REPORT

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BURUNDI

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Table of Contents

Executive Summary **1**

Part I - Background and Secondary data **5**

Section 1.1 - Brief history of Burundi 5

Section 1.2 - Current economic and social conditions 5

Section 1.3 - Food security, vulnerability, and related factors 5

Part II – Country-wide food security and vulnerability survey **8**

Section 2.1 – Background and objectives 8

Section 2.2 - Methodology 8

Part III – Community and Household results **10**

Section 3.1 - Community and household demographics 10

Section 3.2 - Migration/displacement 10

Section 3.3 – Transport 11

Section 3.4 - Housing 11

Section 3.5 - Lighting, water, and sanitation 11

Section 3.6 - Education 12

Section 3.7 – Community health and health care 12

Section 3.8 – Household and livestock assets 12

Section 3.9 – Land ownership and agricultural production 13

Section 3.10 - Market access and prices 15

Section 3.11 - Household income 16

Section 3.12 - Expenditures 18

Section 3.13 – Food production, required food consumption, and income 18

Section 3.14 - Food consumption 19

Section 3.15 - Household shocks and coping strategies 21

Section 3.16 - Coping Strategies Index 26

Section 3.17 - Maternal and child health and nutrition 27

Part IV – Program participation and perceptions **29**

Section 4.1 – Program participation 29

Section 4.2 - Food aid sales 29

Section 4.3 - Perceptions of aid 29

Part V – Household food security profiling **30**

Section 5.1 - Chronically food insecure households- Group A 31

Section 5.2 – Households vulnerable to food insecurity- Groups B, C, D 34

Section 5.3 - Households with better food security- Group E 39

Section 5.4 – Most food secure households- Group F 40

Section 5.5 – Summary tables and maps of food security groups 43

Part VI – Conclusions and recommendations **46**

Annex I - Kabezi, Mutambu, and Muhuta communes in Bujumbura Rural **50**

Annex II – Additional tables **52**

Annex III – Additional graphs **57**

Executive Summary

Despite Burundi's abundance of natural resources and productive land, there are still people who are not producing enough food to eat or who cannot access adequate amounts of food through purchases. Utilization of food is also a problem as indicated by high levels of child malnutrition, particularly chronic malnutrition (stunting), throughout the country.

In July and August 2004, WFP Burundi hired more than 40 survey enumerators to go to all provinces (except *Bujumbura Marie*) and all communes in the country. In four weeks, they managed to interview key informants from 16 provinces and 430 *sous collines* and to conduct nearly 4,300 household interviews. They also weighed and measured over 2,000 young children in those households.

Household food security profiling

From the household survey data, six household food security profiles were created using multivariate analysis techniques, taking into account the inter and intra-variable relationships. The variables used in the analysis included the frequency of consumption of staple and non-staple foods, the source of the foods, the share of the household expenditures on food, and the share of expenditure on individual food items. The analysis results in the creation of homogeneous food security/food consumption groups. The six profiles are:

Group A –Chronically food insecure households

- These households represent 16% of the total sample.
- Are characterized by poor dietary diversity, just managing to eat a staple starch food item 7 days a week. They consume pulses about 2 days a week and oil only once per week.
- They have the highest share of total monthly expenditure on food of all groups (51%), which is mostly spent on pulses, manioc, rice, and potatoes. This group also commonly relies on food gifts as a source of food.
- The main sources of income are sale of cash crops, temporary work, and manual labor.
- The heads of household have the lowest level of literacy in the sample (40%).
- One-quarter of the households are headed by women - the highest in the sample.
- As a response to shocks, this group is the most likely to modify eating habits or to work for food.

Group B - Vulnerable to food insecurity

- These households represent 19% of the total sample.
- They eat pulses frequently (7 days/week), and manioc 3 to 4 times per week.
- Food purchases make up 47% of total monthly expenditure.
- Main sources of income are the sale of cash crops and agricultural products, beer brewing, and manual labor.
- Half the household heads are literate.
- About 18% of the households are headed by women

Group C - Vulnerable to food insecurity

- They represent 32% of the sample.
- These households exhibit a frequent consumption of starchy staples, either a combination of tubers and plantains, or a combination of corn and rice. They consume oil 3 - 6 times days per week, and pulses 5 to 6 times per week.
- The main source of in come is the sale of cash crops, followed by temporary work, manual labor, the sale of agricultural products, and beer brewing.
- Forty-seven percent of the household heads are literate.
- 16% of households are headed by women

Group D - Vulnerable to food insecurity

- These households represent 16% of the total sample
- They eat manioc 4-5 days per week, and tubers 3 to 4 days per week, and pulses 4 to 5 days per week. They have the most frequent consumption of leaves/vegetables of all the groups, an average of 5 days per week.
- 50% of monthly expenditure is for food.

- The main sources of income are the sale of cash crops, manual labor, temporary work, small commerce, and the sale of agricultural products.
- 46% of the household heads are literate
- 21% of households are headed by women.

