.2	90.5	4.2	0.0	1.1	78.7	94.8	3.2	1.9
Mwaro	3.4	98.8	25.3	0.4	1.0	18.7	98.5	23.0	1.5
Ngozi	17.4	85.9	3.6	0.0	4.5	87.7	92.0	3.2	2.5
Rutana	37.8	83.8	7.8	19.6	0.6	72.8	90.2	7.6	1.2
Ruyigi	42.1	90.3	7.7	4.1	0.8	78.0	86.4	1.9	3.1
TOTAL	18.2	89.3	10.0	3.3	3.5	72.7	88.2	7.8	3.6

## LIVESTOCK OWNERSHIP

Ownership of livestock is widespread in Burundi, but households have few animals on average. The CFSVA assessed ownership of 9 livestock groups, including bee hives and fish pond. Nearly two third of the households (61.8%) reported owning at least one farm animal. The most commonly owned livestock are goats (36.2%, average of 0.9 per household), rabbits (26.4%), cattle (11.3%) and poultry (10.3%), followed by bee hives (7.5%), sheep (7.1%), pork (7.1%), guinea pig (5.6), and fish pond (2.9%). On average, a household owned 0.9 goats, 0.9 poultry, 0.4 guinea pig, 0.2 cattle and 0.2 rabbits.<sup>18</sup>

Figure 4: Average Livestock (TLU) per household by Province



To better assess the livestock available to a household, livestock holdings were converted in Tropical Livestock Unit (TLU) using a weighted sum.<sup>19</sup> The average TLU per household was 0.3. Overall, 40.6% had a TLU of 0 (no livestock, or livestock not included in the weighted sum), 41.8% had a TLU below 0.5 (corresponding to less than one cattle) and another 8.6% had a TLU equal or above 0.5 but below 1. Only 9% of the households had a TLU of 1 or above. The TLU provides an easy way to compare livestock ownership across provinces. The lower the TLU the less livestock is available on average to a household (darker shade on the map). TLU was highest in Mwaro (0.78), Muramvya (0.63) and Bururi (0.61). It was lowest in Bubanza (0.09), Bujumbura Rural (0.14), Kirundo (0.23) and Muyinga (0.25).

<sup>18</sup> Averages are computed for all households and include households with no livestock.

<sup>19</sup> One TLU is equivalent to one cattle of 250kg at maintenance. The summative scale used the following standard weights: cattle: 0.8, goat: 0.1, sheep: 0.1, pork: 0.3, poultry: 0.007, rabbit: 0.007. Guinea pigs, bee hives and fish pond were not included in the weighted sum because no standard weights have been defined.

## PHYSICAL CAPITAL

The physical capital consists of the infrastructure (e.g. transportation, shelter, water supply and sanitation etc.) and tools and equipments necessary to a household's livelihood (productive assets). Non-productive assets were also included to develop a household wealth index. Infrastructure such as road networks will be discussed in the critical trends section of the vulnerability context at the end of this report.

### HOUSING CONDITIONS

#### Ownership and Housing Structure

The CFSVA assessed housing conditions among respondents. Nearly all the households owned their dwelling (96.2%) and those who did not most frequently rent it. Houses had an average of 3.8 rooms and the average number of people per room was 1.5 (crowding index). Most households have less than two people per room (72.9%), however, 6.9% of the households had an average of three people per room or more. There were important differences across provinces. The measure of crowding was highest in Bujumbura Rural (2.0) and Bubanza (2.1). It was lowest in Kayanza (1.2). Three provinces, Citiboke (20.3%), Bujumbura Rural (19.7%) and Bubanza (19.1%), had about 20% of their households hosting three or more people per room.

The CFSVA showed differences in housing structures across provinces. Overall, a majority of the houses are made of adobe (earth) bricks for the walls (66.7%) and straw roof (41.1%). Only 3.1% of the households had walls made of straw, with the highest percentage found in Mwaro (10.8%) and Muyinga (9.6%). Mud walls were found in 24.9% of the households and most frequent in Bubanza (43.6%) and Kirundo (47.7%). More permanent adobe bricks were the most common material for the walls (66.7%) of the households and most common in Gitega (92.7%), Muramvya (89.2%) and Kayanza (88.7%). Finally few households had a more permanent wall structure made of cooked bricks (4.8%). However, about one quarter of the respondents had such structure in Bururi (28.2%) and Makamba (24.7%).

With regards to roofing material, straw (used nationally by 41.1% of the households) was most frequent in Cankuzo (64.0%), Bubanza (62.4%) and Ruyigi (60.8%). Metal sheeting was used overall by 29.8% of the households and most frequently in Bujumbura Rural (60.8%) and Bururi (52.1%). Shingles were used by 27.8% of the households. However about three quarter or more of the households used shingles in Kayanza (90.4%) and Muramvya (73.0%).

The crowding index and roofing material suggest little change compared to the 2004 data. However, wall material is more frequently made of the more permanent adobe bricks (2008: 67%, 2004: 56%) rather than mud walls (2008: 25%, 2004: 35%).

#### Lighting and Cooking Energy Sources

Wood (83.4%) and wood chips (13.3%) are the most frequently used source of energy for cooking in all provinces (96.7%). Wood chips are most frequently used in Rutana (22.9%), Makamba (22.0%), Bururi (20.3%), Ngozi (20.2%) and Muramvya (2.0%). Charcoal is not frequently used (2.8%) although it is more important in Bujumbura Rural (8.7%) and Gitega (8.3%).

Among households using wood, mothers are most frequently in charge of collecting the wood (78.5%) in all provinces; mothers alone fetch wood in 48.3% of the households. Children also frequently contribute to fetching wood (40.8%); and in 15.4% of the households, children alone are in charge of fetching wood.

Men (fathers) on the other hand seldom fetch wood (9.4%) and even less frequently fetch the wood alone (1.9%). Few households have domestics (1.6%) or others (2.6%) fetching wood for them.

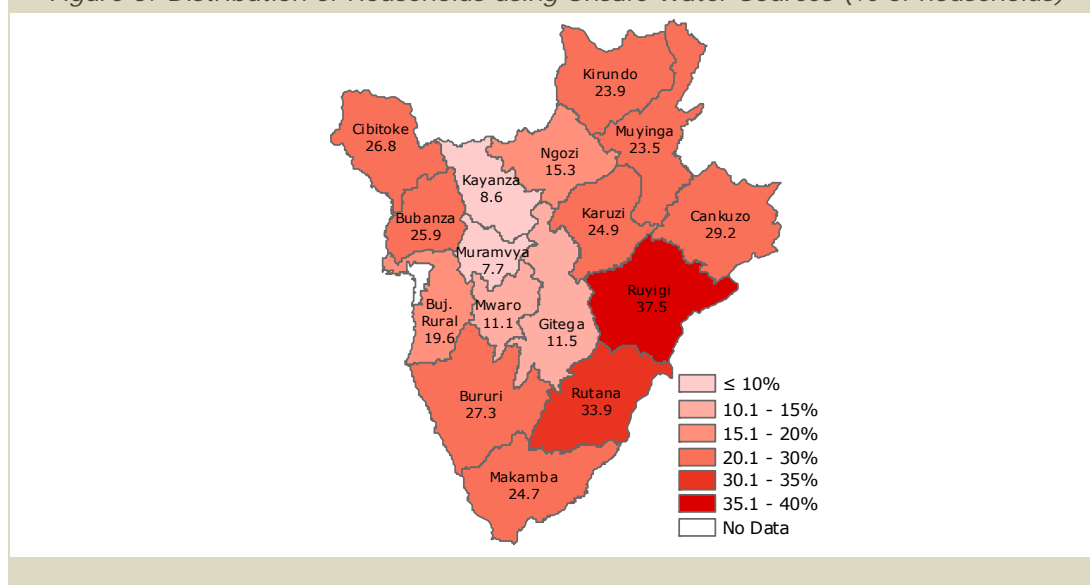
Fetching the wood is a time consuming activity. For over half the households, fetching wood takes at least one hour (51.0%), including 13.1% of the households for which it takes over three hours. Over 70% of the households took one hour or more to fetch wood in Citiboke (74.5%), Kayanza (72.2%), Bujumbura Rural (72.1%), and Muramvya (71.0%).

Wood firing is also the most frequently reported lighting source (43.4%), followed by oil lamp and 'bobeche' (41.1%).<sup>20</sup> Only 1.5% of the households use electricity for lighting and 15.0% used other unspecified sources.

## Water and Sanitation

According to the CFSVA, the most commonly used toilet facilities remain traditional open pit latrines; reportedly used by 95.8% of the households. Few respondents had no access to toilet facilities (1.8%), but more frequently so in Ruyigi (7.2%) and Cankuzo (6.3%). However, it is also in those two provinces that the use of improved latrines (with venting) was also most frequently reported (respectively 3.8% and 11.4%). Nationally, improved latrines were only used by 1.6% of the households. Flush toilets were only used by 0.4% of the households and 0.4% reported using other unspecified types of latrines.

Figure 5: Distribution of Households using Unsafe Water Sources (% of households)



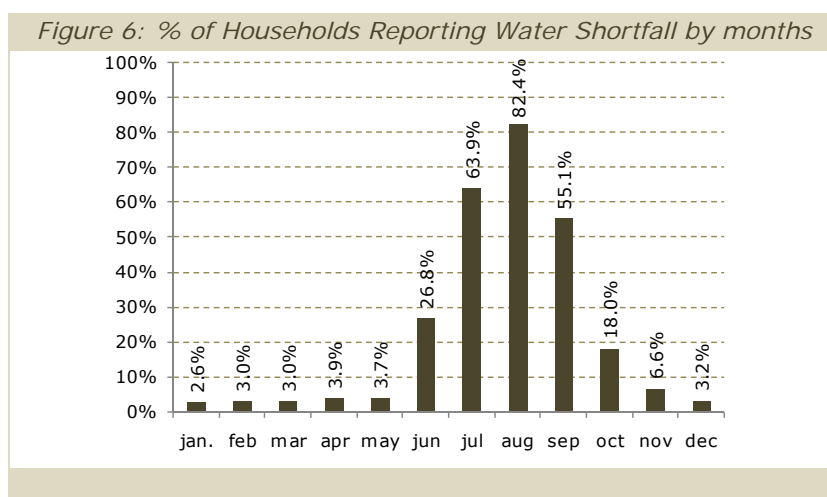
According to the CFSVA 77% of the population has access to safe water sources, most frequently a protected spring (51.5%) or a public water pump (22.9%). Few had access to piped water (1.0%) or used a protected well (1.6%). Unsafe water sources included open water sources (e.g. lake, rivers) used by 19.0% of the households and unprotected wells (2.3%). Other sources of water were mentioned by 1.7% of the households. Unsafe water sources were most frequently used in Ruyigi (37.5%), Rutana (33.9%), Cankuzo (29.2%) and Bururi (27.3%). Bururi is generally considered to have good access to safe water sources, so more information is needed to examine the situation there. Nationally, very few households (3.0%) treated their water before consumption. On average, few households had to pay for their water (13.7%), but the proportion was high in some provinces, including Cankuzo (46.8%) and Karuzi (31.0%). Payment is generally due all year (83.7%) or on the dry season only (13.5%).

<sup>20</sup> A sort of small oil lamp



Fetching water is a less time consuming activity than fetching wood, with 92.1% of the households needing less than an hour and 64.2% needing less than 30 minutes. Nationally, 7.9% of the households needed over an hour to fetch water, the proportion being highest in Kirundo (13.8%), Kayanza (13.1%), Cibitoke (13.1%) and Bujumbura Rural (12.4%). However, just like fetching wood, fetching water is predominantly an activity conducted by women and children. Women (mothers) were in charge of fetching the water in 72.9% of the households, generally alone (39.4%) but also with the children (27.0%). Children overall were involved in fetching water in over half the households (51.2%). In 21.7% of the households, children alone were in charge of fetching the water. In few households men (fathers) participated to fetching water (7.6%) and in 1.4% and 2.8% respectively, households benefited from domestics or others to fetch water.

Nationally, 26.9% of the households expressed a lack of water during some months of the year. Households expressed a lack of water most frequently in Bujumbura Rural (47.6%), Bururi (35.3%), Citiboke (34.7%) and Rutana (31.9%). Among those who lacked water, the shortfall was most frequently identified in July (63.9%), August (82.4%) and September (55.1%), which correspond to the long dry season. The main alternative for those households was to use alternate unsafe water sources (47.1%), drink less water (22.5%) or pay for water (2.4%). Other coping mechanisms were provided by 28.0% of the households.



## ASSET OWNERSHIP AND WEALTH INDEX

### Asset Ownership

The CFSVA survey asked households if they owned a series of 19 assets including productive assets (e.g. agricultural tools, transportation) and non-productive assets (e.g. household items such a table, chairs, bed). Among productive assets, the most commonly owned assets were a hoe (97.4%), followed by a machete (62.1%) and an axe (46.9%). Other commonly owned agricultural tools included a billhook (32.6%) and a sickle (26.8%). Some items related to livelihood activities were assessed but rarely owned, including a mill (1.4%), a sewing machine (1.2%), a pirogue (1.1%) and fishing equipment (0.6%). Few households owned transportation means, including a bicycle (15.9%), a motorbike (0.5%) or a vehicle (0.1%). Among non-productive assets, most households owned cooking utensils (92.5%) and a bed (84.5%). About half the households owned a table (45.2%) or a chair (52.7%). A third of the households owned a radio (38.2%) and few owned a domestic iron (4.9%) or a television (0.6%). Two percent of the households also reported owning other unspecified assets.

Assets ownership varies across provinces for each asset. To provide a comparative basis, an asset wealth score was computed. For One point was given for each category of asset that the household owned (i.e.



even if a household has two bicycles, it is counted as one asset category). The result is in a scale ranging from 0 (no assets) to 20 (all the asset categories owned, includes 'others'). Although the index is not a measure of the entire wealth of the household (i.e. financial assets are not included), it is a good proxy measure. The reported maximum number of assets owned by a household was 15. Standards cut-off of 4 assets and 9 assets were used to define three categories: (1) the asset poor, with four assets or less represent 26.9% of the population; (2) the asset medium with more than four but nine or less assets, representing 65.9% of the population; and finally, the asset rich who reported ownership of 10 assets or more, representing just 7.2% of the population.

Geographically, there were statistically significant differences in average household asset wealth across provinces ( $F=9.13$ , 15 d.f.,  $p<0.001$ ). The provinces with the most asset poor were Karuzi (38.6%) and Bubanza (36.1%), followed by Citiboke (33.4%), Cankuzo (30.1%) and Bujumbura Rural (30.0%). The provinces with the least asset poor were Mwaro (16.8%) and Bururi (17.9%).

Figure 7: Proportion of Households by Number of Assets Owned

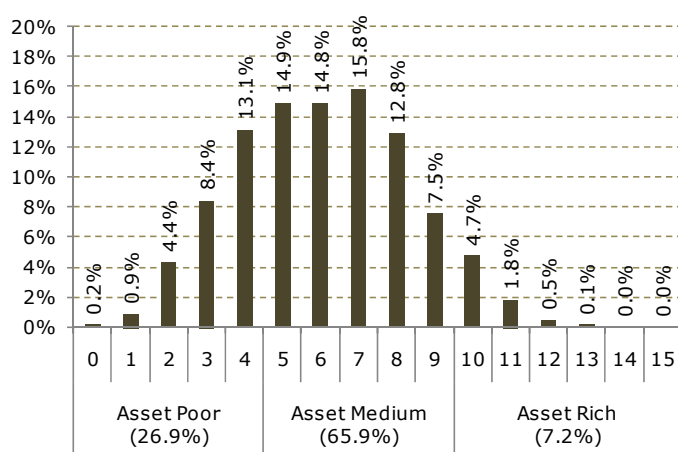


Figure 8: prevalence of Asset Poor Households by Province (% of households)

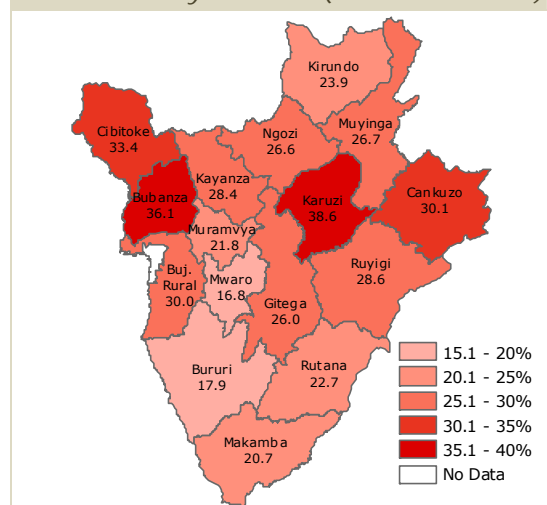
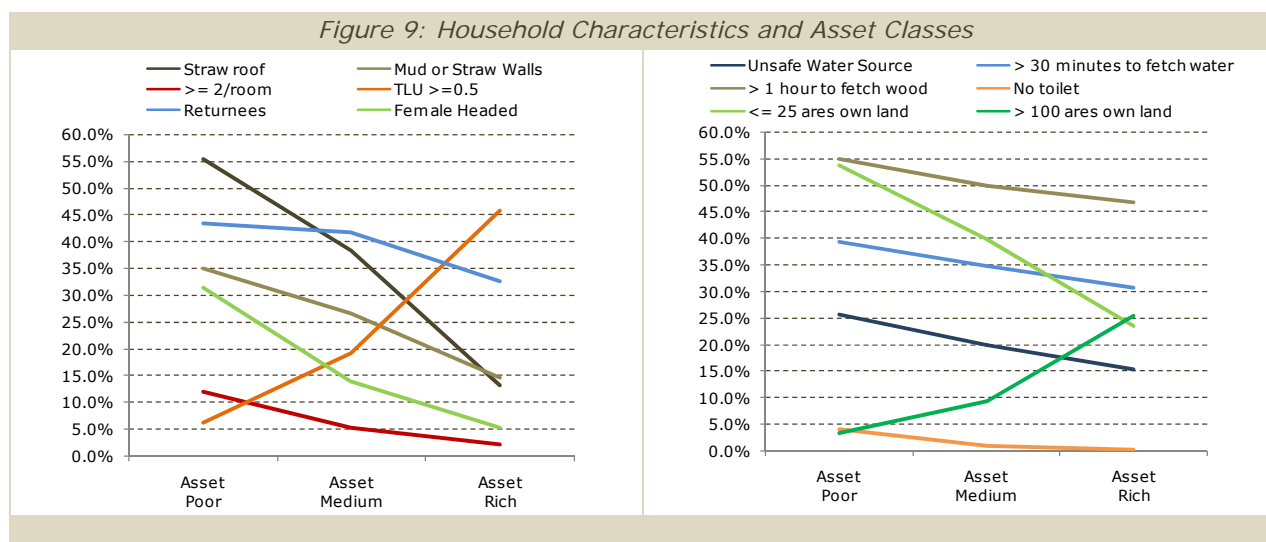


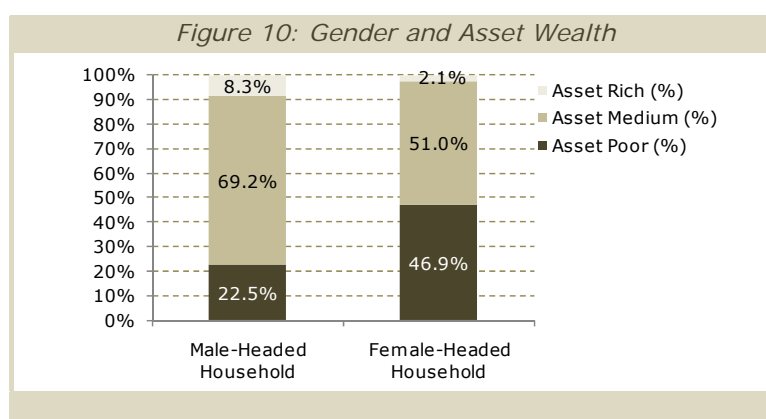
Figure 9 below illustrates the relationship between selected indicators and asset wealth. For all the variables studied, there was a statistically significant difference across groups ( $p<0.01$ ) at the bivariate level. Asset poor households had more frequently less permanent housing structure including straw roof (55.4%) and mud or straw walls (35.1%) compared to asset medium (38.3% and 26.7% respectively) and asset rich (13.1% and 14.6% respectively). Wealthier households were also on average less crowded, with the asset poor having on average 1.6 individual per room, the asset medium 1.5 and the asset rich 1.4. Although the difference is small, it is statistically significant ( $F=14.25$ , 2d.f.,  $p<0.001$ ). Overall, 11.9% of the households had two or more people per room among asset poor compared to 5.4% among asset medium and 2.2% among asset rich.

Asset poor usually had less access to natural resources including land and livestock. Among those who had access to land, 53.8% of the asset poor had less than 0.25 of their own land, compared to 39.9% of the asset medium and 23.6% of the asset rich. This is further highlighted by the finding that 25.6% of the asset rich had access to over 1 ha of their own land compared to 9.5% among the asset medium and just 3.5% of the asset poor. Furthermore, asset rich cultivated mainly their own land (87.3%) more frequently than asset medium (78.6%) and asset poor (72.6%). Rather, asset poor cultivated rented land more frequently. Cash crops were more frequent among asset rich, with 9.6% of the asset rich reporting no cash crop compared to 14.9% of the asset medium and 31.2% of the asset poor. With regards to livestock, asset poor owned fewer animals or animals of lesser value. Among asset poor, only 6.2% of the households had over 0.5 TLU compared to 19.2% among asset medium and 45.8% among asset rich.

Water and sanitation was overall better as Wealth increased. 26% of the asset poor used unsafe water source compared to 20% of the asset medium and 15% of the asset rich. Water was also more difficult to reach as asset poor more frequently had to travel over 30 minutes (39.5%) compared to asset medium (34.8%) and asset rich (30.7%). Although most households used traditional pit latrines, the use of no toilet facilities was most common among asset poor (4.1%) compared to asset medium (1.0%) and asset rich (0.3%).



With regards to the household conditions, asset poor were more frequently returnees. Among asset poor, 43% were returnees, compared to 42% among asset medium and 33% among asset rich. With regards to gender, female-headed households represented 31% of the households among asset poor, compared to 14% among asset medium and 5% among asset rich. Female households were in fact three times more likely to be asset poor compared to male headed households (O.R. 3.036, 95%CI: 2.61-3.52,  $p < 0.001$ ). Among female headed households, 46.9% were asset poor compared to 22.5% among male headed households.



### Household Wealth Index

As mentioned above, asset wealth does not represent the total wealth of a household. To better capture wealth, a principal component analysis (PCA) was conducted on wealth-related variables including: (1) asset wealth, (2) livestock ownership (LTU)<sup>21</sup>, (3) roofing and walls material (non-permanent vs.

<sup>21</sup> The logarithm of LTU was used for this analysis. The logarithm transformation is used to ensure that the variable approaches a normal distribution curve.

permanent), (4) the number of rooms, (5) type of toilet facilities (none vs. improved latrines), and (6) source of drinking water (protected vs. non protected). PCA results in factors that represent the correlation between the original variables. In this case, one factor was obtained to represent the correlation between wealth-related variables. The factor therefore provides a proxy measure of wealth. In the end, the type of toilet and source of water were removed from the analysis because they were not strongly related with the resulting factor. The final factor conserved 46.9% of the original variance. To facilitate the discussion scores for the household wealth index were transformed in a scale from 0 to 100. The figures below represent the distribution of households (percentage of households) by wealth index scores and geographic distribution of the poorest quintile.