Group E – Less vulnerable to food insecurity

- This group represents 11% of the total sample
- The diet is based on a frequent (5-6 days per week) consumption of manioc, pulses, and fish, as well as daily consumption of oil.
- Forty-four percent of monthly expenditures are for food, with an increased amount going to meat, poultry, and fish.
- The main sources of income include small commerce and the sale of cash crops, temporary work and manual labor.
- More than half (53%) of household heads are literate
- 17% of households are female headed

Group F – Food secure households

- Group E represents 5% of households in the sample
- They have the most diversified consumption patterns of all groups, with a combination of starchy staples, including manioc (4 days per week), both pulses and oil consumed 6 days per week, fish and meat 3 days per week. Leaves and vegetables are eaten 2 times per week.
- Forty-six percent of monthly expenditures go towards food. They have the highest percent of expenditures going towards meat and fish.
- Main sources of income include the sale of cash crops, salaried work, small commerce, and the sale of agricultural products
- In response to shocks, these households are the most likely to rely on savings/investments, or on modifications of expenditures.
- Highest percentage of household heads (62%) are literate.
- Lowest percentage of households (6%) headed by women.

Household and community results

Household demographics

- 90% of sous-collines have less than 350 households
- Average household size is 5.6
- Children under five years of age are found in 59% of households.
- 18% of households are female headed
- One-tenth of households have a physically or mentally handicapped member

Migration and displacement

- One-fifth of households have a member/members that had been displaced in the past 2 years
- Of the households experiencing displacement, 71% report insecurity as the main reason, and 10% cited employment
- More than 40% of households experiencing displacement moved within the commune of origin while 11% left the country.

Transport

- One-quarter of communities have public transport within the community
- Transport is found within the community or less than 1 hour away for 45% of the communities.

Housing

- Most (94%) of households own their home
- There are an average of 1.7 people per room
- The most common wall construction material is earthen bricks (56%) followed by mud walls (36%)
- Roofing is mostly straw (42%), corrugated metal (31%), or tiles (26%)

Lighting, water, sanitation

- Almost half of households use small oil lamps as the main source of lighting, and 35% use firewood

- More than 90% of households use wood as the main cooking fuel
- 90% of households use a traditional pit latrine
- Nearly 20% of households use drinking water from an unsafe source
- More than 60% of households access drinking water in less than ½ hour

Education

- Almost half the heads of household are literate (54% of males, 21% of females)
- 70% of mothers report having had no education, 12% have completed primary school or more
- Half the children between 5 and 15 years old attend primary school
- 72% of sous-collines in the sample report having a primary school either in the community, or less than ½ hour away

Community health and health care

- Almost half of sous-collines in the sample are less than 1 hour from the nearest health center; 5% are more than 3 hours away.
- In 95% of sous collines, key informants report having to pay for health care; in 75% they say that costs prevents access for many members of the community
- Malaria is the most commonly reported health problem in communities, followed by intestinal parasites, respiratory infections, and general malnutrition.

Asset and livestock ownership

- Farming tools, such as hoes and machetes, are the most commonly owned productive assets.
- 30% of households own a radio
- The most commonly owned livestock are goats (35% of households) and poultry (27%)

Agriculture (land ownership and production)

- Only 6% of households have no cultivated land (rented or owned)
- The most commonly cultivated crop is beans (89% of households), followed by banana (72%), sweet potatoes (67%), and manioc (61%)
- Nearly 40% of households report having purchased seeds for primary cereal crop cultivation over the last year, 32% used own stock. For beans, 61% of households purchased seeds, and 27% used their stock.
- The most common cash crops include coffee (36% of households), beer plantain (42%), and manioc (22%).

Market access and prices

- About half the communities have access to a market less than 1 hour away or in their own communities
- Just over 50% of communities report a disruption in market supply at some time in the year, usually in February, March or April, as well as in August through November.
- The prices of most staple foods in the markets are reported to have risen in the 3 months prior to the survey.

Household income

- Over 30% of households report only one income source - mostly manual labor, temporary work, or sale of cash crops.
- Around 20% of households have 3 or 4 income sources
- Community key informants report that about 90% of households rely on agriculture or agriculture and livestock as their main livelihood

Expenditures

- For the entire sample, 46% of monthly expenditures share is for food purchases, and the rest to non-food
- Debt repayment is the 2nd largest expenditure share - 14% of total expenditures
- Other important monthly expenditures include tobacco &alcohol (8%), transport (6%), and health (5%)

Executive Summary

Food consumption

- The most frequently consumed foods are pulses, oil, manioc, sweet potatoes/other tubers. Other commonly eaten foods include manioc leaves, fish, vegetables, corn, and rice. Dairy, bread, sorghum, wheat, poultry, and meat are infrequently consumed
- Using rough estimates from the 7-day dietary recall on quantity of food eaten, the mean per capita kilocalorie consumption in rural Burundi is 1945 kcal/capita/day

Shocks and coping strategies

- The most common covariate shock experienced by households in the past year is drought (68%), followed by plant insects/disease (26%), hail (21%), and flooding (16%)
- Seven percent of households reported physical insecurity as a covariate shock in the past year, but this was more frequently cited in particular areas of the country
- In response to drought, hail, and plant insects/disease, most households reduce the quality or quantity of their diet, rely on temporary work, or reduce expenditures as the main coping strategy.
- The most common idiosyncratic shock is the sickness/accident of a productive member of the household (26% of households), followed by stolen crops/livestock (11%).
- Common coping strategies in response to the sickness/accident of a productive household member include loans from family/friends, diet modification, and temporary work. In response to stolen crops/livestock, the most frequent coping strategies are diet modification, decreasing expenditures, early sale of crops, and loans from family and friends.

Coping strategies index

- Using information on the recent use of coping strategies to meet households' food needs, a composite score was calculated in order to make relative comparisons between groups, as well as to provide a baseline against which to measure change in future assessments
- The mean composite score for the sample is 60, ranging from 47 to 74 between provinces

Maternal and child health and nutrition

- Of the children 0-59 months in the sample, 36% were moderately or severely underweight, 52% were moderately or severely stunted, and 7% were moderately or severely wasted. The sample was not designed to be statistically representative. However, these results compare closely with the prevalence found in the 2000 MICS.
- No significant differences in prevalence of stunting, wasting, or underweight were found between boys and girls.
- More than 90% of women had received antenatal care during their last pregnancy, but only 20% of women had 4 or more visits.

Part I - Background and secondary data

Section 1.1 - Brief history of Burundi

Before gaining independence in 1962, Burundi was a colony of Germany, and later Belgium. Since that time, the country has undergone a series of political changes and conflicts. These conflicts arose out of tensions between the main ethnic groups, the Hutus and the Tutsis.

In 1994, after the death of President Melchior Ndadaye in a coup attempt, and the subsequent death of his successor, President Cyprien Ntaryamira, who died in a plane crash after his aircraft came under fire over Kigali, and following the ethnic tension spawned genocide in Rwanda, Burundi entered into a period of sustained political and armed conflict.

In 2000, the Arusha accords were signed under the mediation of Nelson Mandela, providing a framework for political reconciliation. The transitional government was put in place on November 2001. A cease-fire was signed by three of the four main rebel groups in December 2002. Although the cease-fire has been interrupted with relapses of violence, general elections are scheduled for November 2004.

Section 1.2 - Current economic and social conditions

Estimates of the current population size vary, putting the total population at around 7,424,120 (UPP). The current population growth is 2.2%, with a birth rate of 39.7/1,000 population, and a death rate of 17.6/1,000. Infant mortality is approximately 70.4 deaths/1,000 live births. Life expectancy is about 43 years (CIA World Factbook 2004). The total fertility rate is 5.9 children/woman, and maternal mortality is 1,000/10,000 live births. Ten percent of the population is urbanized.

The main ethnic groups in the country include the Hutu (85%), the Tutsi (14%), and the Twa (1%). Around 70% of the population is Christian, primarily Catholic while 23% follow traditional beliefs, and 10% are Muslim. The official languages are Kirundi and French. Swahili is also commonly spoken in Bujumbura and along Lake Tanganyika (CIA World Factbook 2004).

According to the World Bank, it is estimated that over 300,000 people lost their lives and 1.2 million have been displaced from their homes due to the conflict, and an estimated 15% of children have been orphaned.

The conflict has had a devastating effect on the economic situation of Burundi. The gross domestic product has fallen 25% in the last 5 years while the GDP per capita fell from $180 in 1993 to $110 in 2003. The majority of infrastructure in the country was either destroyed, or ceased to be maintained. The road network has suffered. Additionally, about three-quarters of district health centers have been destroyed (World Bank). However, since 2000, a Government implemented stabilization program has brought about small increases in GDP. As of 2003, about 68% of the population survives on less than $1 per day, as compared to 40% in 1993, before the start of the conflict.

In Burundi, the mortality rate for children under five years of age is 190, the 14th highest among all countries of the world, according to the 2004 State of the World's Children document from UNICEF.

Educational indicators are also poor. Adult literacy in 2000 was estimated at 48 percent - 56% of men, and 40% of women. The 2000 MICS (Multiple Indicator Cluster Survey) indicates that 47% of school age children are attending primary school (51% for boys, 44% for girls), with the lowest levels found in the northern provinces.

Section 1.3 - Food security, vulnerability, and related factors

Burundi is a small but highly populated country, which places a strong competition on access to land. Rural livelihoods are closely tied to agriculture, which is not only a source of food for most households, but also a source of revenue, both in food sales and in the creation of labor opportunities. Any disruption to agriculture production thus could have

multiple impacts on rural food security, as it affects both production for consumption as well as cash income. Burundi has three main agricultural seasons, often referred to as A, B, and C.

In 2004, despite small increases in the A and B seasons (2% and 1%, respectively) over 2003, and with production up 3% as compared to the pre-crisis years of 1988 to 2003, the 2004B Crop and Food Supply Assessment Mission predicts a national deficit of 199,000 metric tons of cereal equivalents in the country for 2004-2005 agricultural year.