Geographically, the wealth index quintiles revealed a contrasted picture across provinces. Looking at the lowest wealth index quintiles, the 2008 CFSVA found that the highest proportion of poor households were located in Bubanza (44.4% of the households belong to the lowest wealth quintiles), and Cibitoke (32.7%). Two broad areas of poverty can be identified: (1) the Western axis formed by Cibitoke, Bubanza and Bujumbura Rural, and (2) the North Western region including Karuzi, Muyinga, Kirundo and Cankuzo. The geographic distribution of the wealth poor (lowest quintile) is consistent with the geographic distribution of asset poor discussed above.

Figure 11: Quintiles and Percentage of Households by Wealth Index Score

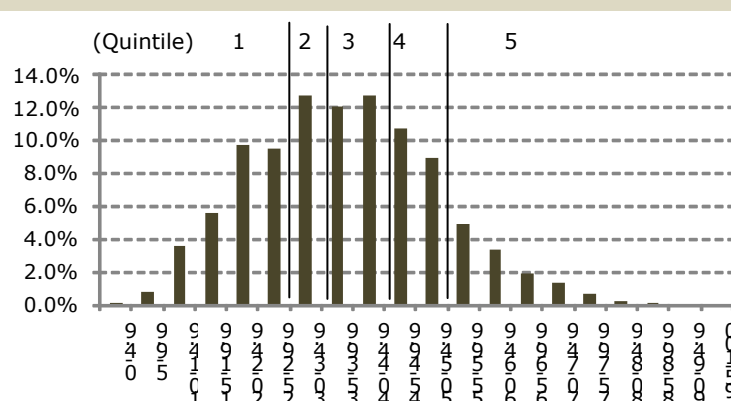
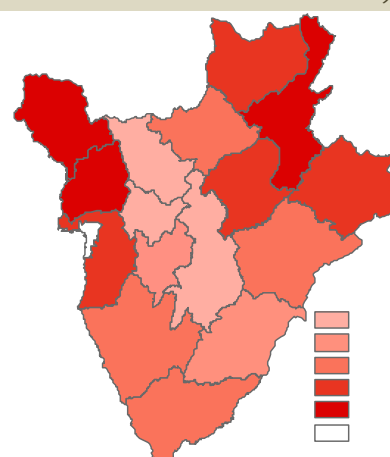


Figure 12: Wealth Distribution (% in Wealth Index Lowest Quintile)



Index wealth and the wealth index are indeed well correlated (Pearson  $r^2=0.7$ ,  $p<0.001$ ) since asset wealth was included in the computation of the asset wealth index. The table below provides a cross-tabulation of asset classes and wealth index quintiles. Overall, 54% of the asset poor households were in the lowest wealth index quintiles. No asset rich were found among the poorest wealth index quintile.

Table 7: Asset Wealth and Wealth Index Quintiles

(% of Households)	Wealth index Quintiles				
	1	2	3	4	5
Asset poor	53.8	25.4	17.2	3.1	0.5
Asset medium	8.4	20.5	23.7	27.3	20.1
Asset rich	0	0	2.5	17.1	80.4

Statistically significant differences in average wealth index scores were found across education levels of the household head ( $F=44.3$ , 6 d.f.,  $p<0.001$ ) and based on the gender of the household head ( $F=143.6$ , 1 d.f.,  $p<0.001$ ), highlighting the impact of education on poverty and the importance of gender issues.

## FINANCIAL CAPITAL AND LIVELIHOOD STRATEGIES

The financial capital includes flows (e.g. income, expenses) and stocks (e.g. savings, credit) used to achieve livelihood objectives. Livelihood strategies result from the combination of all the forms of capital available to an individual or household. However, the link is most direct with financial capital: Financial capital can be used to change livelihood strategies (e.g. purchase productive assets) and livelihood strategies directly contribute to financial capital (e.g. income). Both the financial capital and livelihood strategies are therefore discussed in this chapter.

### ACTIVITIES AND FINANCIAL CAPITAL

#### Activities

The 2008 CFSVA asked respondents to identify the main activities performed and, for each activity, its contribution to their household's livelihood. Most households reported basing their livelihood on two activities (61.8%), while 15.1% report one activity and 23.1% report three. The highest proportion of household relying on only one activity was found in Karusi (31.4%), Gitega (24.5%) and Muyinga (23.5%). Having only one activity is a vulnerability factor since it limits the ability of the household to switch between different strategies to secure their livelihoods.

*Table 8: Main Activities by Province (% of Households)*

Province	Agriculture (Food)	DAYLY LABOR	Agriculture (Market)	Small Trade	Brewing / Wine	Livestock rearing
Bubanza (%)	88.3	69.8	7.9	9.3	1.9	3.1
Bujumbura Rural (%)	79.6	54.2	21.7	19.5	3.8	0.5
Bururi (%)	93.7	42.8	43.2	19.6	2.6	10.7
Cankuzo (%)	91.7	56.7	20.7	11.1	0.3	3.2
Cibitoke (%)	90.4	52.1	14.6	14.2	8.7	2.1
Gitega (%)	91.3	45.3	8.2	10.6	12.3	3.1
Karusi (%)	97.3	44.4	8.3	8.6	3.3	2.3
Kayanza (%)	93.0	55.1	42.8	5.8	12.1	3.7
Kirundo (%)	95.5	63.0	9.3	7.8	2.6	5.3
Makamba (%)	97.9	48.8	29.6	16.2	0.8	8.0
Muramvya (%)	95.1	42.4	38.5	2.6	10.2	14.7
Muyinga (%)	97.3	42.5	12.7	7.9	5.4	9.4
Mwaro (%)	97.7	41.8	24.9	10.3	17.3	3.4
Ngozi (%)	90.9	38.6	28.9	6.2	13.9	5.4
Rutana (%)	88.1	45.2	23.3	19.1	1.8	9.2
Ruyigi (%)	100.0	70.8	4.5	13.7	5.9	2.5
TOTAL	92.7	50.4	21.2	11.2	6.9	5.2

*\* Only activities undertaken by at least 5% of the households nationally are represented.*

About all the households (92.7%) are involved in agriculture, although it is considered the main activity for only 77.2% of them and the average contribution of agriculture to the livelihood averaged 61.2%. Agriculture on average contributed to 32.4% of the income of the household. The second most frequently reported activity is manual (day) labor (50.4%), with an average contribution of 19.6% to the household livelihood and 34.4% of the income. Additional frequent activities include market-agriculture (21.2%),<sup>22</sup> small trade (11.2%), brewing (6.9%), and livestock rearing (5.2%). The table below illustrates the reported frequencies by province for the six main activities.

<sup>22</sup> A difference was made between food-agriculture and market-agriculture, the latter being oriented towards cash crop production and sale of agricultural production.

The average annual income was 300,000 BIF, or approximately US\$ 250. Three-quarter of the households (75.9%) reported income of 300,000 BIF or less, 61.6% earned 200,000 BIF or less and 34.2% earned 100,000 BIF or less.

### Distribution of Labor

For each activity, the 2008 CFSVA asked who, if anyone, was involved. The results reveal gender-based differences by activity and provide information on the tasks attributed to children. Women were involved in (food-) agriculture in most households (89.4%) who conduct that activity and more frequently so than men (65.5%). Women alone were in charge of agriculture in 18.4% of the households. Children were involved in agriculture in about one fourth of the households (25.3%) and households benefited from other involvement in 3.7% of the cases. The distribution of labor was similar for market-agriculture (i.e. cash crops, sale), although men were more frequently involved (73.9%) than in food-agriculture (65.5%).

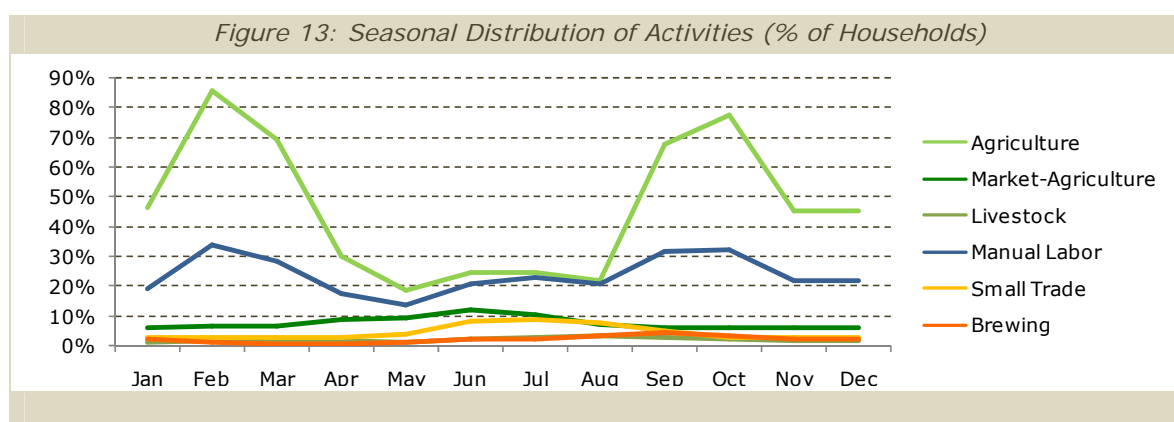
Taking care of the livestock, however, was more frequently a duty of men as men were involved in 81.5% of the households and woman in 67.7% of the households. Children were involved in 28.7% of the households. Men were also more frequently involved than women in manual labor and small trade, while brewing was a more evenly distributed activity.

Table 9: Distribution of Labor by Activity

Percentage of households with Participating:				
	Men	Women	Children	Other
Agriculture (%)	65.5	89.4	25.3	3.7
Market-Agriculture (%)	73.9	84.1	25.4	3.2
Livestock (%)	81.5	67.7	28.7	2.0
Manual Labor (%)	69.3	50.6	18.9	0.1
Small Trade (%)	76.1	35.5	7.6	0.7
Brewing (%)	70.8	73.2	23.6	3.7

### Seasonality of the Activities

The seasonality of the activities reflects the agricultural calendar. For agriculture, households were most frequently active around February-March, corresponding to the planting period for the agricultural season B and in September-October, corresponding to the planting season for agricultural season A. Overall fewer households were involved in manual (daily) labor, but the peak of activities corresponded to the period of agricultural labor, indicating that most of the manual labor is related to agricultural production. Few households overall were involved in other activities such as market-agriculture (cash crops), livestock rearing, small trade or brewing. Those activities generally showed a peak of work around the June period, which corresponds to a low point for agricultural and manual labor activities.

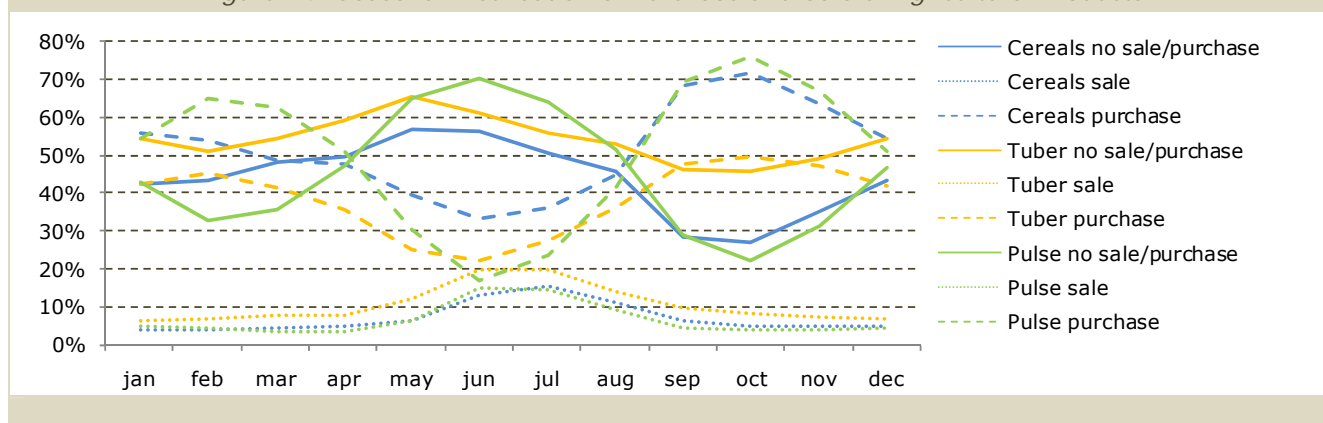


The 2008 CFSVA further asked respondents to specify which months of the year they most frequently (1) sold, (2) purchased, (3) sold and purchased, or (4) did not sell or purchase cereals, tubers and pulses. Not unexpectedly, the sale and purchase of agricultural products follow seasonal patterns. Many households relied on their own production of cereals, tubers and pulses throughout the year, especially during the

April to August period, which roughly corresponds to the harvest of the agricultural season B. At the peak, in June, 56% of the households depend on their own productions (no sale/purchase) for cereals, 61% for tubers and 70% for pulses. Purchases become more frequent during the September to December period, peaking in October. The harvest of Season A then provides some relief in January, with more households depending on their own production. A second purchase period peaks around February-March.

Overall, Tubers show the most stable distribution of purchase and sale throughout the year while pulses are the most irregular, with 22.2% of the households depending on their own production in October, down from 70.1% in June. Few households reported months where they predominantly sold cereals, tubers or pulses. A peak of predominant sale exists in July with 15.6% reporting selling cereals, 19.7% selling tuber and 14.2% selling pulses. However, the peak of the sale period corresponds to a time where few households rely on purchases and rather consume their own production.

Figure 14: Seasonal Distribution of Purchase and Sale of Agricultural Products



The importance of relying on the household own production is further documented by estimates on proportion of the production that is reserved for self-consumption. Production of 11 crops was assessed for season A and respondents were asked what percentage they reserved for their own consumption. For all the crops, over half the production was kept for consumption, and for five crops (corn, cassava, sweet potato, irish potato and beans/pulses), over 80% of the production was kept for consumption.

Table 10: Among producers, Percentage of Production Reserved for Consumption (Season 2008A)

Corn	Sorghum	Wheat	Rice	Cassava	Sweet Potato	Irish Potato	Plantain	Cooking Banana	Beans /Pulses	Ground -Nuts
91.5	63.0	77.9	74.9	83.3	87.6	81.3	49.1	67.5	87.3	55.9

On average, households reported having stocks that would last them 6.6 weeks at the time of the survey, however, stocks in the fields, which are important for Cassava and sweet potato among others, were not assessed. Households in Muyinga reported on average the longest period their stock would last (10.2 weeks), while the shortest average was reported in Bujumbura Rural (2.9 weeks).

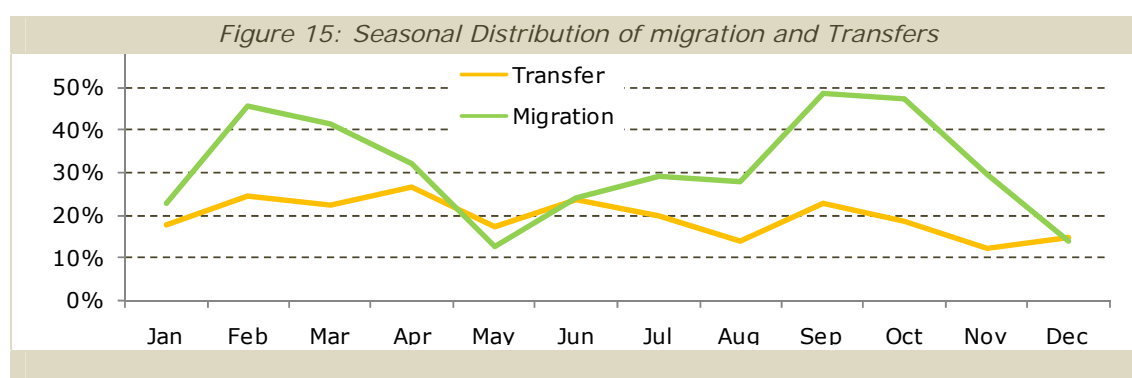
### Access to Credit

Three out of four households (73.8%) have access to credit. The least frequent access to credit is reported in Cankuzo (55.2%) and Karuzi (39.4%). However, most credit access was to friends and families (60.8%) with less than half the households having access to local commercial lenders (47.1%) or local lenders (6.8%) and banks (1.2%). Cooperatives (1.7%), NGOs (0.9%) and other sources of credit (1.7%) were seldom mentioned. Access to sources other than family and friends was least frequent in Cankuzo, Karuzi and Ruyigi.

## Temporary Migration, Transfer and Remittances

Migration for work is a common decision in Burundi. One third (33.5%) of the households reported having a member that worked or looked for work outside of the colline over the last 6 months. They most frequently went to another colline but in the same commune (44.6%). Migration to urban area concerned 16.4% of the households while the rest went to a different commune but in the same province (13.5%), a different province (12.9%) or another country (12.6%). Looking at the provincial level, migration was most common in Ruyigi (54.3%), Bujumbura Rural (43.7%) and Kirundo (42.3%). Migration to urban areas was most frequent in Bujumbura Rural (43.5%), Mwaro (40.2%) and Gitega (38.9%). Migration to another country most frequently occurred in border provinces including Cankuzo (58.8%), Rutana (30.7%) and Kirundo (30.2%).

Migrants were predominantly men (58.1%) but women and children also migrated in search for work (21.4% and 20.% of the migrants, respectively). The direct outcome of the migration was that for 81.4% of the households, migrants brought back or sent money, and for 44.2%, migrants brought back or sent food items. However, only 14.7% of the households said they received money transfers, possibly because they do not consider money sent by household members as a transfer. Finally, looking at seasonality indicates that although transfers are relatively constant throughout the year, migration pattern follows the agricultural calendar, with most households reporting migration in February (planting for season B) and in Sept-October (planting for season A).



## LIVELIHOOD STRATEGY GROUPS

Livelihood strategies directly impact livelihood outcomes such as food access and food security. As illustrated above, households tend to have more than one activity as part of their strategy, which allow them to rely alternatively on different sources of cash or in-kind revenue. Cluster analysis was performed to group together households that are engaged in similar activities or combination of activities.

Respondents were asked to provide information on the three main activities undertaken by their household to maintain its livelihood. Overall, 19 activity categories were mentioned (including an 'other' unspecified category). For each of the activity mentioned, respondents were asked to estimate the relative contribution to the household livelihood. The cluster analysis used information on the contribution of the 19 different activities to the livelihood of each household to group together similar households. The approach allows to not only account for the type of activity performed but also the relative importance of each activity.

A total of 18 clusters resulted from the analysis. The results were then tabulated and groups that shared common features were further regrouped, resulting in 10 livelihood strategy groups described in the table below. The figures below represent the contribution of activities to the livelihood strategy (Figure 16) and the average income (Figure 17). The income only represents cash income, and not production that is directly consumed. As a result, source of livelihood and source of cash vary in importance within livelihood strategies.



Table 11: Livelihood Strategy Groups Characteristics

Livelihood Group N (%*)	Description (based on average characteristics of the group)	% Lowest Wealth Quintile	% Asset Poor
<b>Agriculturalists</b> 1,781 (33.9)	Households with the highest dependency on agricultural production for their livelihood (90%). Low average annual revenue of 195,000 BIF mainly coming from agriculture	16.3	24.1
<b>Agro-Sellers</b> 934 (17.6)	Households dependent on agriculture (food) production for its livelihood (62%) with an additional contribution coming from cash crop (20%) and an average annual revenue of 380,000 BIF. Two subgroups: <i>mostly cash-crop</i> (2%), with 67% of the livelihood from cash crop and <i>mostly food-crop</i> (16%), with 14% of the livelihood coming from cash crop	10.0	15.3
<b>Agro-Laborers</b> 1,066 (20.8)	The main livelihood activity remains agriculture (62%) with added contribution from manual/daily labor activities (34%). The average income is low, at 240,000 BIF, mainly from the manual labor activity (65%)	23.9	30.2
<b>Laborers</b> 668 (14.7)	Same as Agro-Laborers, but stronger dependency on labor (manual and seasonal) which accounts for 74% of the livelihood and 84% of the income. Agriculture still accounts for 21% of the livelihood. The average income is 250,000 BIF	40.1	48.1
<b>Agro-Traders</b> 196 (4.6)	Households with an average 52% of their livelihood generated by petty/small trade, the rest coming predominantly from agriculture (33.6%). The average income is high, at 765,000 BIF mainly generated from trade (63%), agriculture (19%) and artisan production (10%). Two subgroups: the <i>agro-artisans</i> (0.6% of the sample) with 73% of the livelihood coming from artisan work and the <i>agro-traders</i> (4.0%), with 59% of the livelihood from trade.	11.9	17.1
<b>Agro-Brewers</b> 113 (2.5)	Small group with specialized activity in brewing and wine making contributing to an average 39% of the livelihood, in addition to an average 53% coming from agriculture. The average annual income is 265,000 coming mainly from the brewing activity (65%).	6.5	13.8
<b>Agro-Exploiters</b> 44 (1.2)	This group regroups three profiles living of agriculture and additional exploitation of natural resources. The first sub-group (0.6%) depend on fishing for an average 63% of their overall livelihood; the second sub-group (0.2%) depends partially on mining (49%) and the third one (0.4%) depends on wood sale (51%). The group average income is 360,000 BIF generated predominantly by the exploitation of natural resources.	32.2	10.9
<b>Employees / Business</b> 98 (2.3)	This group generates high income of 1,170,000 BIF on average and depends predominantly of their revenue or large business profit for their livelihood and income, although they also continue some agricultural production which accounts for 22% of their livelihood on average.	1.7	6.6
<b>Marginal Households</b> 61 (1.2)	Small group of households living of pension (5%) and/or transfers (79%), with some contribution of agriculture (12%) to the livelihood. The average income is the lowest, at 90,000 BIF coming for 60% from pensions and transfer, and the rest from both food-agriculture and cash-crops.	39.7	76.0
<b>Others</b> 48 (1.2)	This group lives of other unspecified activities, with an average revenue of 2300,000 and some dependency on agriculture (accounts for 18% of the livelihood)	24.2	31.0

\* Weighted percentages are used



Figure 16: Contribution of Activities (in %) to Overall Livelihood by Livelihood Strategies

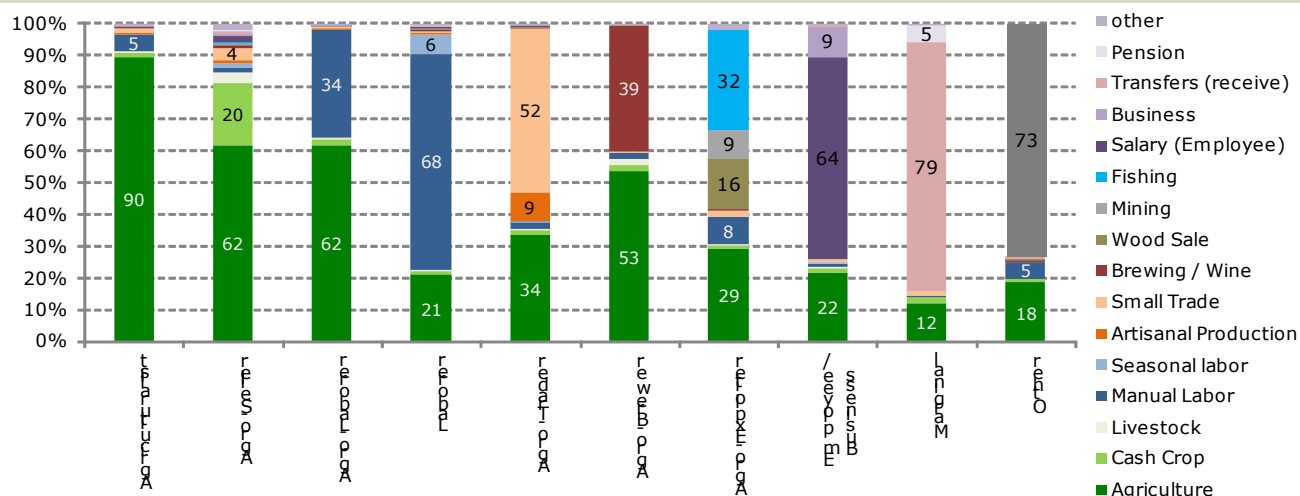
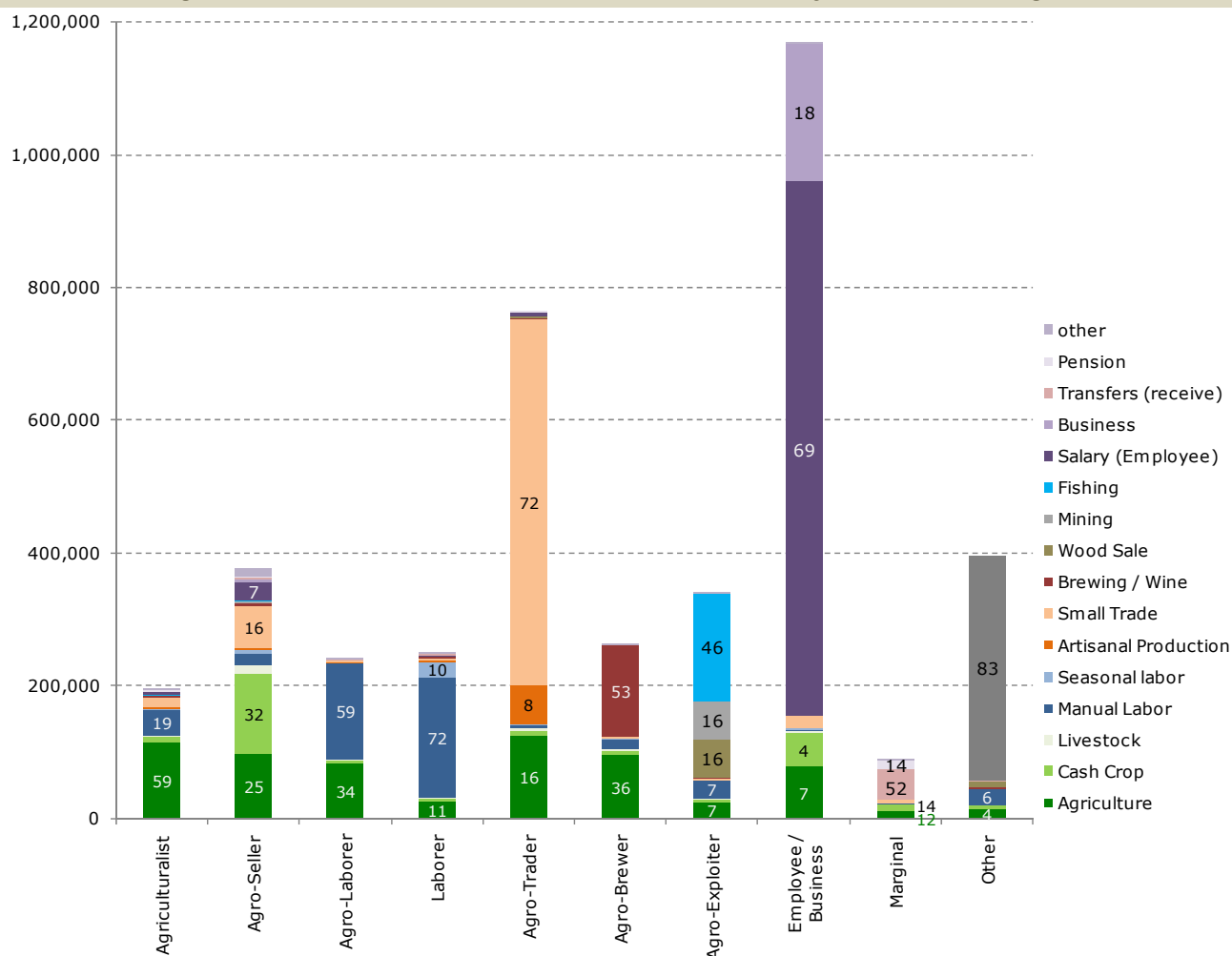


Figure 17: Contribution of Activities (in BIF) to Income by Livelihood Strategies



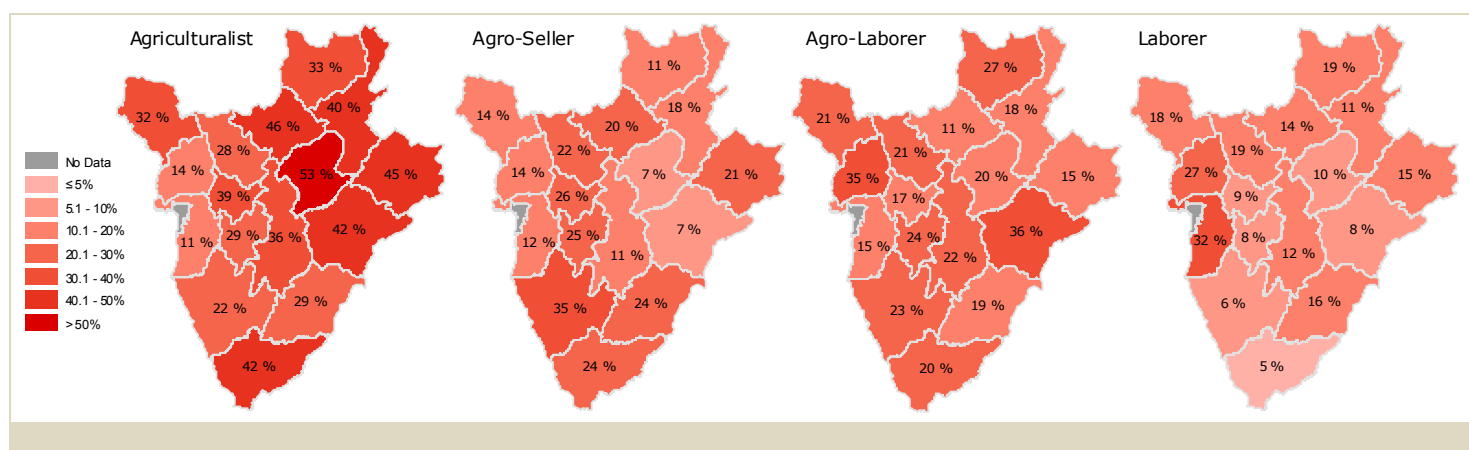
The four main livelihood groups – agriculturalists, agro-sellers, agro-laborers and laborers account for 87% of the population. Laborers and Agriculturalists depend mainly on just one activity to sustain their livelihood. Agro-Laborers depend on two activities, but both activities are related to the agricultural calendar. Agro-Sellers have the most stable activities as attending to cash crops is a year-long activity. Laborers, agriculturalists and agro-laborers have a livelihood strategy that is highly dependent on agro-ecological conditions, especially climate conditions. However, laborers – unlike agriculturalists and agro-laborers cannot draw on their own production to sustain their livelihood, which makes them vulnerable not only to changes in food availability but also in food access (e.g. prices). As illustrated in the table below, Laborers have the least access to land of the four main groups, with 40.8% having access to less than 0.25 hectare of total land. Laborers have also less livestock available to them on average, with 61.1% having 0 LTU. Four out of 10 Laborers belong to the lowest wealth quintile (40.1%) and half the Laborers are asset poor (48.1%), more than in any of the other three main livelihood strategies. Among the smaller livelihood strategy groups, those in the Marginal households group (depending on transfers and pensions) are particularly vulnerable, with 63.7% having less than 0.25 are of total land, four out of five having 0 LTU (82.5%), forty percent being among the lowest wealth quintile (39.7%) and three quarter (76.0%) being asset poor. Over half the Marginal households (54.9%) are female headed compared to 18% nationally.

*Table 12: Characteristics of Livelihood Groups*

	Female-Headed Household (%)	Land <= .25 ha Total (%)	0 LTU (%)	Livestock 0.1-0.5 LTU (%)	≥ 0.5 LTU (%)	Lowest Wealth Quintile (%)	Household Asset Poor (%)	Wealth Index Asset Medium (%)	Index Asset Rich (%)
Agriculturalists	20.0	19.8	34.0	46.2	19.8	16.3	24.1	68.4	7.5
Agro-Sellers	14.7	13.9	27.2	41.4	31.4	10.0	15.3	72.6	12.1
Agro-Laborers	17.5	19.9	43.9	44.6	11.5	23.9	30.2	66.3	3.5
Laborers	19.1	40.8	61.1	33.5	5.4	40.1	48.1	49.9	2.1
Agro-Traders	11.0	17.3	41.1	43.4	15.5	11.9	17.1	72.8	10.2
Agro-Brewers	15.1	11.4	35.6	31.1	33.3	6.5	13.8	73.0	13.2
Agro-Exploiters	4.0	15.1	56.0	32.1	11.9	32.2	10.9	76.8	12.3
Employees/Businesses	13.8	10.3	42.1	37.1	20.9	1.7	6.6	74.2	19.3
Marginal households	54.9	63.7	82.5	15.8	1.7	39.7	76.0	24.0	0.0
Others	21.2	20.8	62.9	35.7	1.5	24.2	31.0	61.0	8.0

Looking at geographic distribution of the livelihood groups shows important differences across provinces. The figure below provides the distribution of the four main livelihood groups. Agriculturalists were especially frequent in Eastern Provinces, accounting for 40 to 53% of the households, and in Makamba (42%). Agro-Sellers (with cash-crop activities) were most frequent in the South and the provinces of Kayanza, Muramvya and Mwaro. Agro-Laborers did not show a clear geographic pattern but were most frequent in Cankuzo and Bubanza. Finally, Laborers were most frequent in the Western and North-Western provinces.

*Figure 18: Geographic Distribution of Main Livelihood Groups (% Households)*



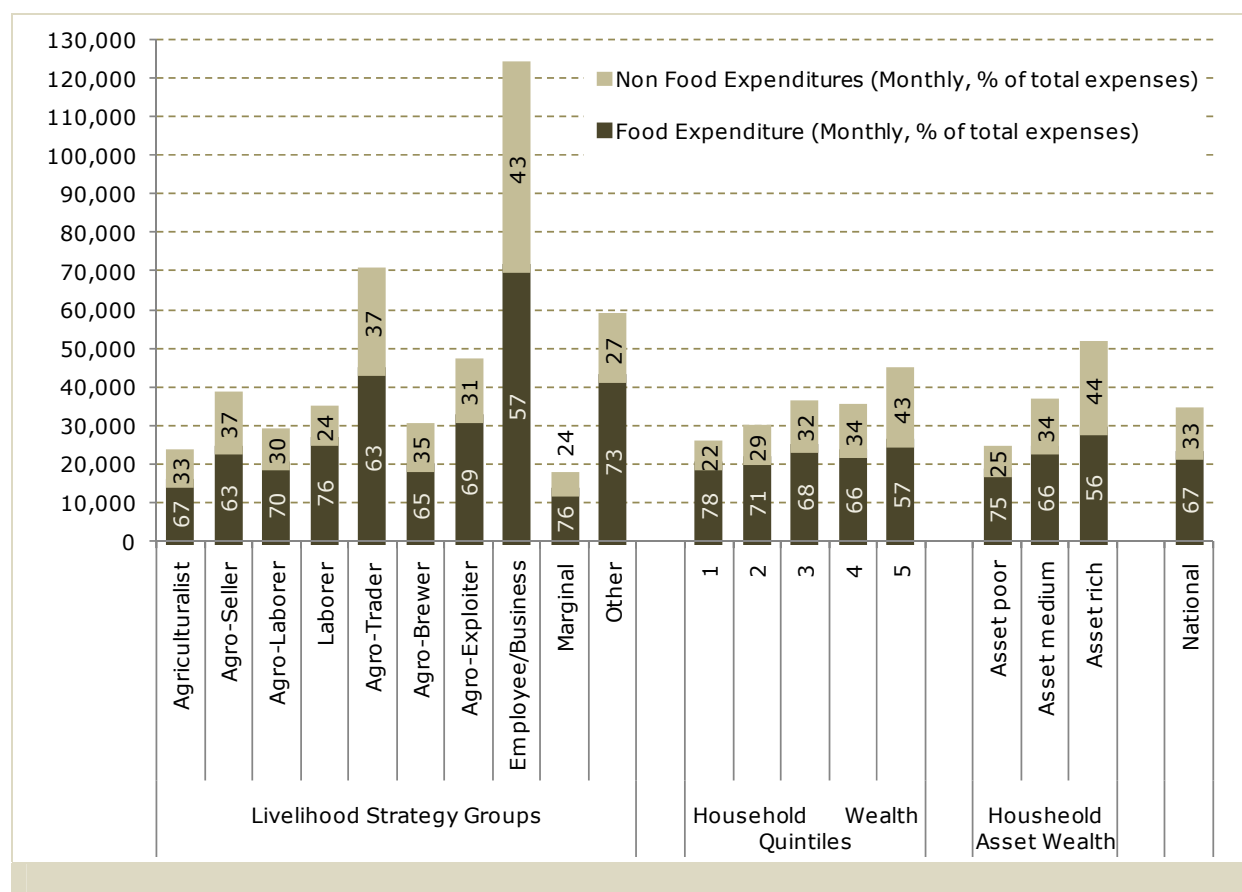
## EXPENDITURES

The 2008 CFSVA collected information on cash, credit and trade forms of expenditure at the household level. For 19 food items, expenditures were recorded using a 30 days recall period. For 11 non-food items that are less frequently purchased (e.g. medical care, tools etc.), a 6 months recall period was used. The expenditures were then converted to average monthly expenditures. The data are used to examine patterns of expenditure, especially the proportion of food expenditure. Results are limited by the number and type of items considered and the CFSVA does not provide a comprehensive expenditure survey. In addition, some inconsistencies appear between the reported income and reported expenditure, with average reported expenditures higher than reported cash income. Nevertheless, the results provide a good basis for comparison between groups.

### Food and Non-Food Expenditures

Overall, the average household total monthly expenditure amounted to 33,500 BIF (\$30), including purchase in cash, credit and trade. Of this, 22,500 BIF, or 67%, were used to purchase food items. Total monthly expenditure varied across livelihood strategy groups and geographically, reflecting the distribution of income. The figure below presents the average monthly expenditure on food and non food items. Among the four largest groups (agriculturalists, agro-sellers, agro-laborers and laborers), total expenditures range from 22,500 BIF (Agriculturalists) to 37,500 BIF (Agro-Sellers). The laborers spent the largest percentage of their expenditures on food (76%) which is consistent with their livelihood strategy based predominantly on manual (daily) labor and little contribution from agriculture. Among Agro-Sellers, the expenditures are higher on average, reflecting the higher average income for the group earned from cash-crops. However, they spent proportionately less on food, which allows them to invest in non-food items. This possibly explains why lowest wealth quintile and asset poor households were least frequent among this group out of the four main ones.

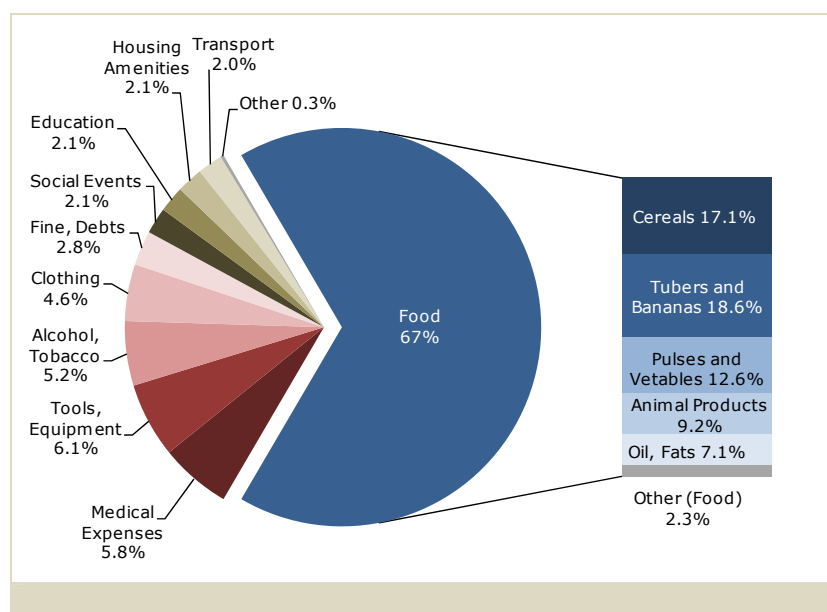
Figure 19: Food and non-Food Expenditures by Livelihood



Among the smaller livelihood groups, the Employees/Business earners had the highest expenditure, reflecting their high income (average 123,000/month expenditure). The proportion of their expenditure on food was lowest at 57%. Inversely, the Marginal households group had the lowest overall expenditure (16,500 BIF) and the highest proportion of expenditure on food (76%). Geographically, the lowest average total monthly expenditure were found in Karusi (17,500 BIF), Mwaro (19,000 BIF) and Ruyigi (20,500 BIF). However, in Mwaro, the percentage of food in the overall expenditures was lowest, averaging 53.8%. In Karusi and Ruyigi, food accounted for 68.5% and 65.8% of the expenditures respectively. The highest total monthly expenditure were found in Bujumbura Rural (75,500 BIF) and Bururi (64,000 BIF), with food accounting for as much as 66.7% of the expenditure in Bujumbura Rural and 63.1% in Bururi.

Overall, food items account for 67% of all the expenditures, including 18.6% spent on tubers (e.g. sweet potato, cassava, Irish potato), 17.1% spent on cereals, 12.6% spent on pulses and vegetables, 9.2% spent on animal products (meat, eggs, milk), 7.1% spent on oil and fats and 2.3% spent on other food items. Among the non-food items, the main expenditure include on average tools and equipment (6.1%), medical expenses (5.8%), alcohol and tobacco (5.2%) and clothing (4.6%). Education accounted on average for only 2.1% of a household expenditure. Some differences exist across livelihood groups. Among Laborers – who spend an average of 76% on food, expenditures on non-food items are especially lower than average for medical care, tools and equipment and alcohol and tobacco. Inversely, among Employees/Business, the share of expenditures on tools and equipments and on clothing is the highest of all groups.

*Figure 20: Composition of Expenditures (Total)*



As wealth increased, both in terms of asset wealth and wealth index, the absolute value of the food expenditure and non food expenditure increased, while the share of food expenditure in the total expenditure decreased.

### Credit, Cash and Exchange

As outlined in the discussion on households' livelihood activities and financial capital, three out of four households (73.8%) have access to credit. This is consistent with the finding that over two-third of the households did purchase goods using credit in the 12 months prior to the survey. However, over 90% of all the expenditures are made in cash (91.6%), with credit accounting for 7.8% and barter/exchange for 0.7%. Credit accounted for over 10% of the expenses in five provinces: Muramvya (14.7%), Kayanza (11.8%), Gitega (10.9%), Mwaro (10.9%) and Ngozi (10.1%). The average debt owned at the time of the survey was highest in Bururi (52,000 BIF) and Bujumbura Rural (45,000 BIF), compared to an average debt of 24,000 BIF nationally.

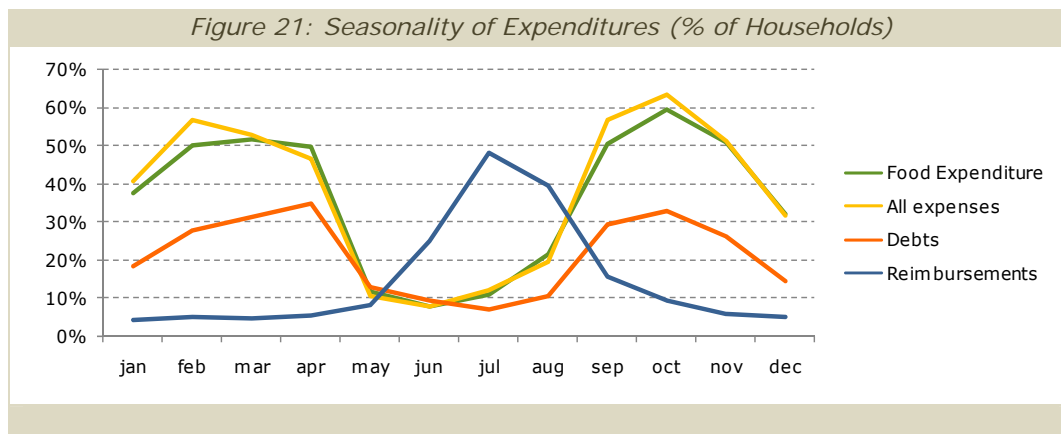
Looking at livelihood groups, credit accounted for 10% of the total expenditure among Laborers (10.7%) and Agro-Exploiters (12.0%). However, the total value of the debt owned by the household was highest on average among Employees/Business households, at 123,000 BIF, and among Agro-Traders (54,500 BIF). Credit was also more important as a share of all expenditure among asset poor (9.6%) compared to asset medium (8.0%) and asset rich (6.0%), but the average amount owned at the time of the survey was higher among asset rich (50,500 BIF) compared to asset medium (25,500 BIF) and asset Poor (13,000 BIF). Differences in amount owned between asset groups were statistically significant ( $F_{13.9, 2 \text{ d.f.}}, p < 0.001$ ). In short, although the share of credit expenditure is on average lower among asset rich spend compared to asset poor, asset rich are able to draw on larger sums on money, which in turn they can invest to improve their livelihood.

The results of the 2008 CFSVA do not suggest that credit is used for any item type in particular, as the share of credit expenditure to the total expenditures for food items (7.8%) is similar to the share of credit for non food items (7.6%).

### Seasonality

Households were asked which months they experienced the highest expenditures for food and in general. They also asked which months the largest debts were incurred and what months reimbursements took place. Overall most households experienced a peak in food and total expenditures in February and

October, corresponding to the beginning of planting seasons B and A and the period where stocks are likely to be at their lowest. About 60% of the households reported those months as month of expenditures. Months of debts correspond to months of expenditure, while reimbursements peak in June - July, which corresponds to the post-harvest season B. The seasonality of the expenditures is consistent with the seasonality of the self-consumption, purchase and sale of crop groups discussed in Figure 14.



## LIVELIHOOD OUTCOME: FOOD CONSUMPTION AND FOOD SECURITY

The livelihood strategies discussed in the previous chapter directly influence livelihood outputs, or outcomes such as the well being, wealth, vulnerability or food security status. This section concentrates on one livelihood outcome that reflects both food availability and access: the consumption of different food groups and consumption patterns among the population.

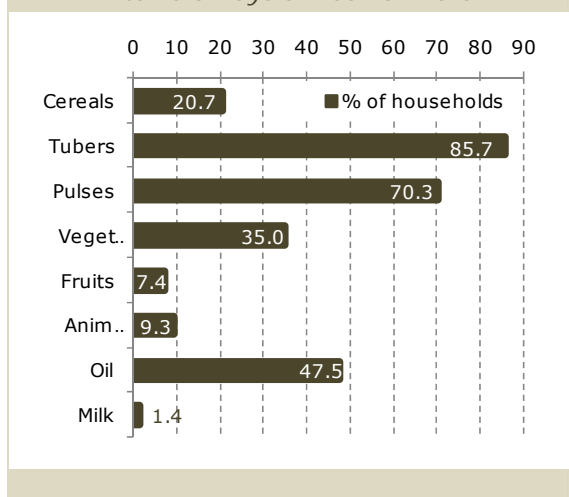
### DIETARY DIVERSITY AND FOOD SOURCES

The 2008 CFSVA was conducted at the time of the harvest season, resulting in rather good food consumption. On average, children ate 2.2 meals a day, compared to 1.9 for the adults. In comparison, households reported that during the lean season, children eat an average of 1.7 meals a day and adults eat 1.2 meals a day. On average, the number of meals of children therefore decreased less than the number of meals for adults between the harvest and lean season. As for other seasonal patterns, months of food security problems peaked around February-March (respectively, 46.9% and 47.5% of the households reported experiencing problems during those months) and more importantly, October (62.6% of the households reported problems).