In recent year, the manioc mosaic virus has had a particular impact on agricultural production in Burundi. Manioc is estimated to represent 70% of food consumption for the households most vulnerable to food insecurity. It is most commonly grown in *Gitega*, *Cibitoke*, *Bujumbura Rural*, *Makamba*, *Muyinga*, and *Kirundo*. Beginning in 2002, a severe form of the manioc mosaic virus was identified in *Muyinga* and *Kirundo*. Although manioc mosaic virus has been a problem in east Africa for more than a decade, this severe form hit Uganda in the 1990's, causing a 60% loss of production. As the virus spreads from the northern provinces to the south, manioc production in the entire country is under great threat. (FAO/WFP Burundi Crop and Food Supply Assessment Mission, Season 2004A)

According to the Season 2004B CFSAM, market food prices in Burundi have increased greatly in the past year. Manioc flour, in particular, has increased 67% in price from June 2003 to June 2004. The price of beans has increased 32%, rice 23%, and sweet potato 13 percent. These increases in market prices are attributed to low food reserves at the household level, the increase in the price of fuel and transport, and the strong demand for food both within and outside the country. The highest prices were found in *Ruyigi*, *Cankuzo*, *Makamba*, and *Cibitoke*.

When considering nutritional outcome indicators, the food security and health situation appears equally severe. The 2000 MICS was the most recent national survey measuring the nutritional status of children. It found that 45.1% of children 6 to 59 months suffer from moderate or severe underweight, 54.9% from moderate or severe stunting, and 8.1% moderate or severe wasting. The survey showed no difference in malnutrition between girls and boys. The highest levels of malnutrition were found in the center and center north of the country; *Karusi*, *Muramvya*, *Muyinga*, *Mwaro*, and *Ruyigi* had underweight prevalences above 50 percent. *Bujumbura Rural*, *Gitega*, *Karusi*, *Kayanza*, *Kirundo*, *Muramvya*, *Muyinga*, *Ngozi*, *Mwaro*, *Ruyigi*, and *Rutana* had elevated levels of stunting.

Recent nutritional surveys found the main causes of malnutrition in children less than 5 years of age to be insufficient and/or inadequate food due to household food insecurity, high incidence of sicknesses such as malaria and diarrhea, inappropriate weaning and feeding practices, extreme poverty, HIV/AIDS and tuberculosis.

Micronutrient malnutrition is closely linked to diet as well as health. Insufficient diet, either in quantity or in quality, can lead to many micronutrient deficiencies, as can poor health. There is little information on vitamin A deficiency in the country. However, according to the MICS 2000, 38% of children between 6 and 59 months had received a single dose of vitamin A during the previous 6 months while only 15.9% of post partum mothers had received a dose of vitamin A.

Burundi also suffers from endemic iodine deficiency. The most recent iodine deficiency survey was conducted in 1992, which showed 42% of the population was deficient in dietary iodine. However, the MICS 2000 indicates that 96% of households consume iodized salt.

More recent data are available in relation to iron deficiency, as a national survey was carried out in 2003 with the support of UNICEF. The survey found that 56% of children less than five years of age are anemic[1], 30.7% of women of reproductive age[2], and 47.1% of pregnant women[3]. Additionally, 20.8% of men were found to be anemic. The

[1] Hemoglobin less than 11.0 g/dl
[2] Hemoglobin less than 12.0 g/dl
[3] Hemoglobin less than 11.0 g/dl

prevalence of anemia is particularly high in *Makamba*, *Cibitoke*, Muyinga, *Bubanza*, *Kirundo*, *Muramvya*, and *Gitega*. The elevated levels of anemia likely contribute to the elevated under 5-mortality rate. Iron deficiency can be caused by many factors including poor consumption of iron rich foods, malaria, intestinal parasites and other infectious diseases.

From the 2000 MICS survey, 78% of households in rural Burundi are using drinking water from improved sources, with the poorest access in the eastern provinces. Over three-quarters of the households are using adequate sanitation.

Exclusive breastfeeding (breast milk only – no water) is found in more than 60% of children less than 6 months of age and in 74% of children under 3 months. Nearly half the children between the ages of 6 and 9 months of age are receiving complementary foods (MICS 2000).

According to the 2004 State of the Worlds Children, 8.3% of adults between 15 and 49 years are infected with the virus that causes AIDS. As of 2003, Burundi was estimated to be the country second most affected by AIDS in the central African region, and 13th most affected in sub Saharan Africa. There are many prevalence estimates for the HIV/AIDS infection in the country, but they all show that the prevalence is increasing over time. In nutritional centers, 15-20 percent of patients hospitalized for severe malnutrition are carrying the virus.

According to the CFSAM from the 2004B agricultural season, the provinces most at risk of crop failure were thought to be *Bujumbura Rural*, *Ruyigi*, *Kirundo*, *Makamba*, *Muyinga*, *Ngozi*, *Kayanza*, *Gitega*, *Karuzi*, *Cibitoke*, and *Bubanza*. However, there is still the possibility of the occurrence of localized areas of food insecurity in other provinces. The report outlines the following main barriers to achieving food security:

- The rains failed at the end of April 2004, particularly impacting the regions of *Bugesera*, *Imbo*, and *Moso*[4]. The long dry season has affected crops as well as labor opportunities.
- In *Bujumbura Rural*, in the communes of *Kabezi*, *Muhuta*, *Mutambu*, and *Nyabirabi*, the households have limited access to land for agricultural production. Coffee plantations have been burned or abandoned. The sources of revenue have been severely reduced. Households with an active worker may take advantage of labor opportunities in *Bujumbura* city.
- The provinces of *Kirundo* and *Muyinga* in the north are the most affected by the manioc mosaic virus; however, the disease is spreading to *Ngozi*, *Kayanza*, *Karuzi*, *Ruyigi*, and *Rutana*.
- The provinces of *Ruyigi*, *Muyinga*, *Makamba*, *Karuzi*, and *Rutana* have seen a lot of movement of repatriated people. These households often compete for limited resources with other vulnerable households.
- Employment wages have gone down in many areas and are no longer sufficient to meet household's food needs when compared to the increased market prices
- Other costs such as education are higher in the second half of the year, as well as health costs, often forcing households to choose between food and other expenses.
- HIV/AIDS has had an impact on households, both in draining resources, and decreasing productivity. This often leads to child labor. People hospitalized for malnutrition have a high rate of AIDS (estimated at 60 to 65% of adults).