The 2008 CFSVA further collected information on consumption of 18 food items over a recall period of seven days prior to the survey. For each item, the two main food sources were also assessed (i.e. production, hunting/fishing/gathering, transfer/gift, barter, food aid or purchase).

A large majority of the households reported consuming pulses (groundnuts, beans – 95.4%), cassava (74.2%), sweet potato or other tuber (93.0%) and vegetable oil (82.5%). Those food items were further the most frequently consumed, with pulses being eaten on average 5.3 days a week, potato and other tubers 4.1 days a week, oil and vegetables 4.1 days a week and cassava 2.6 days a week. With regards to cereals, about half the households consumed corn (47.5%) at an average of 1.3 days a week. Fewer households consumed rice (44.4%), sorghum (5.0%) and wheat (0.7%). Among animal products, fish was consumed by about half the households (48.3%), while meat was consumed by 15.9% and poultry by 1.4%. On average, those items were consumed less than once a week.

Figure 22: proportion of Households Eating Items 5 Days a Week or More



Overall, 85.7% of the households consumed tubers at least 5 days a week, 70.3% consumed pulses at least 5 days a week; 47.5% of the households consumed oil at least five days a week and 35.0% consumed vegetables at least 5 days a week. Households reported less frequently consuming other food items at least 5 days a week: 20.7% for cereals, 9.3% for animal products (meat, fish, poultry), 7.45 for fruits, and 1.4% for milk. The following table presents the average weekly consumption of the various food items by province, livelihood groups and asset wealth. Consumption of oil and all animal products, including milk and eggs increases on average with wealth. Laborers and Marginal households group consume pulses on average less frequently than other groups.

Table 13: Mean Weekly Food Consumption (number of days) by Province, Livelihood and Asset Wealth

	Corn	Wheat	Sorghum	Rice	Cassava	Other	Banana Legume	Pulses	Cassava leaves	Other Vegetables	Vegetable Oil	Fish	Poultry	Meat	Eggs	Milk / Milk Products	Fruits	Bread
Bubanza	1.4	0.0	0.0	1.8	3.7	2.7	0.9	4.7	2.2	1.6	4.5	1.6	0.0	0.2	0.0	0.1	0.4	0.2
Bujumbura Rural	1.1	0.0	0.2	1.8	4.7	2.5	0.7	4.2	1.8	2.2	5.2	2.7	0.1	0.9	0.2	0.4	1.0	0.9
Bururi	1.6	0.0	0.0	1.1	3.6	4.1	0.7	5.7	2.2	2.6	6.0	2.2	0.1	0.6	0.1	0.4	1.3	0.4
Cankuzo	2.0	0.1	0.6	0.5	1.2	3.7	0.9	5.4	2.2	1.9	3.3	0.6	0.0	0.2	0.0	0.1	2.2	0.3
Cibitoke	0.9	0.0	0.0	1.5	4.7	2.7	1.2	3.7	2.9	1.7	4.8	1.5	0.0	0.7	0.1	0.1	1.0	0.5
Gitega	1.4	0.0	0.0	0.8	1.4	4.5	0.8	5.8	1.2	1.4	4.5	1.4	0.0	0.2	0.0	0.2	0.9	0.2
Karusi	0.6	0.0	0.1	1.1	1.8	4.4	0.7	5.0	2.6	0.7	3.0	1.1	0.0	0.1	0.0	0.1	0.5	0.1
Kayanza	1.2	0.0	0.0	0.7	1.6	5.5	0.7	5.2	2.1	1.6	3.8	1.3	0.0	0.1	0.0	0.2	1.3	0.2
Kirundo	0.9	0.0	0.2	1.3	2.0	3.4	1.7	6.0	2.1	1.2	3.3	0.9	0.0	0.2	0.0	0.1	1.1	0.3
Makamba	1.8	0.0	0.0	0.8	4.6	4.0	0.8	6.2	2.3	1.8	5.5	1.5	0.0	0.6	0.1	0.3	1.0	0.3
Muramvya	1.3	0.0	0.0	0.5	2.1	5.7	0.5	5.8	2.1	2.0	4.4	1.4	0.0	0.2	0.0	0.1	1.2	0.3
Muyinga	1.3	0.0	0.3	0.7	2.5	4.2	1.2	5.4	2.4	1.1	3.6	1.0	0.0	0.1	0.0	0.1	1.2	0.1
Mwaro	1.9	0.0	0.0	0.3	0.9	5.0	0.7	5.6	1.3	1.5	3.6	1.1	0.0	0.1	0.0	0.1	0.8	0.0
Ngozi	1.0	0.0	0.1	1.1	1.8	4.7	0.8	5.0	2.7	0.9	3.5	0.7	0.0	0.1	0.0	0.1	0.9	0.2
Rutana	2.2	0.0	0.4	0.8	2.7	4.3	0.4	6.0	2.8	1.4	4.3	1.0	0.0	0.3	0.0	0.0	1.1	0.3
Ruyigi	1.0	0.1	0.5	1.5	1.5	3.9	0.8	5.4	2.2	1.1	3.5	1.4	0.0	0.2	0.0	0.0	1.1	0.2
Agriculturalists	1.2	0.0	0.1	1.0	2.2	4.3	0.9	5.5	2.2	1.4	4.0	1.2	0.0	0.2	0.0	0.1	1.1	0.2
Agro-Sellers	1.5	0.0	0.2	1.1	2.6	4.1	1.0	5.7	2.1	1.6	4.8	1.3	0.0	0.3	0.1	0.2	1.3	0.3
Agro-Laborers	1.1	0.0	0.2	0.9	2.5	4.2	0.7	5.1	2.2	1.3	3.7	1.3	0.0	0.2	0.0	0.0	0.8	0.2
Laborers	1.2	0.0	0.1	1.0	2.9	3.8	0.5	4.3	2.4	1.5	3.5	1.3	0.0	0.3	0.0	0.1	0.9	0.2
Agro-Traders	1.5	0.0	0.3	1.8	3.2	3.2	1.0	5.4	2.2	2.2	5.5	2.3	0.1	0.6	0.2	0.4	1.3	1.0
Agro-Brewers	1.3	0.0	0.1	1.0	2.3	4.2	1.3	5.2	2.0	1.5	4.6	1.5	0.0	0.2	0.0	0.0	0.8	0.2
Agro-Exploiters	1.1	0.0	0.0	1.4	4.0	3.7	1.0	5.4	2.2	1.8	4.9	1.7	0.0	0.5	0.2	0.0	0.9	0.1
Employees/Business	1.9	0.1	0.1	3.0	3.4	2.7	1.5	5.8	1.3	2.9	6.6	2.3	0.1	1.1	0.3	2.1	2.3	1.7
Marginal Households	0.7	0.0	0.0	0.6	2.5	4.4	0.5	4.6	1.9	1.3	2.4	0.8	0.0	0.2	0.0	0.1	0.4	0.0
Others	0.8	0.0	0.0	1.5	3.5	3.3	1.1	5.1	1.5	1.9	4.7	1.7	0.0	0.5	0.0	0.5	1.2	0.5
Asset Poor	1.1	0.0	0.1	0.8	2.5	4.3	0.6	4.6	2.3	1.1	3.1	1.0	0.0	0.2	0.0	0.0	0.7	0.1
Asset Medium	1.3	0.0	0.2	1.1	2.6	4.0	0.9	5.5	2.2	1.6	4.4	1.4	0.0	0.3	0.1	0.2	1.2	0.3
Asset Rich	1.6	0.0	0.1	1.5	2.5	3.8	1.4	6.0	2.0	2.0	5.6	1.7	0.1	0.5	0.1	0.4	1.6	0.5
TOTAL	1.3	0.0	0.1	1.1	2.6	4.1	0.9	5.3	2.2	1.5	4.1	1.3	0.0	0.3	0.1	0.2	1.1	0.3



With regards to food sources, the CFSVA indicated that markets play an important role among the main sources of food items. Among households who consume those items, over half used purchase as a main source for corn (72.3%), cassava (62.5%), rice (69.5%), vegetable (66.8%). Markets were also a frequent source for animal products including poultry (69.1%) and other meat (96.3%). Households frequently reported using their own production as a source of sweet potato (76.4%), plantain (76.5%), pulses (73.0%) and cassava leaves (83.2%).

Table 14: Food Sources by Food Items Consumed

	Own Production (%)	Purchase (%)	Gift, transfer (%)	Exchange (%)	Gathering (%)	Food aid (%)
Corn	25.6	72.3	2.8	1.6	.0	.2
Wheat	50.9	39.7	10.7	.0	.0	.0
Sorghum	49.9	49.1	3.3	1.0	.5	.0
Cassava	37.8	62.5	3.0	1.1	.0	.2
Rice	22.5	69.5	8.2	1.3	.0	.2
Sweet Potato	76.4	21.2	3.3	2.1	.1	.1
Plantain	76.5	21.9	3.1	.4	.1	.0
Pulses	73.0	27.9	2.8	1.4	.0	.1
Cassava Leaves	83.2	6.8	10.2	.7	.5	.4
Vegetable	32.8	66.8	3.7	.5	.5	.1
Oil	6.2	92.0	2.0	.3	.0	.2
Fish	2.4	96.2	.7	.1	.9	.0
Poultry	25.3	69.1	2.5	.0	1.7	1.4
Meat	2.4	96.3	1.1	.2	.3	.0
Eggs	35.6	65.2	.0	.0	.0	.0
Milk	21.4	73.8	4.8	.0	.0	.0
Fruits	45.9	51.6	4.1	.1	.5	.0
Bread	2.5	96.3	1.3	.3	.0	.0

The food sources presented above are a snapshot at the time of the survey and average for all livelihood strategy groups. The seasonality of the expenditures discussed above suggests that food sources vary throughout the year, with purchases peaking in February and October.

## HOUSEHOLD FOOD CONSUMPTION PROFILES

### Methodology

Food Consumption Scores (FCS) were computed to reflect the diversity and frequency (number of days per week) of the food items consumed by a household. Diet diversity is correlated to nutrient adequacy, children's and women's anthropometry and socio-economic status.<sup>23</sup> It is therefore a good proxy indicator of the access dimension of food security and nutrition intake. The FCS is a frequency weighted diet diversity score standardized by WFP.

The FCS is computed by grouping together the food items for which consumption was assessed over a seven-day recall period. For each food group the frequency represent the number of days an item from the food group was consumed, with a range from 0 (never) to 7 (every day). A weight is assigned to each food group, representing the nutritional importance of the food group. The food groups and weight are presented in Table 15. The FCS is the sum across food groups of the product of the frequency by the weight.

<sup>23</sup> Ruel M. (2003): Operationalizing Dietary Diversity: A Review of Measurement Issues and Research Priorities. *Journal of Nutrition* 133 (11 suppl. 2) 3911S-3926S

*Table 15: Food Items, Groups and Weights for Calculation of the FCS*

Food Items	Food Group	Weight
1. Cereals: Corn, Wheat, Sorghum, Rice, Bread Roots and Tubers: Manioc, Sweet Potatoes, Banana	<b>Staples</b>	2
2. Pulses: Peanuts, Beans	<b>Pulses</b>	3
3. Vegetables (including green, leafy vegetables, shoots)	<b>Vegetables</b>	1
4. Fruits	<b>Fruits</b>	1
5. Animal Proteins: Fish, Meat, Eggs	<b>Meat &amp; Fish</b>	4
6. Milk / milk products	<b>Milk</b>	4
7. Oils and Fats	<b>Oil</b>	0.5
8. Sugar*	<b>Sugar</b>	0.5

\* Sugar consumption was not assessed for the 2008 Burundi CFSVA

The FCS is a continuous variable that is difficult to interpret. Two thresholds are used to distinguish consumption level: a FCS of 21 and a FCS of 35. The threshold of 21 corresponds on average to a daily consumption of staples (7 days\* weight 2 = 14) and vegetables (7 days\*weight 1 = 7; 14+7 = 21). The 35 threshold indicates a daily consumption of staples and vegetables and a frequent (at least 4 times a week) consumption of oil and pulses (7\*2 + 7\*1 + 4\*0.5 + 4\*3). The thresholds define three groups: Poor consumption ( $\leq 21$ ), Borderline Consumption ( $>21$  and  $\leq 35$ ), and Acceptable Consumption ( $>35$ ).

Quantities consumed are not assessed for the FCS. Only food items consumed as a substantial meal during the 7-day recall period were to be recorded. However, it is possible that some food items consumed in small quantity, especially meat and fish, were recorded. This may lead to an over-estimation of the FCS.

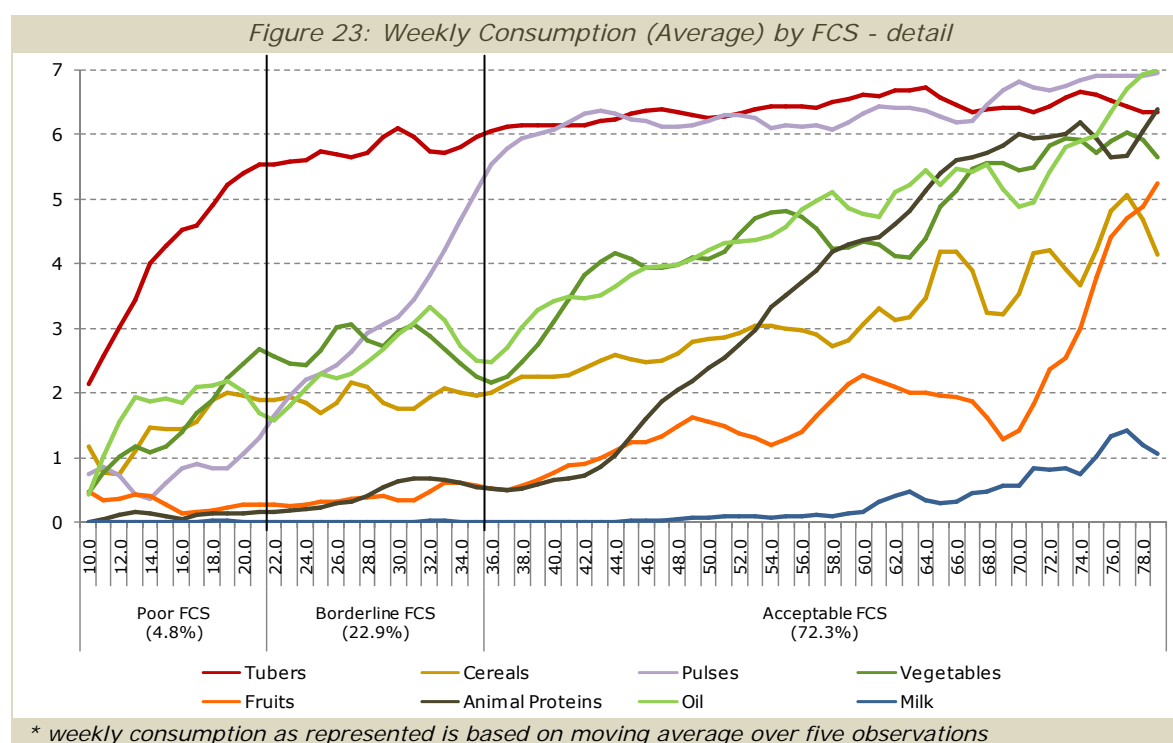
### Food Consumption Scores

The table and Figure 23 below illustrate the weekly consumption (average number of days) of the different food groups by the FCS. The '21' and '35' thresholds are represented as the limits between those with a poor FCS, borderline FCS and acceptable FCS. Nationally, 4.8% of the households were considered as having a poor FCS; 22.9% had a borderline FCS and a majority, 72.3%, had an acceptable FCS. Looking at the changes in specific food group consumptions suggests that tubers are the base of the diet for households, supplemented with some vegetables, cereals and vegetable oil. Increase in FCS is most noticeably associated with a rapid increase in weekly consumption of pulses (groundnuts, beans). A FCS of 35 is associated with a nearly daily consumption of pulses. Only when the consumption of pulses has reached about 6 days a week does the consumption of other food items start to increase more rapidly, including the consumption of milk and fruits, and most noticeable, the consumption of meat.

*Table 16: Weekly Consumption (Average) by FCS*

Food Consumption Scores	Pop. (%)	Food Groups (Weekly Consumption)								FCS Score Average
		Tubers	Cereals	Pulses	Vegetables	Oil	Animal Proteins	Fruits	Milk	
Poor	4.8	4.9	1.8	0.9	2.0	1.5	0.1	0.2	0.0	17.7
Borderline	22.9	5.8	1.9	3.4	2.7	2.5	0.5	0.4	0.0	29.5
Acceptable	72.3	<b>6.3</b>	2.9	<b>6.1</b>	3.9	4.8	2.1	1.3	0.2	48.2

On average, households with a poor FCS consumed tubers five days a week, vegetables two days a week, cereals two days a week and oil one day a week. Among households with a borderline FCS, consumption of all food groups increased. The change was most important in consumption of pulses, increasing from less than one day per week to over three days per week on average. Those with a borderline consumption had tubers six days a week and vegetables three days a week and cereals twice a week on average. Consumption of animal proteins remained below once a week on average. Among those with an acceptable FCS, consumption of oil increased to about five days a week. For this group, consumption of all the food items increased on average, with animal proteins being consumed more than once a week on average.



### Food Consumption Patterns

In addition to the food consumption scores, patterns of consumption were examined using cluster analysis. The analysis examines how households combine the different food groups consumption patterns in order to identify general trends and group individuals with similar patterns in a few clusters. The analysis was conducted on the original 18 food items.

Using this methodology, a total of 8 food consumption profiles were obtained. The profiles are summarized in the table below with weekly consumption by food groups. The results of the cluster analysis show that one group (1) has a poor consumption pattern, with tubers consumed about six days a week and other food items less frequently including vegetables (2 days/week), cereals (2 days a week) and pulses (2 days a week). The average food consumption score was computed for the group using the methodology described above. The FCS was 27.2 – which would be classified as borderline. However, of all the consumption patterns, it is the poorest one. All the other groups have frequent consumption of pulses, eaten four days or more of the week. Group two is the second least diverse consumption pattern, with only tubers and pulses being eaten frequently. Group 3 complements the nearly daily consumption of tubers and pulses with an increased consumption of vegetables (6 days a week), while group 4 supplements the consumption of tubers and pulses with increased consumption of oil as well as animal proteins (fish, meat, poultry, eggs).

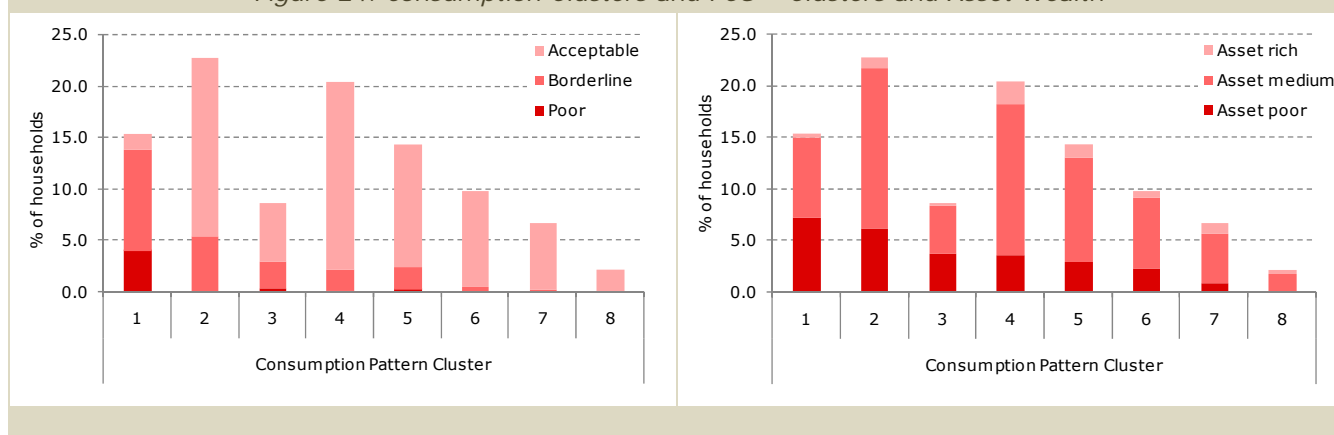
*Table 17: Food Consumption Patterns*

Consumption Pattern Cluster	Pop. (%)	Food Groups (Weekly Consumption)								FCS Score Average
		Tubers	Cereals	Pulses	Vegetables	Oil	Animal Proteins	Fruits	Milk	
1	15.4	5.7	2.2	2.1	2.4	1.5	0.8	0.3	0.0	27.2
2	22.6	6.1	1.8	6.5	2.3	1.7	0.7	0.5	0.0	40.0
3	8.6	6.4	2.1	4.6	6.4	1.8	0.8	0.7	0.0	40.1
4	20.4	5.9	2.9	6.4	3.2	6.5	1.2	0.6	0.1	45.3
5	14.3	6.0	3.3	4.1	3.7	6.5	3.5	1.1	0.1	49.8
6	9.7	7.0	2.2	6.2	5.0	6.1	2.9	0.8	0.1	54.2
7	6.8	6.1	3.4	6.3	4.3	5.5	2.3	6.0	0.1	56.2
8	2.1	6.3	6.8	6.5	5.7	6.9	4.6	4.1	4.5	86.3

Looking at food consumption patterns, Group 5 and following all have a very diverse consumption pattern that includes tubers, pulses, vegetables and oil consumed at least four days a week and animal proteins being consumed twice a week or more on average.

The patterns of food consumption were then compared with the food consumption groups based on the FCS. Overall, 84.2% of those with a poor FCS were found in group 1, which was also identified as having the worse food consumption pattern. Within group 1, 26.3% of the households had a poor consumption pattern, 63.5% had a borderline FCS and 10.2% had an acceptable FCS. Some households with a poor FCS were found in group 3 and group 5. This analysis showed that 15.4% of the households adopt a poor food consumption pattern and that those with a poor FCS are mainly found among those households. Although 73.7% of the households in group 1 have in fact a borderline or acceptable FCS, those households should be considered vulnerable due to their poor consumption pattern. The proportion of Asset poor was also found to be higher among households with poorer consumption patterns.

*Figure 24: consumption Clusters and FCS – Clusters and Asset Wealth*



## FOOD SECURITY PROFILING

In this section, characteristics associated with food insecure households are described. The FCS is used as the proxy measure for food insecurity. Cross-tabulations of key households' characteristics with the FCS classes were conducted. Associations that were found to be statistically significant ( $p < 0.05$ ) are presented. Nationally, 4.8% of the population met the criteria for a poor FCS. Figure 25 presents the distribution of poor FCS by province and communes. Geographically, 65% of those with a poor FCS lived in 5 provinces: 16.8% lived in Ngozi, 14.3% lived in Muyinga, 13.0% lived in Karuzi, 10.5% lived in Cibitoke and 10.5% lived in Bujumbura Rural.

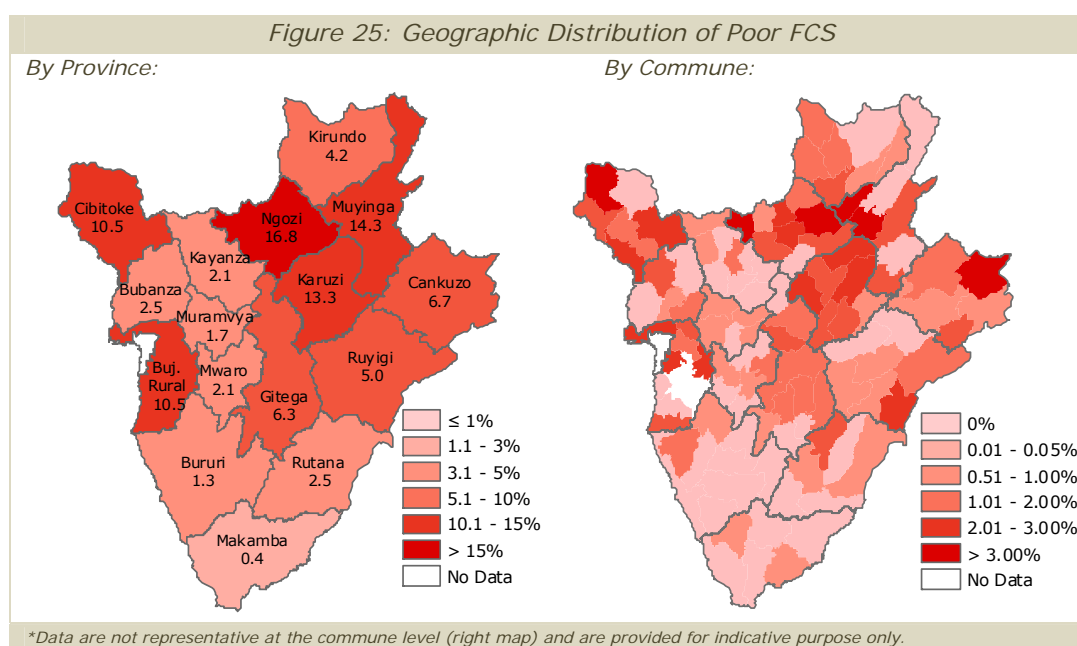
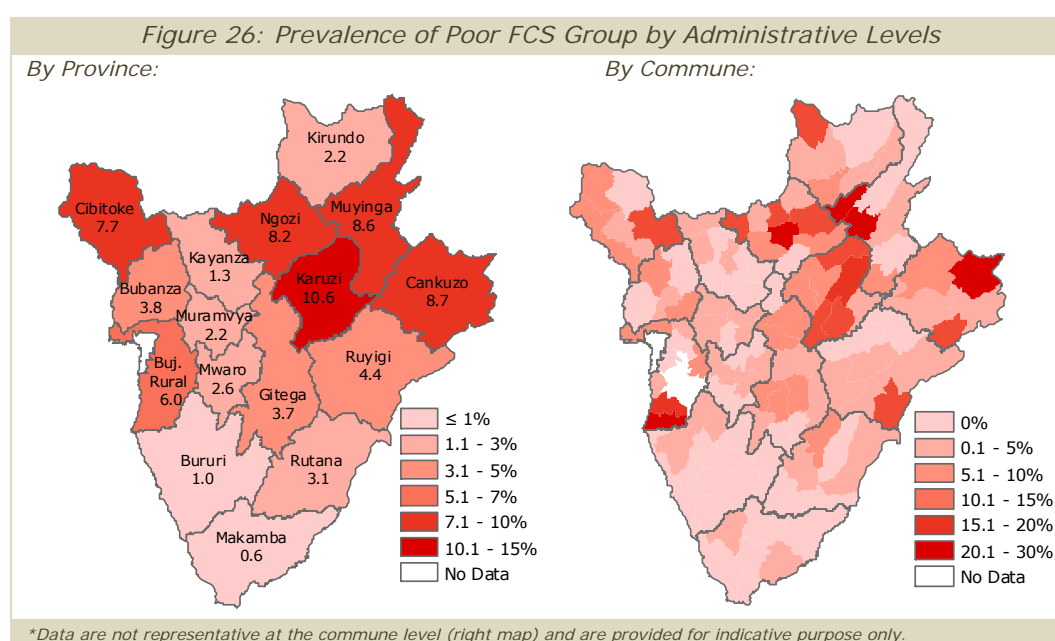


Figure 26 illustrates for each province the proportion of the households that have a poor FCS. The proportion of poor FCS on the total population by province was highest in Karuzi (10.6%), Cankuzo (8.7%), Muyinga (8.6%), Ngozi (8.2%) and Cibitoke (7.7%).



Although the proportion of poor FCS is high in Cankuzo, they represent few of all the poor FCS households (6.7%) due to the low population size in that province. Inversely, although the proportion of FCS is low in Bujumbura Rural (6.0%), they represent a large share of all the poor FCS households (10.5%) due to the high population size in that province.

Looking at demographics of the food insecure households shows that food insecure households are more frequently female headed households (28.9%) than borderline FCS households (24.4%) and acceptable FCS households (16.6%). Heads of food insecure households were also more frequently single-heads (i.e. widow(er), divorced, single never married). The 2008 CFSVA also suggest that food security status is better among larger households. The average household size of an acceptable FCS household was 5.5 compared to 4.4 among those with a poor FCS. However, the dependency ratio on average was lower among households with better consumption level, indicating that those households in general had more active adults proportionately to dependents.

*Table 18: Characteristics of Food Security (1)*

FCS	female headed household (%)	Average hh size computed	average dependency ratio	Straw/Mud Walls (%)	Roof Straw (%)	time wood > 1 hour (%)	toilet in the field,, none (%)
Poor	28.9	4.4	1.04	38.5	56.3	54.9	5.5
Borderline	24.4	4.8	1.01	34.7	50.7	51.1	2.7
Acceptable	16.6	5.5	0.95	25.8	40.0	47.9	1.1

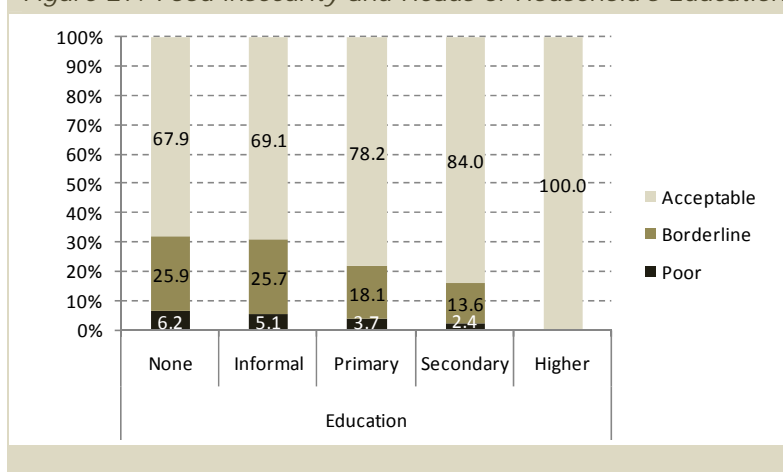
Housing structure was generally less permanent among the food insecure. Households with a poor FCS had more frequently a structure made of straw or mud walls and a roof made of straw. Although overall about all the households used traditional pit latrines, those with a poor FCS more frequently used no latrines at all. There were no major differences in the water sources used by the households. However. Households with a poor FCS reported more frequently having to pay for water, lacking water for some time during the year and taking over one hour by foot to travel to the water source.

*Table 19: Characteristics of Food Security (2)*

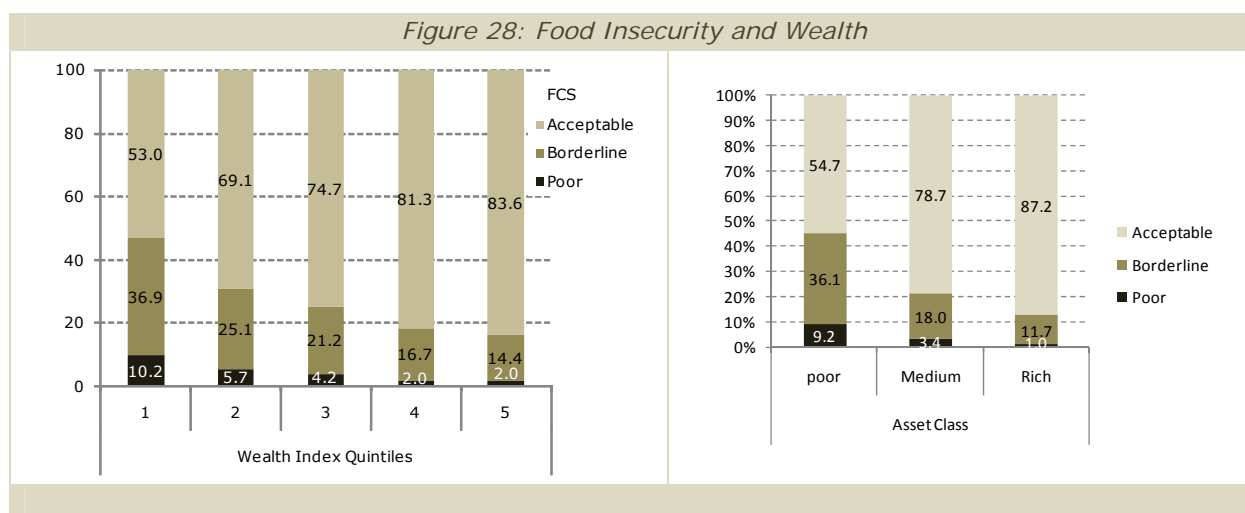
FCS	Unprotected water source (%)	Pay for water (%)	Lack water some months? (%)	Time to water > 1 hour (%)	% Land owned of total surface	<0.25 ha total (%)	No cash crop (%)	Average nbr crop cultivated
Poor	25.3	16.7	30.5%	11.0	73.0	31.5%	22.1	3.7
Borderline	25.3	11.1	26.2%	9.1	77.5	26.4%	21.5	4.0
Acceptable	21.3	11.5	25.0%	6.7	78.5	16.6%	17.6	4.4

Food insecure households also had on average less access to land, using more frequently small plots and less frequently owning the land they cultivate. Poor FCS more frequently did not cultivate cash crop and overall cultivate less variety of crops. Looking at education further indicates that food insecure households are more likely to be headed by less educated individuals.

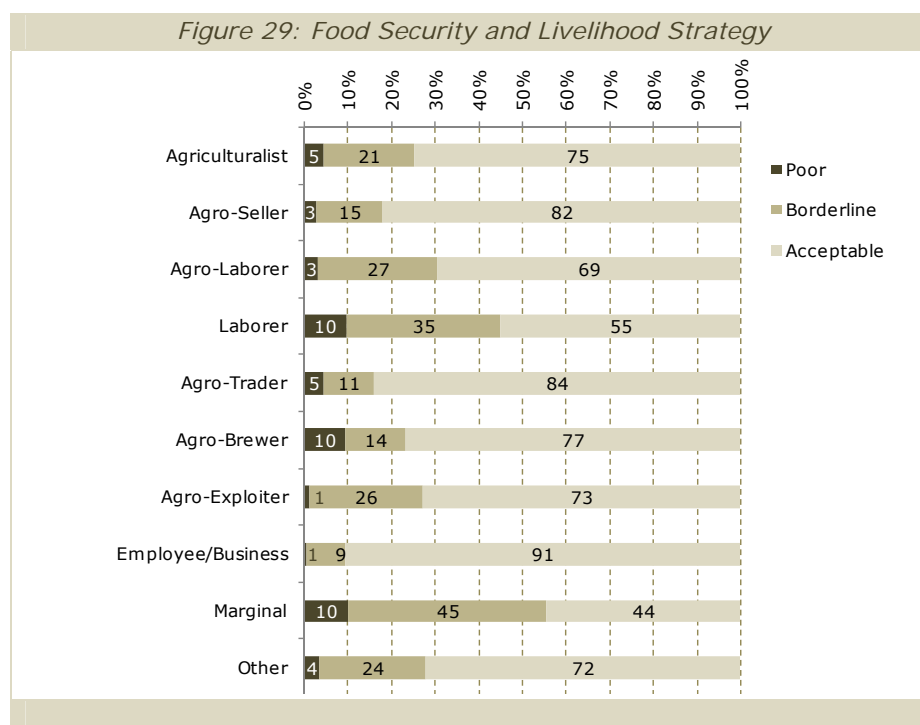
*Figure 27: Food insecurity and Heads of Household's Education*



As shown earlier in this report, many of those indicators are related to the household's wealth. The 2008 CFSVA shows that wealth and asset ownership is linked to food insecurity. Ten percent of the households in the lowest wealth quintile had a poor FCS compared to respectively 5.7%, 4.2%, 2.0% and 2.0% for the second to fifth wealth quintiles. Looking at asset wealth, 9.2% of the asset poor had a poor FCS compared to 3.4% of the asset medium and 1.0% of the asset rich.



In terms of livelihood, the distribution of food insecure households confirms that Laborers and Marginal Households groups are most vulnerable. Among Laborers and Marginal households, 10% have a poor FCS. The data also suggest that Agro-Brewers are more frequently food insecure compared to other livelihood groups.



The relations explored above are not causal relationships, but rather indicative of characteristics that are associated with food security. Food insecure households are more frequently among the lowest index quintile, asset poor households who are primarily engaged in labor only activities to sustain their livelihood, or live on transfers and gifts. They have, on average, access to less land and more frequently



do not own the plots they cultivate. Female-headed, single-headed and less educated households are more frequently food insecure. These characteristics can be used to develop more appropriate targeting tools and possible interventions to reduce households' vulnerability to food insecurity. Determinants of food security are explored further in the last chapter of this report.

## MULTIVARIATE ANALYSIS OF FOOD SECURITY STATUS

A multivariate stepwise (forward) logistic regression was conducted to explore individual level predictors of food insecurity.<sup>24</sup> The dependent variable was a dichotomous variable indicating the food security status defined as a poor food consumption score. The independent (predictor) variables included: gender and age of the household head, marital status of household head, the level of education of the household head and his/her ability to read and write simple messages, the size of the household, the presence or absence of children aged 14 or less, the dependency ratio, whether or not the household was a returnee households (ever, within 10 years, within 5 years), the number of rooms in the dwelling and average number of people per room, the type of roof and wall materials (permanent vs. non-permanent), the total number of assets, the wealth index, access to land, animal ownership (log LTU), land ownership (three variables: <0.25ha own land, <0.25 total land, >1ha total land), food stocks (in months), number of crops cultivated, number of cash crops cultivated, monthly food expenses (log), monthly non-food expenses (log), food expenses as a percentage of total expenses, total estimated income (log), food assistance (beneficiary vs. not beneficiary), the coping strategy index<sup>25</sup>, the livelihood strategy and the location (province). Eight variables were found to be statistically significant in the resulting adjusted model. The following are the adjusted results for each variable. The adjusted Odd Ratios are provided.<sup>26</sup>

1. **The household size:** The odds of being food insecure decreased as the size of the household increased. (for one household member increase: O.R. 0.92, 95%CI: 0.845-0.993,  $p=0.033$ ). This is consistent with the findings at the bivariate level. It was noted that although the average size of food secure households was larger than that of food insecure, the dependency ratio on average was lower, indicating that food secure households on average had more productive adults. The proportion of food insecure was highest among households with only one or two members, with respectively 13.5% and 10.0% of the households being food insecure.
2. **The average size of land owned by the household:** households who owned 0.25 ha of land or less were 1.6 times more likely to be food insecure compared to households that owned more than 0.25 ha of land. (O.R. 1.60, 95%CI: 1.136-2.246,  $p=0.007$ ).
3. **The amount of food stocks available to the households** (in months): for each additional month of food stock, the odds of being food insecure decreased by a factor of 0.95. (O.R. 0.95, 95%CI: 0.914-0.988,  $p=0.011$ ). Both the average size of land available and the amount of food available to the household point to the reliance of most households on their own food production. Households with more land are able to produce more for their own consumption and have larger food stocks.
4. **Monthly Food and Non-food expenses** (log): Increases in food and non-food expenditures (expressed in logarithm of monthly expenditures in Burundian Francs) were associated with a

<sup>24</sup> Logistic regression using a dichotomous variable to indicate food insecurity (Food Insecure or not) was preferred because the method allows comparing risks under different conditions. In addition, linear regression yielded results that included several interaction terms, making the results less interpretable.

<sup>25</sup> Data on the Coping Strategy Index are presented in the following chapter. The index was included in the analysis because of existing evidence of an association between food security and coping strategy patterns.

<sup>26</sup> The adjusted odd ratios are a measure comparing risks under different conditions all other variables being held constant.



decreased probability of being food insecure (respectively O.R. 0.57, 95%CI: 0.419-0.776,  $p<0.001$ ; O.R. 0.63, 95%CI: 0.500-0.801,  $p<0.001$ ). This points to the importance of expenditure and overall access to markets as an individual level predictor of food security.

5. **Asset Wealth<sup>27</sup>**: the total number of assets owned by a household was significantly associated with the odds of being food insecure. For each additional assets, the odds of being food insecure decreased by a factor of 0.86 (95%CI: 0.792-0.934,  $p<0.001$ ). The statistical association of asset wealth, monthly food-and non-food expenditures with food insecurity point to the likely association between food security and poverty in Burundi.
6. **Livelihood strategy groups**: A total of 10 livelihood strategies were described for the population of Burundi. Using Agriculturalists as the comparison group, we found no statistical differences in the odds of being food insecure between Agriculturalists and Agro-sellers and Agriculturalists and Agro-Laborers. However, after adjusting for the other variables, Laborers were found to be 2.11 times more likely to be food insecure than Agriculturalists. (95%CI: 1.373-3.237,  $p=0.001$ ). Among the smaller livelihood strategy groups, agro-brewers were found to be 3.41 times more likely to be food insecure than agriculturalists. (95%CI: 1.518-7.666,  $p=0.003$ ). There were too few households with a marginal households Group to test for statistical differences with other groups.
7. **Province**: The multivariate analysis confirmed differences in food security across provinces observed at the bivariate level. Using Makamba (a province generally found to be food secure) as a comparison point, we found statistically significant differences with five provinces. Compared to Makamba, respondents were more likely to be food insecure in the provinces of:
  - Cankuzo (O.R. 7.41, 95%CI: 1.289-42.646,  $p=0.007$ )
  - Cibitoke (O.R. 7.78, 95%CI: 1.431-42.251,  $p=0.007$ )
  - Karusi (O.R. 5.96, 95%CI: 1.108-32.079,  $p=0.007$ )
  - Muyinga (O.R. 8.04, 95%CI: 1.506-42.901,  $p=0.007$ )
  - Ngozi (O.R. 6.51, 95%CI: 1.232-34.425,  $p=0.007$ )

Differences across provinces may be explained by agro-ecological and local socio-economic factors. The result confirm the importance of food security in the north-eastern part of Burundi were four out of the five provinces are located (Cankuzo, Karusi, Muyinga, Ngozi) and the north-western axis

Because of interactions between variables, one additional vulnerability factor identified at the bivariate level must also be taken into account:

8. The **gender** of the household head is an important variable to take into account. At the bivariate level, female headed-households were more likely to be food insecure compared to male-headed households. In addition, associations between gender of the household head and predictors of food insecurity can be found: female-headed households were more likely to be asset poor (O.R. 3.04, 95% CI:2.61-3.52,  $p<0.001$ ), more likely to own 0.25 ha of land or less (O.R. 1.18, 95%CI: 1.02-1.38,  $p= 0.03$ ) and the average size of a female headed household was statistically smaller than that of male headed households (respectively 4.0 and 5.6 average household members,  $F=371.97$ , 1d.f.,  $p<0.001$ ). The marginal households group was also associated with a high proportion of female headed households.

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<sup>27</sup> The Wealth index was also entered in the model. Since asset wealth and the wealth index are correlated, only one variable entered the model. The statistical association between asset wealth and food security was strongest than the association between the wealth index and food security.

## NUTRITION

Nutritional status and food security are outcomes of the livelihood strategies adopted by a household. However, the nutritional status is not only a reflection of food security. Malnutrition may be the result of (1) inadequate food intake, (2) specific micro-nutrients deficiencies (e.g. iron, iodine, vitamin A), or (3) diseases directly affecting the nutritional outcomes such as malaria or the presence of helminthes. To assess the relation between food security and nutrition, the 2008 Burundi CFSVA questionnaire included a nutrition component for women and children. However, the CFSVA is not a nutrition survey and the sampling methodology used limits the ability to compare between subgroups such as provinces. In addition, results are provided for the rural population only.

### HEALTH AND NUTRITIONAL STATUS OF WOMEN

As part of the 2008 Burundi CFSVA, a measure of the middle-upper arm circumference (MUAC) was performed on all the women aged 15 to 49 years old within the households selected for the 2008 CFSVA. MUAC needs further validation to be used as a measure of malnutrition. However, it is easily measured and widely used. The Standard cut-off to define a low MUAC is 22.5cm.<sup>28</sup> Other authors have used a cut-off of 18.5 cm to define moderate malnutrition and 16.0 cm to define severe malnutrition.<sup>29</sup> Nationally, the MUAC of 4,652 women aged 15 to 49 years old was assessed.

The average age of the respondents was 29 years old (S.D. 9.4). Over half the women had no education (59.5%), one third had primary education (32.2%) and only 8.3% had secondary education or higher. Looking at their current pregnancy status, 12.4% of the women said they were pregnant at the time of the survey and 41.3% said they were breastfeeding at the time of the survey. Three questions further assessed the health status of the women over a two week period prior to the survey: Sixteen 15.6% experienced diarrhea (liquid stools at least three times a day), 23.1% had fever and 8.3% reported suffering from a chronic illness (unspecified). Finally, 21.1% of the women had a MUAC below 22.5cm, 4.4% had a MUAC below 18.5 cm and 4.1% had a MUAC below 16 cm.

*Table 20: Women's Health and Nutrition*

Mean Age (SD)	Education (%)			Pregnant (%)	Breast-feeding (%)	Diarrhea (%)	Fever (%)	Chronic Illness (%)	MUAC (%)		
	None	Primary	Secondary						<22.5	<18.5	<16.0
29 (9.4)	59.5	32.2	8.3	12.4	41.3	15.6	23.1	8.3	21.1	4.4	4.1

### HEALTH AND NUTRITIONAL STATUS OF CHILDREN

Information on health and nutrition was collected from a total of 4,006 children below 5 years old within the selected households.<sup>30</sup> Among them, 7.3% did not live with their biological mother: 3.3% were maternal orphans and 4.0% were separated from their families for unspecified reasons. Four indicators were used to assess the nutritional status of children aged between 6 and 59 months:

<sup>28</sup> Bertrand, Escudero (2002) *Compendium d'Indicateurs pour l'Evaluation des Programmes de la Santé de la Reproduction*, USAID, Measure Evaluation

<sup>29</sup> Collins, Duffield, Myatt (July 2000) *Assessment of Nutritional Status in Emergency-Affected Populations – Adults*, Secretariat of the UN ACC/Sub-Committee on Nutrition (<http://www.unsystem.org/SCN/archives/adults/begin.htm#Contents>)

<sup>30</sup> The sample size varies for each question due to non-response rate for specific questions.