The CFSAM report identifies households particularly at risk of food insecurity as:

- The displaced
- The repatriated/resettled in the reinstallation phase
- Very poor households - those with little land (<0.5 hectares), infertile land, no cash crops, few assets, disabled or chronically ill members, dependant on labor income for food purchases, as well as certain Batwas, orphans, and widows/widowers with children and no outside support

[4] Burundi has 11 different 'natural regions' identified in the country, according to a 1991 survey. These zones are defined by agro-ecological characteristics and main livelihoods in the areas.

Part II – Country-wide food security and vulnerability survey

Section 2.1 – Background and objectives

The overall objective of the assessment was to collect baseline information to inform policy, guide in the formulation of food and non-food based safety net programs and decision making that would lead to improved household food and livelihood security for households in rural Burundi.

Specific objectives of the study include:

- To determine who are the hungry, poor, and vulnerable people of rural Burundi
- Where they live
- To understand the causes of vulnerability and food insecurity
- To identify areas of intervention where food aid has an advantage in addressing the problems of food security and vulnerability
- To provide a basis for developing and improving existing food security monitoring systems

Section 2.2 - Methodology

Provincial, community and household data collection took place from 26 July to 23 August, 2004. Four different instruments were used: a household questionnaire, a community (*sous-colline*) questionnaire, a market price questionnaire, and a provincial questionnaire. All Provinces and all communes within provinces were included in the sample, except for *Bujumbura Marie*.

Concurrently, a secondary data analysis took place, where recent relevant reports relating to food security and vulnerability were reviewed. This information was used to both contextualize and triangulate the new information collected through the primary data collection activities.

The planned sample included 450 *sous-collines* and 4,500 households. The actual number of surveys completed was slightly less due to absent households or logistical constraints. Additionally, the communes of *Kabezi*, *Mutambu*, and *Muhuta* in *Bujumbura Rural* province were excluded due to insecurity at the time of data collection. These three communes were later visited, and a truncated household questionnaire was administered to a random sample of households from each commune. The data from these three communes are NOT included in the results presented in this report. The results for these three communes were analyzed separately and are presented in Annex I. The final sample, taken from 428 *sous-collines* in the table. Additionally, 3,066 children 0-59 months of age were weighed and measured as part of the household questionnaire.

Questionnaire	Number Completed
Household	4243
Community	414
Provincial	16
Market Price	24

The **household questionnaire** was designed using examples from previous WFP VAM surveys from CAR and Sierra Leone, and emergency food needs assessments done in Uganda, along with substantial inputs from the country office staff, partners, ISTEEBU, and Enumerators. It also incorporated the Coping Strategies Index developed by WFP and CARE. It consisted of modules regarding household demography and circumstances, housing and household facilities, asset ownership, land ownership and use, income and expenditure data, food consumption, risks and shocks, coping strategies, and maternal and child health and nutrition.

The **community questionnaire** was patterned after one used for the Central African Republic Vulnerability and Food Security survey conducted in 2004 by WFP. It was administered to 1-3 key informants, usually the *chef de sous-colline*. A combination of open, semi-closed, and closed questions were used to gather information on demographics, economy and infrastructure, education, health, agriculture, shocks and coping strategies, and program participation and preferences.

The **provincial questionnaire** was designed using examples from previous WFP Burundi surveys. It was administered primarily to the DPAE (*Direction Provincial de Agriculture et Elevage*) representative, with input from other key informants where possible. It includes mainly open questions regarding the current status and causes of food insecurity in the province, a categorization of Communes in the province by food security status, with main causes and affected groups, as well as questions about current and potential food aid or other programs in the province.

The **market price questionnaire** was designed using the WFP Burundi market-monitoring questionnaire. The current prices of 20 staple foods was included, as well as the prices three months prior to the survey. A minimum of two main markets per province were surveyed.

Sampling of communities and households was done using the latest data of number of households by *colline* provided by ISTEEBU. A systematic random sample of *collines* was chosen, with their probability of being chosen proportional to the number of households in the *colline*. Once this was done, one *sous-colline* was chosen at random within the colline. Population data was not available at the *sous-colline* level; however, *sous-collines* within a *colline* are generally similar in size, so the simple random selection of one *sous-colline* in each selected *colline* was estimated not to have a significant biasing effect on the sample.

Within each selected *sous-colline*, enumerators conducted one community key informant interview and 10 household interviews. Households were randomly selected from a list of all households in the *sous colline*. When the household members were not present, the household was revisited later in the day. If no one was available, a replacement household was chosen at random from the list of households in the community.