- **Height by age (stunting):** Height by age is a measure of linear growth, and as such, an indicator of long term effect of under nutrition not affected by seasonal changes.
- **Weight by Height (wasting):** Weight by height is an indication of the current nutritional status of a child and reflects recent nutritional intake and/or episode of illness. Severe stunting is often linked to acute food shortage.
- **Weight by age (underweight):** Weight by age combines information from stunting and wasting. Children can therefore be underweight because they are stunted, wasted or both
- **Presence of Oedema**

WHO Anthro Software was used to compute the levels of stunting, wasting, and underweight. The three indicators are expressed in standard deviation from the median of the new WHO and the Nutrition and child health statistics and Center for Disease Control, NCHS/CDC reference standards, with cut-offs set at - 2 SD and -3 SD. The levels of wasting, stunting and underweight were, respectively 8.4%, 52.7%, and 26.5%. In comparison a 2005 national nutrition survey also found prevalence of wasting, stunting and underweight respectively, at 7.4%, 52.5.0%, and 39.2%. Another similar survey conducted in 2007 however, indicated them at respectively, 5.6%, 46.0%, and 35.2%. The differences with the later may be due to differences in methodology.

Table 21: Nutritional Status

		Wasting (WHZ)	Stunting (HAZ)	Underweight (WAZ)	Oedema
2008 CFSVA	n (un-weighted)	3,440	3,652	3,537	3,890
	Mean z-score	-0.03	- 2.01	-1.17	3.4%
	S.D.	1.54	1.74	1.37	--
	% < - 2 SD (95% C.I.)	8.4 (7.5-9.4)	52.7 (51.1-54.4)	26.5 (25.1-28.0)	--
	% < - 3 SD (severe) (95% C.I.)	3.0 (2.5-3.6)	27.0 (25.6-28.5)	9.2 (8.3-10.2)	--
2007 nut Survey (% <-2S.D.)		5.6	46.0	35.2	--
2005 Nut Survey (% <-2S.D.)		7.4	52.5	39.2	

Looking at the age distribution, the data suggest that wasting is more prevalent among children aged below 24 months old (11.2%) compared to those 24 months old or more (6.8%). Inversely, stunting was more prevalent among those aged 24 months old or more (57.4%), compared to the younger children (45.8%). Differences were statistically significant for both stunting and wasting ( $p < 0.001$ ). The high prevalence of wasting among the younger group may be due to poor hygiene practices.

Table 22: Age and Malnutrition

	Wasting (WHZ) % < - 2 SD	Stunting (HAZ) % < - 2 SD	Underweight (WAZ) % < - 2 SD
6 - <24 months	11.2	45.8	27.1
≥ 24 - 59 months	6.8	57.4	25.0

Nationally, only 43.9% of the children were born in a health structure, however, 92.8% did have a vaccination card (self-reported by mothers). Looking at health status, 28.1% of the children had diarrhea (liquid stools at least three times a day), 35.8% had fever and 24.6% reported a respiratory infection (unspecified). Six percent (6.0%) frequented a nutrition center.

Table 23: Children's Health

Lives in Household (%)	Mother Lives outside Household (%)	Deceased (%)	Birth in Health Structure (%)	Has Vaccination card (%)	Diarrhea (%)	Fever (%)	Respiratory Infection (%)
92.7	4.0	3.3	43.9	92.8	28.1	35.8	24.6

## PROFILES AND MULTIVARIATE ANALYSIS OF MALNUTRITION

In this section, characteristics associated with malnutrition are examined. For women, the 22.5 cm MUAC cut-off was used to conduct bivariate and multivariate analysis of the characteristics associated with a Low BMI. For children, stunting and wasting were used to conduct multivariate analysis.

Geographically, malnutrition prevails in every province of Burundi. The table below illustrates the geographic distribution of malnutrition for both women and children and includes results of a nutrition survey conducted in 2007. The table is indicative of malnutrition trends. Wasting was most frequent in Cankuzo and Rutana while high prevalence of stunting was found throughout Burundi with only five out of 16 provinces with less than 50% of stunting. The highest prevalence was found in Ngozi, Cibitoke, Mwaro, Kayanza and Muyinga. However, in most cases, differences between provinces were not statistically significant. In addition, no clear geographic patterns emerged from the analysis of the distribution of malnutrition. Larger sample sizes are needed to examine malnutrition at the provincial level.

Table 24: Regional Distribution of Malnutrition

CFSVA 2008												Nut Survey 2007		
Province	Women		Children									Children		
	n	% low BMI	WHZ			HAZ			WAZ			Oedema		
			n	< 2 S.D. (%)	< 3 S.D. (%)	n	< 2 S.D. (%)	< 3 S.D. (%)	n	< 2 S.D. (%)	< 3 S.D. (%)	n	%	
Bubanza	317	26.0	245	8.5	2.1	253	46.3	21.8	247	25.2	6.3	256	2.0	6.3 43.2 38.7
Bujumbura	243	20.5	155	6.9	4.2	160	46.2	22.9	162	22.4	8.1	178	2.4	6.8 40.6 32.0
Bururi	314	22.1	223	10.7	3.3	236	50.9	27.0	227	29.4	12.2	247	3.6	4.1 37.9 31.7
Cankuzo	211	22.8	207	18.9	7.6	225	44.9	17.0	222	26.2	13.8	256	5.4	6.6 39.6 33.0
Cibitoke	260	19.6	218	11.0	3.0	230	58.1	27.7	224	23.9	8.4	268	4.1	3.5 52.0 32.5
Gitega	274	22.8	197	3.7	0.0	201	53.2	25.9	199	23.1	6.9	233	2.7	4.7 50.2 33.3
Karusi	243	17.7	198	9.0	3.7	206	46.8	24.4	200	22.0	6.3	225	4.4	2.7 48.2 40.0
Kayanza	352	23.3	234	4.7	0.7	236	56.7	24.3	238	23.1	5.0	243	0.0	6.8 52.3 38.8
Kirundo	359	15.9	318	5.5	2.0	326	51.9	29.1	322	25.7	8.4	339	3.5	7.7 49.4 34.8
Makamba	274	17.7	231	9.3	4.9	238	49.5	26.9	234	26.9	7.1	250	4.0	3.9 30.8 13.0
Muramvya	348	22.4	192	9.4	1.6	192	50.4	22.8	194	30.2	9.3	201	0.0	3.2 37.2 28.7
Muyinga	323	13.7	260	10.4	3.0	265	56.6	30.6	272	30.5	14.6	295	4.1	6.7 56.6 45.5
Mwaro	225	31.1	132	8.4	1.2	137	57.0	26.7	132	26.5	8.4	156	4.1	2.4 42.9 39.7
Ngozi	365	23.2	217	4.7	2.5	223	61.8	29.2	236	26.1	6.2	251	2.2	4.7 46.3 35.5
Rutana	277	22.0	223	15.1	7.5	241	52.9	34.1	235	32.5	15.4	251	5.1	11.5 51.0 42.3
Ruyigi	267	27.3	190	9.3	3.9	196	52.6	34.0	193	34.5	13.1	241	7.4	7.0 47.1 44.5
Total	4652	21.1	3440	8.4	3.0	3565	52.7	27.0	3537	26.6	9.2	3890	3.4	5.6 46.0 35.2

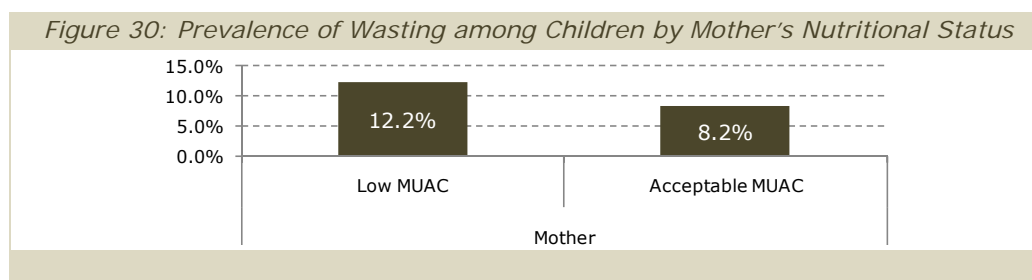
At the bivariate level only the gender of the household head and food consumption score were found to be associated with malnutrition among women (low MUAC):

- The **gender of the household head** was associated with higher risk of having a low MUAC: 28.5% of the women living in female-headed households had a low MUAC compared to 19.7% of women in male-headed households.
- Although the difference is small, the average household **food consumption score** was significantly lower among women with a low MUAC compared to women with an acceptable MUAC (F=11.3, 1 d.f., p=0.001)

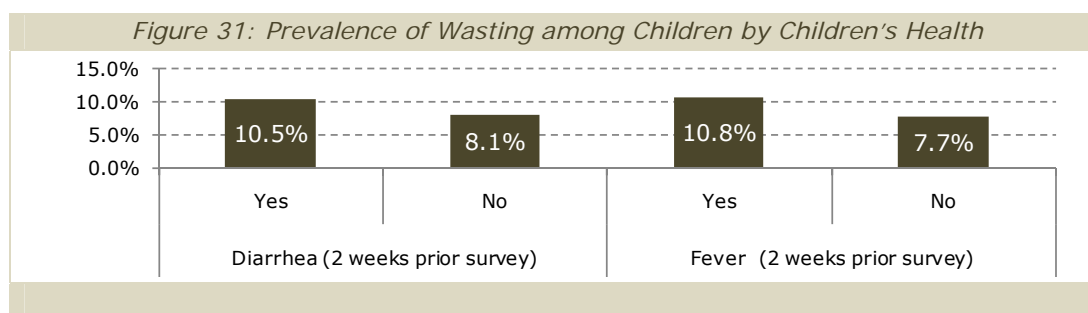
Among children, the following factors were associated with stunting and wasting:

- Children of mothers with a low MUAC are 1.5 times more likely to suffer from wasting compared to those of mothers with an acceptable MUAC. (O.R.=1.5, 95% C.I.: 1.15-2.10, p = 0.005). However, there was only a borderline significant difference (p=0.49) in prevalence of stunting

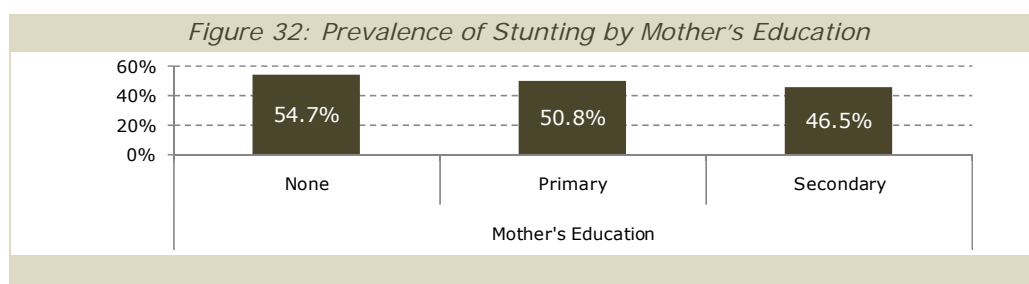
among children of mothers with a low MUAC compared to children of mothers with an acceptable MUAC.



- Of the four main **livelihood groups**, Laborers had the highest prevalence of wasting (11.3%) compared to Agro-Laborers (9.7%), Agriculturalists (8.0%) and Agro-Sellers (7.6%). However, looking at stunting, the prevalence was highest among Agro-Laborers (55.2%), followed by Agriculturalists (53.6%), Laborers (53.0%) and Agro-Sellers (49.2%). The sample size was too small to provide valid estimates for other livelihood groups.
- **Access to land** was associated with stunting: 59.3% of the children living in households with less than 0.25 ha of total land were stunted compared to 52.1% among children in households with more than 0.25ha ( $\chi^2 = 10.0$ , 1 d.f.,  $p = 0.002$ ). The difference observed here may reflect differences in livelihood strategies as well as poverty levels.
- **Poverty** as measured by the **wealth index** was found to be significantly associated with wasting among children: 6.6% of the children in the wealthiest quintile were wasted compared to 10.6% among the lowest quintile. While the CFSVA did not find significant differences in the prevalence of stunting between wealth groups, the results suggest that the household level average monthly **food expenditure**, **non-food expenditure** and **total food expenditure** was lowest for stunted children compared to others. For stunted children, the household food expenditure averaged 21,500 BIF compared to 25,500 for non-stunted children
- The 2008 CFSVA did not find significant differences in the prevalence of stunting and wasting between **food consumption** groups. However, the household level average food consumption score was significantly lower among stunted children compared to other children. There were no differences with regards to wasting. It should be noted that food consumption was computed at the household level. How the food is distributed among household members was not assessed. The results suggest that, as expected, a poor food consumption results in stunting in the long term. However, with regards to acute malnutrition (wasting), other factors such as health and hygienic practices play an important role.
- The use of unsafe **source of water** was associated with wasting: 10.9% of the children living in households using unsafe sources of water were wasted, compared to 8.2% of the children living in households using safe sources of water. The difference was statistically significant ( $p < 0.01$ )
- **Children's health** was found to be significantly associated with wasting: The prevalence of wasting was higher among children who had experienced diarrhea and children who had experienced fever over the two weeks prior to the survey compared to those who did not. Differences were statistically significant ( $p = 0.001$  for fever, and  $p = 0.016$  for diarrhea.) However, respiratory infection was not associated with wasting. Children's diarrhea, fever and respiratory infection were not associated with the prevalence of stunting. Mothers' symptoms of diarrhea, fever or chronic illnesses were not associated with wasting and stunting.



- **Education** of the mother was significantly associated with Stunting, but not wasting: Among children with a mother with no education, 54.7% were stunted, compared to 50.8% among those with a mother with primary education and 46.5% among those with a mother with secondary education. Difference between groups was significant ( $\chi^2 = 9.3$ , 3 d.f.,  $p = 0.026$ ).



Three multivariate stepwise (forward) logistic regressions were conducted to explore individual level predictors of malnutrition. The dependent variables were stunting and wasting for children, and low MUAC among women. Multivariate regression provides an adjusted measurement of the association between predictors and the dependent variables.

The multivariate analysis found that four variables were significantly associated with a low MUAC among women aged 15 to 49 years old after adjustment: The age of the woman, the gender of the household head, the food consumption score and the monthly total non food expenditure. Older women were less likely to have a low MUAC. The odds of having a low MUAC also decreased as the food consumption score increased. Perhaps counter-intuitively, the odds of having a low MUAC increased as non-food expenditure increased. The most significant factor was the gender of the head of the household: Women living in female headed households were 1.6 times more likely to have a low MUAC.

*Table 25: Factors Associated with Low MUAC (Multivariate Analysis)*

Predictor	Exp B	95% C.I.		p
		Lower	Upper	
Woman's Age	0.97	0.96	0.97	<0.001
Gender Household Head (Female)	1.6	1.31	1.95	<0.001
Food Consumption Score	0.99	0.98	0.99	<0.001
Total Monthly Non-Food Expenditure	1.01	1.01	1.01	0.001

With regards to wasting, two variables were found to be significant: the presence of diarrhea and mother's MUAC: Children of a woman with a low MUAC were 1.5 times more likely to be wasted compared to children of a woman with acceptable MUAC. Children with diarrhea were 1.3 times more likely to be wasted compared to those without. Looking at stunting, five variable were found to be significant after adjusting for other factors: the gender of the child, the age of the household head, the total food expenditure, the mother's MUAC and land access: girls were less likely to be stunted than boys; children were less likely to be stunted as the age of the household head increased; children in households with

0.25 ha of total land or less were more likely to be stunted, children were less likely to be stunted as total food expenditure increased, and children of mothers with a low MUAC were more likely to be stunted.

*Table 26: Factors Associated with Wasting and Stunting (Multivariate Analysis)*

	Predictor	Exp B	95% C.I.		p
			Lower	Upper	
<b>Wasting</b>	Diarrhea (yes)	1.33	1.01	1.74	0.039
	Mother's MUAC (low)	1.55	1.14	2.12	0.006
<b>Stunting</b>	Sex (girls)	0.86	0.75	0.99	0.038
	Age Household Head	0.99	0.98	0.99	0.019
	<0.25ha Total Land (yes)	1.24	1.02	1.50	0.029
	Total Food Expenditure	0.99	0.99	0.99	0.009
	Mother's MUAC (low)	1.25	1.03	1.53	0.028

## RISK AND VULNERABILITY CONTEXT

### RISK AND VULNERABILITY APPROACH

Household's livelihood strategies and livelihood outcomes, including food security, are influenced by the external environment in which they live. Within the external environment, critical trends (e.g. *population growth, national and international economic trends, governance and technological changes*), seasonal cycles (*of prices, production, livelihood strategies*), and shocks (*natural and man-made*) frame the vulnerability context.<sup>31</sup> Within that context, the risk to food insecurity is defined as the interaction between the probability of a given hazard of certain intensity, the vulnerability of the population to the hazard and the size of the population.

$R = H \times VUL \times POP$	with	R =	Risk to food insecurity: Probability of harmful consequence or expected losses (specifically with regards to food security)
		H =	Hazard: Probability of occurrence of a potentially damaging phenomenon within a given time period and area
		VUL =	Vulnerability of a household to the impact of a specific hazard
		POP =	Population living in the area at risk

The analysis below provides a discussion of the general vulnerability context and risk to food insecurity. However, more focused impact assessment should be conducted after potentially damaging events.

### CRITICAL TRENDS

Population and climatic trends were explored earlier in this report. The high population density, high dependency ratio and high population growth rate combined with the current structure of the economy (heavy reliance on limited natural resources such as land, low urbanization rate) contribute to the vulnerability of the population to food insecurity. The livelihood strategies adopted by most households further puts them at risk of food insecurity due to climatic events. According to a recent World Bank report,<sup>32</sup>

*Economic growth [in Burundi] has remained well below the SSA [Sub-Saharan Africa] average, and Burundi is now the third poorest country in the world. In 2005, real per capita GDP dropped to \$105, a level that had not been recorded since the mid-1960s.<sup>33</sup> If trends persist, Burundi will need 225 years to reduce its poverty by one-half.*

Economic (GDP) growth in Burundi averaged 1.7% over the 2000-2005 period, less than the regional average. Given the rapid population growth over the same period (average 2.8%), GDP growth is insufficient to improve living standards. Reliance on sustenance agriculture, lack of market-oriented infrastructure (including roads) and successive cycles of violence have hindered Burundi's economic growth.

<sup>31</sup> DFID (1999) *Sustainable Livelihoods Guidance Sheet*, Department for International Development1

<sup>32</sup> Baghdadli I, Harborne B, Rajadel T (ed.), *Breaking the Cycle: A Strategy for Conflict-sensitive Rural Growth in Burundi*, World Bank Working Paper 147 (Jan. 2008), World Bank. Unless otherwise specified, the figures discussed in this section on the macro-economic context are based on the World Bank report.

<sup>33</sup> All dollar figures are in US dollars.



Over the 2000-2005 periods, the structure of the economy (contribution to the GDP by sector) was as follow: Services: 41.7%, Agriculture: 39.2%, Industry: 19.1%. Over time, the structure shows a shift towards services: in 1970-1979, services accounted for 21.5% of the GDP and agriculture for 65.5%. The share of industries has only marginally increased over the last 30 years, from 13.1% in 1970-1979 to 19.1% in 2000-2005. Although the contribution of the service sector was higher than that of agriculture for the first time during the 200-2005 period, the population remains predominantly rural (90-95%) and dependent on its own agricultural production for its subsistence. Furthermore while the service sector indeed experienced a growth period, the figures also reflect a decline of agricultural productivity due to environmental factors (climate, erosion, loss of fertility) and periods of conflicts and insecurity.

Given the high population pressure on land and the reliance on subsistence agriculture, land tenure is an important problem in Burundi. The diminishing size of plots resulting from population growth directly impacts households' ability to produce food, but other factors must also be considered. First, customary and statutory laws are inconsistent with regards to land rights. Customary law for example grants land ownership to households that have managed or cultivated a plot of land over a certain period of time. That right is not recognized by statutory laws, resulting in conflicts over ownership. This is further complicated by the status of Burundian returnees that were given the right to retrieve their old property (although they may have been managed or cultivated by another household for a long period of time, therefore granting them the ownership according to customary laws). It should further be noted that resolution of land conflicts is often done outside of the legal system. The settlement of returnees could therefore be challenged in the future. Another aspect of land tenure is the non recognition of the right of women to inherit land. As the 2008 CFSVA suggest, female-headed households are generally poorer and more food insecure than male headed households. They also have less access to land. Yet statutory law does not prevent inheritance of family land by daughters, but customary law does. Uncertainty over land tenure results in a lack of investment in the land (e.g. to maintain soil fertility and prevent erosion) and possibly hinders access to credit where land could be used as a collateral.

Communication (transport) and energy infrastructure are major constraints to economic growth in Burundi. The poor transport system in Burundi has a direct impact on accessibility to goods and their prices. It is estimated that "transport costs represent on average 35 percent of import prices and 40 percent of export prices of agricultural products".<sup>34</sup> The recent increase in gas prices may have worsened the situation. Although the density of roads is among the highest in the sub region (294km/inhabitant), most of those roads are unpaved and difficult to access, especially during the rainy seasons. Looking at energy, despite the potential for hydropower capacity (250MW), wood and wood products (e.g. charcoal) continue to be the main source of energy for 96.7% of the households according to the results of the 2008 CFSVA. According to the World Bank only 2% of the total energy consumed comes from electricity, while 11% comes from oil (independent generators). This pattern of energy consumption has a direct impact on deforestation, which in turn results in land degradation.

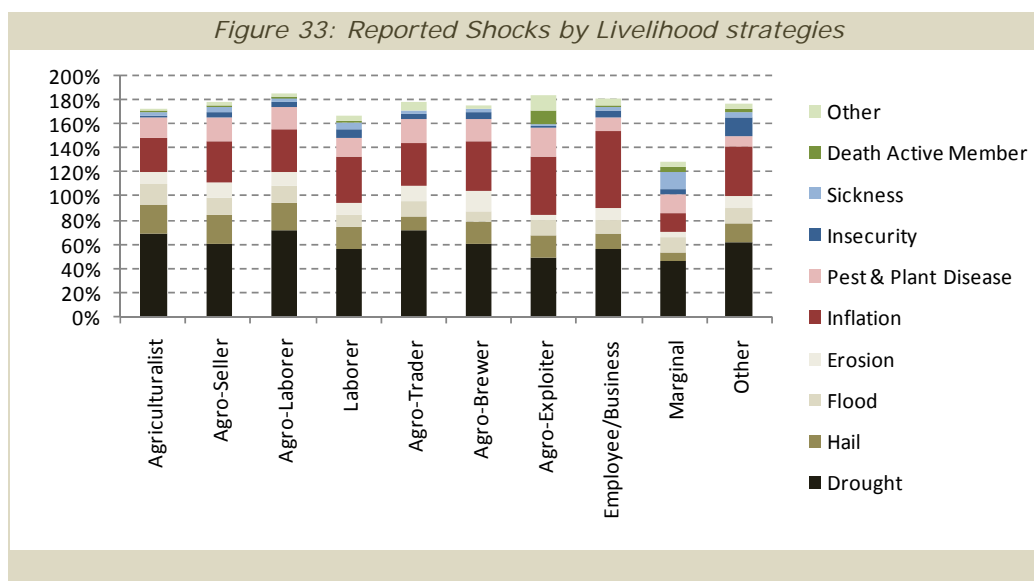
## SHOCKS

### Hazards in Burundi

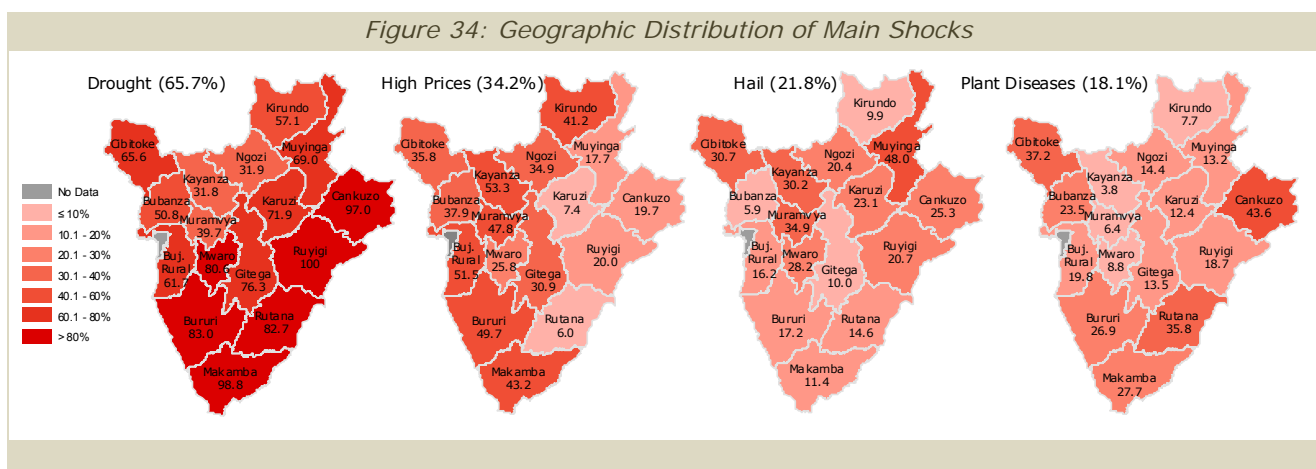
The CFSVA 2008 survey asked respondents to report shocks they experienced over the 12 month period prior to the interview. Respondents had the opportunity to provide up to three shocks. Overall, only 6.5% of the respondents provided no shocks, 32.5% reported one shock, 38.9% reported two shocks, and 22.0% reported three shocks. Looking at livelihood strategies, laborers and marginal households reported more frequently having experienced no shocks (respectively 10.8% and 22.4% of the households) compared to other livelihood groups.