For the maternal and child health and nutrition sections of the household survey, only women of reproductive age (15 to 49 years) and their children were eligible for inclusion in the sample. If there was more than one eligible woman in a household, only one was chosen at random, and all her children 0-59 months of age were included in the survey. Although this method may produce slightly biased results, the resources were not available to include all eligible women and children in a household. Additionally, the purpose of the study was not to produce precise national or sub-national estimates of the nutritional status of children, but rather to produce estimates that would provide information on the utilization aspect of household food security.

This method of household and *sous-colline* sampling produces a self-weighting sample, which facilitates analysis in that results can be produced nationally, provincially, by natural region, and where sample size allows, by commune. The overall sample size gives sufficient numbers in all natural zones, provinces, and many communes.

Although commune level results give the most information for programming within a province, providing accurate estimates for all the communes in the country (approx. 120) would require an extremely large overall sample size. This sampling methodology provides 10 to 70 household interviews per commune. In some communes, there were sufficient household interviews conducted to produce commune-level estimates. However, where the sample size per commune was less than 40, groups of communes were clustered together to produce cluster-level estimates. Despite the clustering, the sample size per commune/commune cluster is still too small to produce statistically representative results and thus the findings should be interpreted with caution and should be used as general and comparative estimates rather than precise figures[1].

Data entry was done with ISSA while data analysis was conducted using Epi-Info 3.2.2 and SPSS 11.5 software.

[1] With a sample size of 43 households, on can be 95% sure that reported prevalences are within a maximum of 15 percentage points of the true value. A sample size of 68 gives 95% confidence that the reported prevalence is at least within 12 percentage points of the true value. This does not account for the design effect.

Part III – Community and household results

Section 3.1 - Community and household demographics

Village leaders were asked to estimate the number of households in the *sous-collines* visited. The average size of the *sous-collines* in the sample is 214 households, with a median size of 152 households. However, 90% of *sous-collines* had less than 350 households.

On average, there are 5.6 people in a household in rural Burundi. There is little variation between provinces or natural regions. Nearly 60% of households have at least one child under 5 years old while 12% of households have a member 60 years or older.

In the sample, 18% of households are headed by women. There is little difference in percentage of female-headed households between provinces, except for *Bururi* (8%). The data from community key informant interviews triangulates well, indicating that 21% of households in the overall sample are headed by women, also with little variation between provinces.

The average age of household heads is 43 years (42 for males and 47 for female heads). Nearly 15% of household heads are over 60 years of age, while less than 1% of households are headed by persons under 16 years of age. This may be due to the definition of household when drawing the sample at the sous colline level, or the concept of household head by the informant. It may also indicate that many of the child headed households have been absorbed into other households.

Ten percent of households report having at least one physically and/or mentally disabled member. The provinces of *Cankuzo* (20%), *Makamba* (15%), and *Kirundo* (14%) show the highest percentages, while *Muramvya* (4.8%) and *Kayanza* (5.9%) show the lowest.

Section 3.2 – Migration and displacement

Overall, 20% of households report having members displaced in the previous 2 years. These levels are highest in *Bujumbura Rural* (56%)[1], *Makamba* (41%), and lowest in *Mwaro* (5%), and *Karuzi* (5%). Among the households reporting displacement in the last 2 years, 71% report insecurity as one of their main reason for migration. Ten percent of households reported they moved to seek employment. Displacement to find employment was particularly high in the provinces of *Karuzi* (36%), and *Muyinga* (22%).

For those households who had migrated or been displaced, 43% had migrated/displaced within their commune of origin, 35% had displaced outside their commune, but within the country while 8% responded that they had displaced to a refugee camp outside the country. In addition, 3% had displaced outside the country, but not to a refugee camp and 11% did not give an answer. Additionally, it is important to remember that some of these families were still displaced at the time of the interview, so only families currently displaced inside the country would be included in the survey. Nearly one-quarter of households with members experiencing displacement in the past 2 years have not returned to their place of origin.

Of the households that report having experienced displacement in the past 2 years and have returned, only 18% report having received a return packet of 3 months of food aid and other non-food items. However, 56% of those returned from an out-of-country refugee camp, and 25% of those returning from out-of-country but not a refugee camp received a return packet.

It is important to note that the number of households in the sample that meet some of these criteria related to displacement is small, so when reviewing the characteristics of these sub-groups, the numbers should be interpreted with caution.

Only 7% of households in the survey were hosting people in their homes as temporary residents. These levels were highest in *Muyinga* (18%), and *Kirundo* (16%).

[1] This figure does not include the data from the communes of *Muhuta*, *Mutambu*, and *Kabezi*

According to the sous-colline key informant data, 5% of households have returned to the sous-collines in the sample in the last year. This number is highest in *Makamba* (24%) and *Bujumbura Rural* (17%). Only 1% of households in the communities surveyed had left in the past year, with only very slightly higher levels in *Rutana*, *Bujumbura*, *Mwaro*, *Kayanza*, and *Makamba*.

Section 3.3 – Transport

One-quarter of the communities reported having access to public transport in the community and 45% reported having public transport in either in the community or less than 1 hour away. However, 11% reported that public transport is more than three hours away, which was reported most often in *Cankuzo* (46%), *Rutana* (22%), and *Bubanza* (20%).