<sup>34</sup> World Bank (2008) op. cited

Nationally, 65.5% of the respondents reported drought among their three main shocks. Other frequently reported shocks include inflation (high prices – 34.1%), hail (21.7%), and pests and plant diseases (18.1%). Looking at livelihood strategies, climatic shocks were generally less frequently reported among groups with less dependence on agricultural production to sustain their livelihoods: Laborers, Agro-exploiters, Employees/Business and Marginal households. Reporting price increase (inflation) was most frequent among Laborers, Agro-brewers, Agro-Exploiters and Employees-Business. Of the four largest livelihood groups, Laborers had the highest percentage of their expenditure on food. Overall, however, shocks did not appear to clearly affect some livelihood strategies rather than others. The only exception is the marginal households group, which reported least frequently exposure to shocks, but this may reflect their already very vulnerable status (e.g. low income, little access to land, low expenditure).



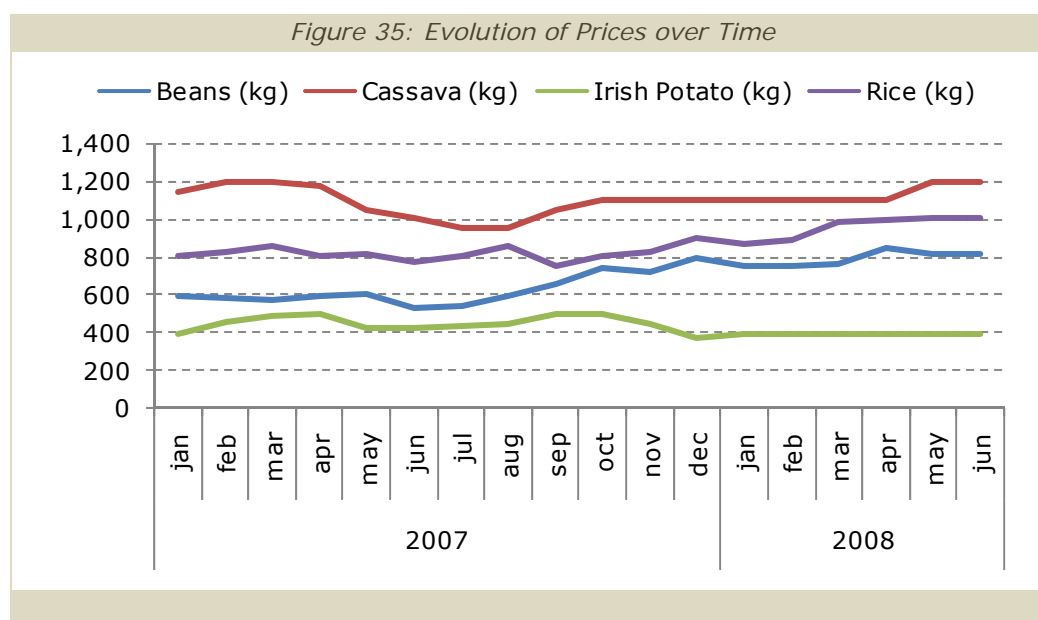
While shocks did not cluster across livelihood strategies, a clearer pattern appeared when looking at geographic aggregates for the four main shocks (see figure below). Overall, drought was most frequently reported in the East – South-East - South provinces including Cankuzo, Ruyigi, Rutana, Makamba as well as Bururi and Mwaro. High prices were most frequently reported in the West, while hail was most frequent in the North. Finally, pests and plant diseases showed less of a geographic pattern, but were nevertheless generally more frequently reported in the South.



Drought was most frequently reported during the months of March (48.3% of the households), April (38.7%) and June (76.7%). March and April should be rainy month part of the long wet season, also corresponding to the end of the planting activity for season B. A rain deficit during those months would

affect the normal development of the crops for season B which is the most important in terms of contribution to the total agricultural production. Across livelihood groups, drought affected those with a strategy most dependent on agricultural production such as the agriculturalists. Agro-laborers and agro-traders also frequently reported drought as a shock. For about all the households (>99%) who reported drought, the shock resulted in a loss of wealth (goods or income) and a loss in the capacity of the household to produce or purchase food. About half the households reported not having recovered (48.6%) from the shock.

High prices were reported as a shock by one third of the households. Seasonal cycles reflect the supply/demand market response to food availability and food production cycles. At the same time, rapid inflation had reportedly affected many households. Looking at trends over time for four food items<sup>35</sup> suggest that prices decrease over the May to August period and November-December period, corresponding to higher food availability from production of season B and A harvests, respectively. At the same time, inflation was illustrated by a 55% increase in the price of beans between June 2007 and June 2008. Price of cassava and rice increased over the same period by respectively 20% and 29% but remained about the same for Irish potato. It should be noted that these are average prices for the markets that are monitored and that differences between areas must be expected.



As outlined above, plant pests and diseases were reported throughout Burundi especially and more frequently in the South. This may be due to the concentration of agro-sellers and, to a lesser extent, agriculturalists in the region. However, further discussion suggests that the increased pressure from cassava mosaic may have affected agricultural production in those provinces. While the mosaic first appeared in the North, those provinces have benefited from the introduction of resistant/tolerant varieties of cassava that have yet to be made available in the southern provinces of Bururi, Rutana and Makamba.

Nationally, only 3.9% of the households reported insecurity among their three main shocks. However, insecurity was reported by 17.6% of the households in Bujumbura Rural and 15.0% of the households in Bubanza. Insecurity was reported throughout the year. Respondents were further asked if they had experienced problems of violence over the 12month period prior to the survey. Nationally, 15.2% of the households reported experiencing such problems. Reports were most frequent in Muramvya (33.0%) and Bujumbura Rural (31.1%). The type of problem reported was most frequently robbery (79.1%) and looting

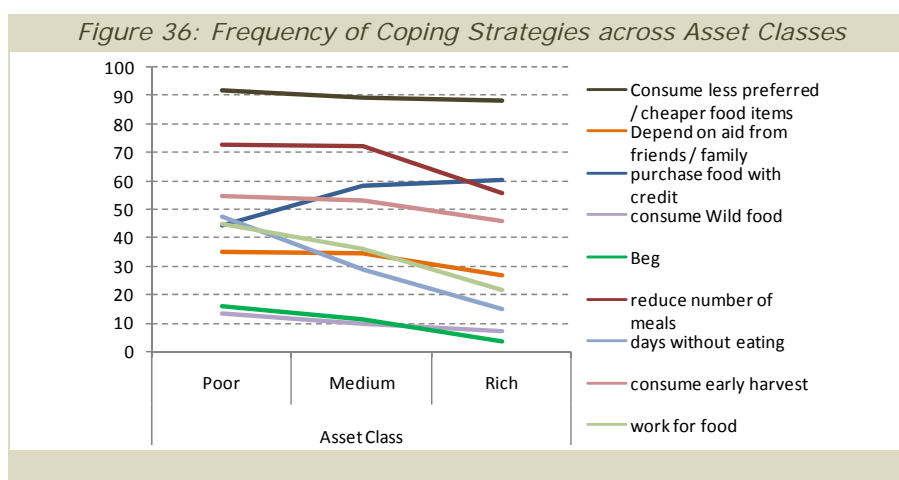
<sup>35</sup> Source FAO market monitoring- Average for all markets. The four food items were selected because data were available for all months over the Jan 2007 – June 2008 period.

(17.8%), with few reporting sexual violence (1.1%) or other unspecified violence (9.2%). Looking at livelihood strategies, insecurity was most frequently reported by laborers (6.7%), agro-brewers (5.9%) and employees (5.9%). This may be due to the geographic distribution of livelihood strategies (e.g. employees are frequent in Bujumbura Rural) rather than a specific vulnerability of those livelihood strategies to insecurity.

### Capacity to Cope and Coping Strategy Index

Households were asked about their use of different coping strategies over a 30 days period prior to the survey. Most households reported coping strategies. Over half the households reported limiting quantities at meals (88.8%), consuming less preferred/cheaper food (88.7%), reducing adults' meal size for children (65.0%), reducing the number of meals (60.3%), purchasing food with credit (58.9%), and borrowing (52.2%). Risk analyses below explore coping strategies in relation to specific shocks.

The choice of coping strategies typically reflects the household wealth and livelihood strategies. Coping strategies related to food intake often were found to be more frequent among poorer households. Compared to asset medium and asset rich households, asset poor households more frequently reported consuming less preferred food, consuming wild food, reducing the number of meals, spending days without eating or consuming early harvest. They also more frequently reported begging or working for food. Inversely, asset medium and asset rich households used credit to purchase food more frequently than asset poor. The figure below illustrates the frequency of selected coping strategies across asset ownership classes. However, not all coping strategies follow the same trend. For example, asset medium were more likely to sell assets than asset poor (likely because they have little to sell) and asset rich (i.e. they may not need to sell anything to cope).



Looking at livelihood strategies, trends are difficult to identify. However, among the four main livelihood strategy groups (agriculturalists, agro-sellers, agro-laborers, laborers), laborers were more likely to report food intake reduction as part of their coping strategies, including reducing the number of meals and spending days without eating. They also more frequently reported working for food only, depending on food aid, aid from friends and family, begging and borrowing. Inversely, agriculturalists used more frequently coping mechanisms related to their own food production, including consuming seeds and consuming early harvest.

To provide a basis for comparison over time and geographic clusters, a coping strategy index (CSI) was computed. The score is obtained by summing the frequency of each coping mechanism multiplied by a weighting factor representing the gravity associated with the coping mechanism. The weight factors are based on the weights used for the 2004 CFSVA resulting from earlier focus groups. The CSI must be interpreted in relative terms and is used for comparison purposes only. A high CSI reflects the intense use of coping mechanisms, which in turns reflects threats to the household food security.

Nationally, the CSI averaged 50, compared to 60 in 2004. Looking at livelihood strategies, the CSI was highest among laborers (67.9), marginal households (58.3%) and agro-exploiters (56.1). Geographically, the CSI was highest in Muramvya (63.5), Cankuzo (61.9), and Bubanza (61.0). Poorer households had, on average, a higher CSI. Differences across wealth quintile groups was significant ( $F=76.8$ , 4 d.f.,  $p<0.001$ ). The Average CSI also varied across gender of the household head. Female headed households had an average CSI of 54.2, compared to 49.3 among male headed households. The difference was statistically significant ( $F=19.5$ , 1 d.f.,  $p<0.001$ ).

The average CSI was further found to be significantly different across food consumption groups ( $F=94.1$ , 2d.f.,  $p<0.001$ ), with households with a poor FCS having a higher CSI (60.5) compared to households with an acceptable FCS (average CSI = 46.5). Looking at nutrition, the household level CSI was on average higher for stunted children (CSI = 59.2) compared to other children (51.1, significant:  $F=14.2$ , 1d.f.,  $p<0.001$ ). This indicates that monitoring coping strategies may be considered as an indicator of acute malnutrition and food insecurity. Wasting and Mother's low MUAC were not associated with High CSI.

Figure 37: Average CSI by Food Consumption Group and Nutritional Status



### Situation of Returnees

Assets ownership and livelihood strategies are affected by displacement. Nationally, 41.5% of the households identified themselves as returnees, regardless of the period, length and cause of displacement. When taking into account the estimated date of return, 22.0% of the households returned in or after 1998 (approximately 10 years) and 10.4% were returnees since 2003 (approximately 5 years). Looking at the livelihood strategies, returnees were more frequently laborers or agro-laborers compared to non-returnees. Inversely, they were less frequently Agriculturalists or agro-sellers. The differences in strategies possibly reflect disparities in access to land, although the CFSVA data did not find statistically significant differences.

The proportion of asset poor was larger among returnees and differences increased as the period since the resettlement shortened: Among those who returned 5 years ago or less, 34.6% were asset poor, compared to 26.0% for the rest of the population. The difference was statistically significant ( $\chi^2 = 26.5$ , 2d.f.,  $p<0.001$ ). Similarly, 24.2% of those who returned less than five years ago belong to the lowest wealth quintile compared to 19.6% among those who were never displaced or returned 5 years ago or more. However, food security (measured by the Food Consumption Score) did not differ significantly among returnees and non returnees. In fact, the proportion of households with an acceptable consumption profile was higher among returnees, but the difference was not statistically significant. This possibly reflects the targeting of returnees for food aid. Among households who returned within five years or less, 15.5% reported having at least one member that benefited from food aid compared to 10.8% among the rest of the population ( $\chi^2 = 10.1$ , 1d.f.,  $p=0.001$ ). Despite the good average FCS, since returnees adopt

vulnerable livelihood strategies (laborers) and that their asset wealth is below average, returnees remain vulnerable to food insecurity.

### Food Assistance

Nationally, 11.2% of the households reported having at least one household member that benefited from food aid over the 6 months prior to the survey. The frequency was highest in Cankuzo (31.9%), Ruyigi (24.8%) and Karusi (23.8%). Food aid was most frequently received through targeted distribution (38.8% of all the households), especially in Muramvya (100%), Musinga (71.4%), Kayanza (67.2%), Mwaro (62.6%) and Bujumbura Rural (61.9%). The second most frequently reported source of food aid was the seed protection program, reported by 27.1% of the households who received assistance. It was most frequently reported in Cankuzo (61.0%), Ruyigi (51.5%) and Bubanza (45.1%). School feeding was the source of food aid for 17.8% of the households who received assistance and was most frequently reported in Karusi (56.6%), Rutana (43.5%), Kirundo (35.2%), Makamba (21.3%) and Cankuzo (20.6%).

Although food aid was somewhat successful at targeting those with poor FCS, overall, few households received food assistance: 14.8% of the households with a poor FCS received food assistance compared to 12.0% of those with a borderline FCS and 11.5% of those with an acceptable FCS. Across livelihood groups, agriculturalists (12.5%), laborers (12.3%) and marginal households (16.6%) had the highest proportion of households who reported receiving food aid.

The CFSVA also assessed what was done with the food aid. Looking at specific items, corn (4.9%) and oil (4.0%) were more frequently resold compared to pulses (2.4%). Nevertheless, the figures suggest households seldom reported selling the food aid they received. When they did sell the aid, the reason was most frequently to purchase other food items (48.1%), to purchase non-food items (29.7%) and to pay medical or school fees (13.5%).

Respondents were further asked to identify selection criteria that should be used to identify food aid beneficiaries and to identify three priority needs. Disabled, widows(ers) and orphans were identified as the priority groups for food assistance. The priority needs were identified as food (52.9%), housing (46.4%), livestock (44.6%), agricultural production (37.8%), income generating activities (24.4%) and water and sanitation (23.8%).

## SEASONAL CYCLES

The 2008 CFSVA provides a snapshot at a given time of an otherwise dynamic and seasonal food security situation.<sup>36</sup> While a longitudinal study would better capture changes over time, the study assessed seasonal patterns for a range of variables including activities, food sale and purchase, food consumption and exposure to external shocks.

Consistent with the agricultural calendar, respondents reported a peak in agricultural and manual labor that corresponds to the planting seasons (February-March and September-October). The availability of work for laborers (who depend mainly on manual labor to sustain their livelihoods) therefore reflects the agricultural calendar.

The planting seasons (February-March and September-October) correspond to the periods where the lack of food is most frequently reported, since stocks from the previous harvest are depleted. This means that households more frequently rely on the market and credit mechanisms to purchase food during that period. Since the demand is high, prices of food items are high during the two time periods. Among the four main livelihood strategy groups, laborers are particularly vulnerable at that time. Laborers only

<sup>36</sup> For a detailed discussion, see for example P. Payne, 'Public health and functional consequences of seasonal hunger and malnutrition', in D. Sahn (ed.), *Seasonal Variability in Third World Agriculture* (Baltimore, 1989), 27-32

marginally depend on their own production to sustain their livelihoods. As a result, their stocks are rapidly depleted and their reliance on markets is important. As prices increase, their purchasing capacity becomes limited and they rely on credit and borrowing to obtain food. Even if they have access to land, laborers have to rely on manual labor to obtain cash or in-kind payment to obtain food. This in turn hinders their ability to increase their own production. Agro-laborers and to a lesser extent Agriculturalists are also vulnerable when their reserves are depleted because they generate little income, which hinders their ability to access food on the market. As a result, the level of production and ability to store and preserve food items are important components of the vulnerability of agriculturalists and agro-laborers. Agro-sellers are less vulnerable to food insecurity during the planting season because in addition to their own production, they rely on cash-crops to generate income, which in turn they can use to purchase food items on the market.

While purchases of food items is most frequent when the food availability is limited and prices are high, food sale, inversely, takes place most frequently during the harvest season B in May-June, when food is available in large quantities and prices are low. The result is that households who rely on agriculture do not maximize their profit: they sell when food is abundant and prices are low and purchase when food is scarce and prices are high. Proceeds from the sale are further used to reimburse credits (June-July-August) contracted during the months of high food expenditures and debts (February to April, September to November). While all the major livelihood groups are affected by these trends, Laborers are highly vulnerable since they most depend on the market to purchase food.

Table 27: Reported Seasonal Cycles

	January	February	March	April	May	June	July	August	September	October	November	December
Agricultural Season	Harvest Season A		Planting Season B		Harvest Season B		Planting Season A		Harvest Season A		Harvest Season A	
Labor	Peak for agricultural and manual labor						Peak for agricultural and manual labor					
Migration	Peak for migration						Peak for migration					
Trade and Expenditures					Peak for small trade activity, sale of cereals, tubers and pulses							
	Peak for purchase of cereals, tubers and pulses						Peak for purchase of cereals, tubers and pulses					
	Month of high food and total expenditures and debts						Month of high food and total expenditures and debts					
					Months for reimbursement of Debts							
Food Prices	Low Prices	High prices			Low prices			High Prices			Low prices	
Food Security	Months with food insecurity						Months with food insecurity					
Shocks							Lack of drinking water					
			Drought		Drought							
			Hail		Livestock epidemics							
	Flood											
	Erosion											
			Insecurity									



Most external shocks were reported during agricultural season B. Drought were frequently reported in March, April, and June, therefore affecting both the planting season (not enough rain for the seeds to grow) and the harvest (not enough water before maturation). Hail was somewhat unexpectedly frequently reported and mainly peaked in March. Hail was most frequent in the North-West, while drought affected the South-East, which explains that both shocks were reported over the same period of the year.

As outlined above, all the major livelihood strategy groups are vulnerable to seasonal trends, especially laborers and to a lesser extent agro-laborers and agriculturalists. Agro-sellers are likely to be least affected because of their reliance on cash-crops throughout the year. Among the smaller livelihood groups, the employees-business households and marginal households are likely to be least affected by seasonal trends because they rely less on livelihood strategies that show a seasonal patterns and either generate sufficient income to cope with market cycles (employees-business) or do not depend on the markets (Marginal Households). Other factors that influence vulnerability to seasonal trends include the agricultural production (i.e. impact on food stock availability), which in turns depends on factors such as land availability and agricultural practices. The ability to store and transform food items could potentially diminish the impact of seasonal trends, including a price stabilization and better financial return for the producers.

## CONCLUSIONS AND RECOMMENDATIONS

### FOOD SECURITY AND VULNERABILITY SUMMARY PROFILES

#### Geographic Priorities

Poverty and food insecurity prevails throughout Burundi. Although administrative aggregates may mask local dynamics and patterns that do not follow administrative divisions, administrative units were used throughout this study because they correspond to levels of decisions and levels for which aggregate statistics are systematically available. The CFSVA identified broad geographic priority areas but more work is needed to identify which communes and collines within those areas should be prioritized. Two major priority aggregates of provinces were identified as geographic priorities during the analysis of the 2008 CFSVA data:

#### 1. The North-East (Cankuzo, Karusi, Muyinga, Ngozi, and Kirundo)

##### ***34.0% of the population, 63.3% of all the food insecure***

The North-East of Burundi is typically considered to be the least food secure. The 2008 CFSVA shows high prevalence of poverty and food insecurity in the provinces of Ngozi, Karuzi, Muyinga and Cankuzo. At the same time, the province of Kirundo usually included in the region was shown to have fewer food insecure (2.2% poor FCS) and fewer asset poor (23.9%) than the national average (respectively 4.8% and 26.9%). Nevertheless, about one third of the households in the province belonged to the poorest wealth quintile (29.7%, the third highest prevalence). Possible explanations for the improvement of the situation in Kirundo include: (1) several successive better than average agricultural seasons, (2) a decrease in losses due to cassava mosaic, (3) a concentration of investment and assistance in the province, including high labor intensity projects such as road building and (4) increased trade with neighboring Rwanda and other provinces in Burundi. These factors may also explain the differences in the livelihood strategies adopted, with a shift from Agriculturalists towards more frequent Agro-Laborers. However, as the prevalence of households that belong to the poorest wealth quintile suggest, the situation remains fragile and further investment are needed to reduce structural poverty. A regional strategy must be considered for the entire region (5 provinces). As illustrated in the geographic distribution of livelihood strategy groups earlier in this report, the North-East region has a high concentration of households that adopted that strategy. The lack of diversity in livelihood strategies and overall poverty may explain the high prevalence of food insecurity in the region. About two-thirds of all the food insecure (63.3%) were found in this region.

*Table 28: North-East Region Summary Profile*

		<b>Cankuzo</b>	<b>Karusi</b>	<b>Muyinga</b>	<b>Ngozi</b>	<b>Kirundo</b>
<b>Population Size:</b>	<i>(households)</i>	35,683	73,471	110,180	124,912	126,635
<b>Sample Size:</b>	<i>(households)</i>	(291)	(295)	(351)	(384)	(356)
<b>Main Livelihood Groups:</b> <i>(Prevalence)</i>	Agriculturalists:	45.4%	53.4%	40.2%	46.1%	32.6%
	Agro-Sellers:	21.1%	6.8%	17.8%	20.3%	11.3%
	Agro-Laborers:	14.6%	19.5%	18.3%	10.9%	26.9%
	Laborers:	14.6%	9.6%	10.6%	14.1%	18.5%
<b>Poverty:</b> <i>(Prevalence)</i>	Asset Poor:	30.1%	38.6%	26.7%	26.6%	23.9%
	Lowest Wealth Quintile:	22.0%	29.7%	24.5%	17.8%	24.5%
<b>Food Security:</b> <i>(Prevalence)</i>	Poor FCS:	8.7%	10.6%	8.6%	8.2%	2.2%
	Borderline FCS:	25.4%	30.4%	22.6%	33.1%	22.8%
	Acceptable FCS:	66.0%	59.0%	68.7%	58.7%	75.0%

## 2. The North-West (Cibitoke, Bubanza and Bujumbura Rural)

**17.5% of the population, 23.5% of all the food insecure.**

This region has not typically been included as a food security priority area. However, the 2008 CFSVA found that those provinces had the highest prevalence of poverty both in terms of asset poverty and wealth index. The area, especially the provinces of Bujumbura Rural and Cibitoke also has among the highest prevalence of food insecurity (poor FCS). When talking into account the population size, Bujumbura Rural and Cibitoke alone concentrated 21% of all the food insecure in Burundi (23.5% when including Bubanza). In this region, discussion panels identified insecurity and damages resulting from the conflicts as the main underlying causes of poverty and subsequently food insecurity. In addition, the proportion of households adopting a laborers livelihood strategy is the highest for Burundi in Bubanza and Bujumbura Rural and among the five highest for Cibitoke.

Table 29: North-West Region Summary Profile

		Cibitoke	Bubanza	Bujumbura Rural
<b>Population Size:</b>	(households)	75,102	57,738	109,662
<b>Sample Size:</b>	(households)	(298)	(292)	(228)
<b>Main Livelihood Groups:</b> (Prevalence)	Agriculturalists:	31.9%	13.6%	11.5%
	Agro-Sellers:	14.0%	14.2%	11.7%
	Agro-Laborers:	20.7%	35.2%	15.1%
	Laborers:	17.9%	26.5%	32.3%
<b>Poverty:</b> (Prevalence)	Asset Poor:	33.4%	36.1%	30.0%
	Lowest Wealth Quintile:	37.8%	46.3%	28.1%
<b>Food Security:</b> (Prevalence)	Poor FCS:	7.7%	3.8%	6.0%
	Borderline FCS:	28.6%	26.5%	24.1%
	Acceptable FCS:	63.7%	69.7%	69.9%

The North-East and North-West regions together account for 51.5% of the population and 86.8% of the food insecure. However, food insecurity prevails throughout Burundi and the two following aggregates were further defined:

## 3. The Central region (Kayanza, Muramvya, Mwaro and Gitega)

**26.4% of the households, 12.2% of the food insecure**

The Central region presents characteristics intermediate to the North-West and North-East regions. Households in this area are, on average, poorer but more frequently food secure compared to households in the North-East, and they are on average wealthier and more frequently food secure than those in the North-West. Livelihood profiles are more equally distributed, with fewer agriculturalists than in the North-East and fewer Laborers than in the North-West. Agro-sellers were more frequent than in both the North West and North-East. As a result of its 'intermediate' characteristics, the central region may benefit from structural programs addressing food security, but it is not identified as a priority zone for interventions. Nevertheless, vulnerability factors prevailing in the area (e.g. high proportion of households with less than 0.25ha in Kayanza and Muramvya) point to the need to monitor the situation, especially if a poor agricultural season is forecasted.

Table 30: Central Region Summary Profile

		Kayanza	Muramvya	Mwaro	Gitega
<b>Population Size:</b>	(households)	109,421	55,109	51,445	133,398
<b>Sample Size:</b>	(households)	(348)	(300)	(300)	(382)
<b>Main Livelihood Groups:</b> (Prevalence)	Agriculturalists:	27.8%	39.2%	29.4%	35.7%
	Agro-Sellers:	22.3%	25.9%	25.0%	11.1%
	Agro-Laborers:	20.7%	16.9%	23.9%	22.2%
	Laborers:	18.8%	9.0%	8.3%	12.0%
<b>Poverty:</b> (Prevalence)	Asset Poor:	28.4%	21.8%	16.8%	26.0%
	Lowest Wealth Quintile:	27.8%	39.2%	29.4%	35.7%
<b>Food Security:</b> (Prevalence)	Poor FCS:	1.3%	2.2%	2.6%	3.7%
	Borderline FCS:	29.7%	16.0%	25.8%	18.4%
	Acceptable FCS:	69.0%	81.8%	71.7%	77.9%

#### 4. The South and South-Eastern region (Ruyigi, Rutana, Makamba, Bururi)

**18.7% of the population, 9.2% of all the food insecure.**

The South and South-Eastern region account for a somewhat limited share of all the food insecure (9.2%) and is therefore not considered to be a priority area. However, this region must be singled out for its exposure to drought. As the population depends on agricultural outputs to sustain its livelihood (i.e. direct consumption), probability of exposure to hazard and vulnerability factors result in a high risk of food insecurity. Overall, there were on average fewer households with a laborers livelihood strategy in this region (especially Makamba and Bururi) and more frequent agro-sellers compared to the North-East and North-West.

*Table 31: South and South-Eastern Region Summary Profile*

		<b>Ruyigi</b>	<b>Rutana</b>	<b>Makamba</b>	<b>Bururi</b>
<b>Population Size:</b>	(households)	65,430	52,778	56,152	84,017
<b>Sample Size:</b>	(households)	(289)	(298)	(299)	(300)
<b>Main Livelihood Groups:</b> (Prevalence)	Agriculturalists:	42.0%	28.8%	42.2%	21.9%
	Agro-Sellers:	6.7%	24.0%	23.8%	35.4%
	Agro-Laborers:	36.0%	19.2%	20.1%	22.8%
	Laborers:	7.8%	16.3%	4.5%	6.3%
<b>Poverty:</b> (Prevalence)	Asset Poor:	28.6%	22.7%	20.7%	17.9%
	Lowest Wealth Quintile:	13.7%	16.9%	15.6%	15.2%
<b>Food Security:</b> (Prevalence)	Poor FCS:	4.4%	3.1%	0.6%	1.0%
	Borderline FCS:	20.8%	16.2%	7.1%	8.8%
	Acceptable FCS:	74.9%	80.7%	92.3%	90.2%

### Livelihood Strategy Priorities

The livelihood strategies adopted by households in Burundi reflects their livelihood assets and directly impacts livelihood outcomes such as their food security status. The following four livelihood strategies were found to be most prone to and/or vulnerable to food insecurity.

#### 1. Marginal Households group

**1.2% of the population (16,000 households), 2.5% of all the food insecure**

The marginal households group is the least frequent livelihood strategy in Burundi but also the most prone to food insecurity, with 10.3% having a poor food consumption and 45.3% having a borderline food consumption. It is the only group for which poor and borderline consumption profiles accounted for over half the households. They are on average more frequently poor than any other livelihood strategy group. The average age of household head is the highest, at 68.4 years old (as much as 21 years more than the next livelihood group) and 70.3% are widow(er) (compared to 16% nationally). The literacy rate is the lowest for this group (14.5% are literate, compared to 56% nationally). In short this group is on average characterized by isolated, uneducated, elderly head of households, with the lowest average income, relying on gifts and transfers to sustain their livelihoods.

#### 2. Laborers:

**14.7% of the population (195,000 households), 29.6% of all the food insecure**

Among the four largest livelihood strategy groups, Laborers were identified as the most vulnerable. The prevalence of poverty both in terms of asset wealth and wealth index was highest among this group (48.1% of the laborers are asset poor and 40.1% belong to the lowest wealth quintile). The prevalence of food insecurity (poor FCS – 9.8%) was second only to that of marginal households (10.3%). Vulnerability factors for this group include the dependency on seasonal manual labor to sustain their livelihoods (cash and in-kind payment) and the limited access to land to produce food for their own consumption. Given the limited income, and the dependency on markets to acquire food, the share of food expenditure as a percentage of all expenditure was highest among laborers. This in turns limits the laborers households' ability to invest in livelihood assets, trapping them in a poverty cycle.

#### 3. Agro-Brewers

### **2.5% of the population (33,000 households), 5.0% of all the food insecure**

Agro-Brewers supplement the contribution of agriculture to their livelihood by brewing and wine making. Agro-Brewers have the third highest proportion of food insecure (9.6%). However, Agro-Brewers rank among the wealthiest livelihood strategy groups (2<sup>nd</sup> in terms of asset wealth and 3<sup>rd</sup> in terms of wealth index). More work is needed to identify the sources of food insecurity among this group, including a likely lack of food diversity.

## **4. Agriculturalists**

### **33.9% of the population, 31.7% of all the food insecure**

The agriculturalists were not singled out as more likely to be food insecure compared to most other groups (4.5% of the agriculturalists are food insecure). However, they are included here because of their vulnerable livelihood profile (i.e. livelihood almost exclusively dependent on agriculture, lowest average income after the marginal households). In addition, because over a third of the populations are agriculturalists, many of the food insecure (31.7%) are found in this livelihood strategy group. Specific intervention aimed at agriculturalists therefore must be considered and are explored in the next section.

The above four livelihood strategy groups account for 58.3% of the population and 68.8% of all the food insecure. They are identified as the priority livelihood groups. However, food insecure households are found among all livelihood groups and the livelihood strategy alone is not a sufficient criterion to target the food insecure. Additional vulnerability factors including poverty and access to land must be taken into account and are explored below.

## **Other Priority Factors**

In addition to the geographic location (provinces) and the livelihood strategy, the multivariate analysis identified 6 variables that were found to be significantly associated with the food security status of a household: (1) the household size, (2) the size of land owned, (3) the amount of food stocks available to the households (in months), (4) the monthly food expenditures (log), (5) the monthly non-food expenditures, and (6) the asset wealth. In addition, (7) gender was identified as a key vulnerability factor because of its correlation with food security at the bivariate level and its association with other variables associated with food security at the multivariate level (i.e. household size, size of land owned, marginal households).

For the purpose of the recommendations, the following four criteria will be used to define the vulnerability factors:

- Household size: Households with two or less members
- Size of land owned: households who own 0.25 ha or less
- Wealth: because there was a strong association between asset wealth and food and non-food expenditures per capita, only asset wealth will be considered as an additional priority factor. Specifically, households that were identified as asset poor will be considered among the vulnerable households.
- The gender of the household head: female headed households are more likely to be vulnerable to food insecurity.

The number of months with food stocks will not be included in the discussion because of the dynamic nature of the indicator and the difficulty to obtain reliable data on this item.

## **Population Estimates for the Highly Food Insecure and Vulnerable Groups**

The following table summarizes population estimates (in thousands of households) according to different food security and vulnerability targeting criteria based on the location, livelihood strategy and additional priority factors.

Table 32: Population Estimates for Food Insecure and Vulnerable Groups - *in thousands of households*

	TOTAL ***	North-East					North West			Central				South – South-East			
		Cankuzo	Karusi	Muyinga	Ngozi	Kirundo	Cibitoke	Bubanza	Bujumbura Rural	Kayanza	Muramvya	Mwaro	Gitega	Ruyigi	Rutana	Makamba	Bururi
Total Number of Households	1,321.1	35.7	73.5	110.2	124.9	126.6	75.1	57.7	109.7	109.4	55.1	51.4	133.4	84.0	56.1	52.8	65.4
Total Number of Food Insecure Households (Chronic)*	63.9	3.1	7.8	9.5	10.2	2.8	5.8	2.2	6.6	1.4	1.2	1.3	4.9	2.9	1.6	0.3	0.9
<i>Among Food Insecure:</i>																	
Marginal households	1.3	--	0.5	--	--	--	0.4	--	--	--	--	--	0.4	--	--	--	0.0
Laborers	19.3	1.2	1.5	0.9	3.2	1.7	1.3	0.9	3.2	0.3	0.9	0.3	1.4	1.4	0.8	--	0.0
Agro-Brewers	2.9	--	--	1.7	0.8	--	--	--	--	--	--	--	0.7	--	0.0	--	0.0
Agriculturalists	20.3	1.7	3.8	4.0	4.5	0.6	0.6	0.3	1.3	0.6	0.0	0.3	1.8	0.2	0.3	--	0.0
Asset Poor	30.9	1.2	3.3	6.2	5.1	0.8	1.8	0.4	2.4	0.8	0.3	1.1	3.0	2.1	1.4	--	0.6
Own ≤0.25 ha	37.7	1.2	4.9	5.9	7.2	2.1	3.3	1.7	2.1	0.9	0.8	0.7	2.1	2.4	1.0	0.2	0.0
HH size ≤2	15.1	0.8	1.5	3.0	0.8	0.6	1.3	0.0	3.4	0.0	0.3	0.3	2.0	0.7	0.2	0.0	0.0
Female Headed	19.0	0.8	2.0	2.2	2.6	0.9	3.3	0.4	1.1	0.6	0.9	0.3	2.0	0.7	0.5	0.2	0.3
Agriculturalists AND Own ≤0.25 ha	14.2	0.6	2.6	2.8	3.0	0.6	0.8	--	0.7	0.6	--	0.3	1.0	0.2	0.3	--	0.0
Total Number of Vulnerable Households **	302.7	9.1	22.3	24.9	41.3	28.9	21.5	15.3	26.4	32.5	8.8	13.3	24.6	13.6	8.5	4.0	7.4
<i>Among Vulnerable:</i>																	
Marginal households	6.9	--	0.5	0.3	1.0	0.3	0.7	0.4	0.5	1.3	--	0.8	1.0	--	0.0	--	0.3
Laborers	69.0	1.5	2.0	3.1	6.9	8.2	5.7	5.8	11.9	12.1	0.9	1.4	4.9	1.9	2.1	0.9	0.3
Agro-Brewers	4.8	--	--	1.1	1.5	--	0.5	--	0.3	0.5	--	0.3	--	0.2	0.3	--	--
Agriculturalists	93.6	4.2	10.2	10.4	17.8	8.5	7.2	2.9	4.1	4.1	2.6	4.5	9.2	2.8	1.8	1.6	0.8
Asset Poor	174.6	4.2	12.0	14.7	23.3	17.5	11.5	7.5	14.7	16.4	4.8	8.9	15.9	9.8	5.7	2.8	4.8
Own ≤0.25 ha	136.8	3.1	8.0	16.2	24.4	16.3	8.4	10.1	5.4	18.9	3.8	3.9	7.6	4.6	4.4	1.8	1.2
HH size ≤2	40.6	1.2	4.0	3.9	7.9	2.0	1.6	2.5	1.9	5.2	0.9	2.9	4.5	1.4	0.8	0.0	0.5
Female Headed	69.1	2.1	5.0	4.7	11.0	5.5	3.2	2.5	6.3	10.4	2.3	4.6	7.0	1.8	2.0	0.5	0.5
Agriculturalists AND Own ≤0.25 ha	43.0	0.8	3.9	7.8	11.1	4.0	2.4	2.5	0.3	3.4	0.9	0.9	1.7	0.9	1.1	0.9	0.3

\* The 2008 CFSVA was conducted during a favorable harvest period. As a result, all the households identified as food insecure (poor FCS) during this period can be considered as chronically food insecure.

\*\* Households with a borderline food consumption score

\*\*\* Minor differences may appear between the total column and the sum of the provinces due to rounding and weighting factor.

## RECOMMENDATIONS AND INTERVENTIONS

The objective of the 2008 Burundi CFSVA was to answer five questions: (1) Who are the people at risk of food insecurity? (2) How many are they? (3) Where do they live? (4) Why are they food insecure? and (5) How can food assistance and other interventions make a difference in reducing poverty, hunger and supporting livelihoods?

The results show that food insecurity prevails throughout Burundi. Four broad regions were defined based on common characteristics, with the North-East and North-West region singled out as the priority areas for food security interventions. The CFSVA provides results by province, however, food insecurity does not follow administrative borders and while the CFSVA allows identifying the broad geographic priority areas, more work is needed to identify which communes and collines within those areas should be prioritized. The analysis further shows that vulnerability to food insecurity has multiple causes. Chief among them are the livelihood strategies adopted by the households, which in turn reflect in part the livelihood assets at their disposal, such as the limited availability of land. Isolated households (2 or less household members) and female headed-households were singled out for their vulnerability. In addition, poverty was strongly associated with food security. Quantitative estimates for the prevalence of food insecurity and associated factors were discussed and ultimately resulted in the above table providing population estimates for food insecure and vulnerable groups.

The last question must now be addressed: What, if anything, can be done to make a difference in reducing poverty, hunger and supporting livelihoods? Food and non-food interventions, as well as the timing of interventions must be explored. Because resources are typically limited, interventions should be targeted and address characteristics of specific vulnerable groups or households within those groups. What follows are a set of recommendations organized by specific target groups, some broad (e.g. geographic targeting) and some narrow (sub-group with specific livelihood profiles).

### ***Recommendations:***

Based on the findings and priorities, the following recommendations are made:

#### **1. Include food security-centered programs in national poverty reduction strategies:**

##### ***Target: National/Policy level***

Addressing poverty and food insecurity in Burundi within a sustainable human development framework is a challenge that will require a broad multi-sector approach. Investments are needed in infrastructures, in agricultural productivity, in the service sector, including education and health, etc. Broad poverty reduction strategies must therefore be integrated with food security-centered programs.

#### **2. Integrate food security and health programs in a national nutrition policy**

##### ***Target: National/Policy level***

The 2008 CFSVA found that food consumption score had an impact on women's nutritional status. Their nutritional status, in turn, had an impact on children stunting and wasting. At the same time, health conditions such as diarrhea were found to be associated with nutritional status, especially acute malnutrition (wasting). A combined approach towards food security and improvement in health and sanitation services is needed to tackle malnutrition.

#### **3. Further develop food security monitoring and intervention monitoring and evaluation:**

##### ***Target: National/Policy level***

- Support the development of the National Food Security Monitoring System. However, the type of data monitored need to reflect regional differences. In the South-South-Eastern region, focus should be put on drought and drought related indicators. In the North-West, poverty and food security indicators must be monitored, including food prices. Households in this area are

among the poorest which reduces their ability to cope with limited availability or access to food. In the North-East, food availability, prices and trade of specific food commodities must be assessed. Food security monitoring should be centered on the lean seasons (February-March and September-October).

- Integrate impact evaluation in food security interventions, especially interventions that potentially lead to major changes in livelihood strategies to move them away from vulnerability (laborers and agriculturalists) such as promotion of cash-crops and interventions aimed at increasing trade and market exchanges.

#### 4. **Support the establishment of an institutional social support system:**

##### ***Target: Marginal household group***

Households with a marginal household group depend heavily on transfers to sustain their livelihoods. They are typically poor households, isolated with a single or two elderly individual(s). Those households are in need of food assistance on such a permanent basis that an exit strategy cannot be considered. Only Government, local networks and organizations have to provide long term support to those households.

#### 5. **Stabilize supply and market prices, monetize rural areas:**

##### ***Target: Laborers, All livelihood groups, North-East, North-West***

Laborers heavily depend on market purchase to sustain their livelihood. Food commodities represent over three-quarter of their total expenditures. Interventions that have the potential to reduce and stabilize market prices are likely to benefit laborers. In addition, all livelihood groups are likely to benefit from such interventions. In terms of geographic targeting, the North-West and North-East areas should be considered as a priority. The following interventions will contribute to stabilize market prices and monetize rural areas:

- Invest in storage and transformation: As outlined by the 2008 CFSVA, supply and demand follow seasonal cycles. Just after the harvest, households sell what they cannot consume when demand and prices are low, therefore generating limited income, often used to reimburse credits contracted when stocks are exhausted (February-March, October-September) and demand and prices of food are high. Better storage conditions will allow stabilizing the demand and supply on the market, therefore stabilizing prices. Transformation in products with longer shelf-life and/or better conservation characteristics will similarly contribute to stabilizing supplies over time.
- Invest in transportation infrastructure: poor transportation limits households' access to markets and more importantly the supply of food items beyond the local level. The free-flow of goods and controlled cost of transportation will allow stabilizing market supplies and hence prices of food items.

Mechanisms to support those interventions include: direct financing of infrastructure development, food for work/food for assets and cash for work. Households are in need of cash to purchase food items, especially during the February-March and September-October period. However, this is also the period when agricultural labor is at its peak. Households also need money during the June to August period to reimburse debts. Cash for work could be timed to provide work opportunities when agricultural work is at its lowest (June to August). Since the supply of food is high during that period, food-for-work would be inappropriate. Cash for work and food for work programs may take place during the peak of agricultural work (i.e. to provide a better paid alternative for laborers and decrease reliance on market purchase of high-priced food items). However, the impact on the availability of labor force for agricultural work must be monitored. In addition to interventions to develop infrastructures, the following should be considered:

##### **Market Intervention**

- Price cycles indicate that demand and prices peak during the lean season (February-March and September-October). Direct distribution or other food inputs will contribute to bring prices



down by increasing the supply. However, an alternative and possibly less disruptive approach in a market approach is to adopt a food-aid for markets approach, selling food-aid to increase food supply and drive food prices down.

- Building on the food supply cycle, aid agencies may increase demand for food items and subsequently food prices by purchasing food (to be used as food aid) locally during the June to August period.

## 6. Increase agricultural output

### **Target: Agriculturalists**

Of all factors with the potential to increase agricultural productivity, the availability of adapted and improved seeds and other inputs, including fertilizers should be prioritized. The 2008 CFSVA data suggest that for many crops, market already play an important role to supply seeds. Seed fairs and private (for-profit) seed distribution networks must be promoted. In addition, agriculture extension officers must promote the use of sustainable practices to control erosion and loss of fertility within a sustainable agriculture model. Model gardens and demonstration plots may be useful. Such programs must be developed locally to address specific local conditions.

## 7. Develop vocational skills and capacities

### **Target: Laborers, Vulnerable Agriculturalists (e.g. limited access to land)**

Laborers typically have little access to land and depend on manual labor to sustain their livelihoods. Unskilled agricultural labor wages are low which results in limited income for laborers. By developing skills and capacities, laborers will become more specialized worker which in turns can generate higher income. Agriculturalists who have limited access to land similarly need to develop alternative livelihood strategies to supplement their own agricultural production. Such additional strategies could include skill and unskilled labor. Interventions to consider include: vocational training, Food-for-Training, investment in adult training programs and school implementation.

## 8. Food Aid Distribution

### **Target: Priority livelihood groups with additional vulnerability factors**

Aside from specific target groups including refugees and households with a marginal household group, the need for food assistance in Burundi depends upon the external environment, especially the agricultural conditions and harvested quantities. Contingencies for emergency food distribution should be planed for and implemented upon recommendations by an ongoing food security monitoring system. Food assistance should target the lean seasons.

With regards to returnees, the CFSVSA did not find that returnees were more likely to be food insecure compared to non-returnees. However, since returnees were more frequent beneficiaries of food assistance, it is possible that without that assistance, their situation would deteriorate. The results indicate that recent returnees (arrivals with in the last 5 years) often sell their labor (laborers livelihood strategy) and are more frequently poor than non-returnees. As a result, food assistance to recent returnees should continue, but a more specific study is needed to evaluate the scope and impact of such interventions.

## 9. Invest in export-oriented markets

### **Target: North-East**

The North-East region is strategically placed at the border of Rwanda (source of supply to the Kigali market) and Tanzania which could provide market opportunities for goods exported from Burundi. Trade with Rwanda has been identified as a possible causal factor for the rapid improvement of the food security situation in the border province of Kirundo. Measures to be considered include trade agreements, investment in infrastructure (see above) and support to private initiatives.