Section 3.4 - Housing

Most households (94%) reported owning the house in which they live. Only 4% reported renting their home, and 2% neither rent nor own the house where they live. Home ownership is lowest in *Ruyigi* (17%) and *Cankuzo* (14%).

The average number of rooms occupied by a household is 3.6, with an average of 1.7 people per room. This measure of crowding was highest in *Bujumbura Rural*, with 2.2 people per room, and *Cibitoke*, with 2.1 people per room while the lowest was found in *Kayanza*, with 1.3 people per room.

The most common wall construction material is earth bricks (56%), followed by mud walls (35%). Only 6% of households used fired brick or other materials. More than 40% of households have straw roofs, followed by sheet metal (31%) and tiles (26%). Interestingly, 86% of households in *Kayanza*, and 67% in *Muramvya* reported having tile roofs. Only 2% of all households reported having plastic sheeting or other roof materials.

Section 3.5 - Lighting, water, and sanitation

The most common source of lighting is a *bobech*[2] (48%), followed by firewood (35%). One in 10 households use gas lamps, and less than 1% use electricity for lighting. There is little variation between provinces. Wood is the most commonly used cooking fuel (93%), followed by wood scraps (4%), and charcoal (2%). Again, there is little variation between provinces.

Safe sanitation is defined by UNICEF as a flushing toilet or latrine, improved pit latrine, or traditional pit latrine. According to this definition, only 1.8% of households in the sample have unsafe sanitation. However, 90% of households report using a traditional latrine, and only 8% report using an improved pit latrine, or a flush latrine/toilet.

UNICEF defines drinking water from improved sources as water piped into the home, from a public tap, tube well, or borehole, protected well, protected spring, or water vendor. Unsafe sources include open well, rainwater, or other surface water. The most common water sources for households in the sample are protected spring and public tap, followed by open surface water. By the UNICEF definition, 17% of households are using drinking water from unsafe sources. The highest users of unsafe drinking water are in *Cankuzo* (32%), *Kirundo* (30%), *Rutana* (27%), and *Bubanza* (27%). The lowest usage of unsafe drinking water use are found in *Muramvya* (4%), *Kayanza* (5%), and *Karuzi* (9%).

According to the community level data, 25% of communities use primarily unsafe drinking water sources while half the communities reported having difficulty obtaining water at some period during the year - mostly in June through October.

More than 60% of households reported having their drinking water source in the home or less than ½ hour away. Only 8% report it being further than 1 hour away. *Cibitoke* and *Mwaro* appear to have the best physical access to water, with 76% of households having their water source less than ½ hour away. The highest percentages of households having

[2] A small oil lamp

their drinking water source more than 1 hour away are in *Kirundo* (18%) and *Makamba* (15%).

Section 3.6 - Education

The household heads were asked if they could read and write a simple phrase in any language. Nearly half of household heads are literate, with little variation between provinces. However, 54% of male household are literate as compared to only 21% of female household heads. Mothers' education tends to be very low. Nationally, 70% of mothers report not having any education at all, and only 12% report having completed primary school or above.

Although actual enrollment rates cannot be calculated, a comparative value can be calculated by dividing the number of children in the household enrolled in primary school by the number of children between 5 and 15 years old. This gives an overall level of 50% of children between 5 and 15 years old enrolled in primary school. This level is lowest in *Ngozi* (32%) and Rutana (37%) while the highest rates are found in *Mwaro* (68%), *Muramvya* (62%), and *Bururi* (61%). These results are similar to the MICS 2000 results, which stated that 47% of school age children were attending primary school.

Table 3.6.1 – Percent of children between 5 and 15 years old attending primary school

Province	% of children 5 and 15 years of age attending primary school	Province	% of children 5 and 15 years of age attending primary school
Bubanza	54%	Kirundo	53%
Bujumbura Rural	56%	Makamba	54%
Bururi	61%	Muramvya	62%
Cankuzo	48%	Muyinga	37%
Cibitoke	53%	Mwaro	68%
Gitega	58%	Ngozi	33%
Karuzi	43%	Rutana	37%
Kayanza	46%	Ruyigi	42%

About three-quarters of *sous-collines* reported that a primary school is in their community or less than ½ hour away. However, 20% of communities in *Makamba*, 13% in *Kayanza*, 13% in *Bururi*, and 11% in *Rutana* reported that the closest primary school is over an hour away. Only 2% of communities reported fees for primary school.

Section 3.7 – Community health and health care

According to the communities, about half can access a health center in less than 1 hour. Only 5% of communities reported the nearest health center being more than 3 hours away. *Rutana* and *Ruyigi* appear to have the poorest access, with about 10% of communities being more than 3 hours away from the nearest health center. Almost all communities reported that they had to pay for health care services. Of these communities, 75% report that this cost is a prohibitive factor in the utilization of health care services.

The most common health problem reported by community key informants is malaria/fever, listed by nearly all communities. Other commonly reported health problems include intestinal parasites, as well as respiratory infections and general malnutrition.

Section 3.8 – Household and livestock assets

During the household interview, the enumerators collected information on ownership of 17 common productive and durable assets. The most commonly owned item is a hoe, found in 91% of the households. The next most commonly owned items were machete (48%) and chair (47%). Radios are owned by 30% of households and are found most often in *Mwaro* province, where 44% of households own radios, and least often in *Karuzi*, where only 17% of households own radios. Less than 1% of households own cars, televisions, or fishing equipment.

The number of assets owned by a household is a good proxy indicator for wealth and food security of a household. A greater variety of assets indicates both the stronger purchasing power of the household, the lack of need to sell assets in the past to meet food needs, and the savings in the form of assets in the case of severe shock.

The median number of household assets is four. Households in *Mwaro*, *Muramvya*, and *Bururi* own an average of five assets while those in *Bubanza*, *Bujumbura Rural*, *Cibitoke*, *Karuzi*, and *Muyinga* own a median of only three assets. Those households that own relatively few assets usually have the basic farming implements, such as hoes and machetes, followed by chairs and tables. The complete tables of assets owned and total number of assets by province can be found in Annex II.

About one-third of the sample households own goats, which are the most commonly owned livestock asset. About one-quarter own poultry and only 10% of households own large cattle. Among the households that own goats, 80% own three or fewer. Among households that own cattle, 42% own only one, while 82% own between one and three cattle.

Households that own one or more cattle were most often found in *Bururi* (36%), *Mwaro* (39%), and *Muramvya* (25%). When looking at livestock ownership by livelihood zone, high livestock ownership is seen in the *Bututsi* in the central south, where 45% of households owning cattle, and the *Mugamba* in the west-central and northern areas of the country, with 28% of households owning cattle. Higher levels of goat and sheep ownership are also found in these areas.

It is important to note that cattle ownership is tied strongly to both the agro-ecology of the region, usually where herding traditionally takes place, as well as the level of pillaging that took place during the conflict (and in some areas still occurs), depleting the number of animals in those areas.

Section 3.9 – Land ownership and agricultural production

Land ownership and agricultural production are important aspects of rural livelihoods in Burundi. Many areas are densely populated, limiting individual access to land. Other areas have relatively poor soil, where the limited fertile soils are overused, or requiring people to work over a greater area to obtain the same harvest.

The household questionnaire collected information on the amount of cultivated land owned and rented[3] by the household. Only 6% of the sample households reported having no access to land, either owned or rented, while 68% reported only owning land, and 3% reported only renting land.

Table 3.9.1 – Land rental and ownership

	Percentage households					
	Owning land	**Owning ≥ 0.5 hectares ***	**Mean hectares owned***	**Renting land**	**Mean hectares rented***	**Renting and/or owning ≥ 0.5 hectares**
Bubanza	78%	29%	0.4	32%	0.07	34%
Bujumbura Rural	80%	22%	0.3	20%	0.04	24%
Bururi	92%	44%	0.6	12%	0.07	47%
Cankuzo	95%	67%	1.3	22%	0.07	71%
Cibitoke	86%	31%	1.3	35%	0.77	39%
Gitega	98%	50%	1.4	35%	0.22	56%
Karuzi	87%	28%	2.8	24%	0.39	30%
Kayanza	94%	24%	0.6	32%	0.07	27%
Kirundo	86%	26%	1.5	32%	0.22	32%
Makamba	95%	37%	0.7	19%	0.05	41%
Muramvya	99%	41%	0.6	14%	0.04	43%
Muyinga	90%	24%	0.8	23%	0.41	28%
Mwaro	99%	44%	0.6	7%	0.01	45%
Ngozi	96%	22%	0.5	32%	0.05	26%
Rutana	91%	44%	0.9	25%	0.10	49%
Ruyigi	92%	47%	0.7	38%	0.13	56%
Total	**91%**	**34%**	**0.9**	**26%**	**0.18**	**38%**

[3] Due to recording errors during data collection and in data entry, the information on actual surface area of land rented and owned is not reliable. Data presented in this section should be interpreted with caution.

Production, however, is also an important indicator when looking at land access. Different agricultural practices and soil qualities have a large impact on production per hectare. Tables 3.9.2a & b present the percentage of households cultivating different food crops in the past year, in any quantity. The most commonly cultivated crop is beans (89%), followed by banana (72%), sweet potato (67%), manioc (61%), and maize (56%). Certain crops, such as wheat and sorghum, have a strong geographic variation. Wheat is more commonly cultivated in *Muramvya*, *Bujumbura Rural*, and *Kayanza*. Sorghum is most often cultivated in *Cankuzo*, *Ruyigi*, *Kirundo*, and *Muyinga*. Manioc is frequently cultivated throughout the country, except for *Kirundo* (12%) and *Muyinga* (17%).

Table 3.9.2a – Percent of households cultivating food crops by province

	Maize	Sorghum	Wheat	Rice	Beans	Groundnuts
Bubanza	73%	8%	1%	14%	90%	15%
Buj.umbura Rural	40%	<1%	14%	4%	83%	4%
Bururi	79%	1%	10%	3%	85%	0%
Cankuzo	69%	70%	-	9%	87%	18%
Cibitoke	57%	4%	-	12%	79%	12%
Gitega	86%	7%	-	9%	97%	9%
Karuzi	42%	39%	0%	33%	87%	8%
Kayanza	51%	8%	12%	13%	90%	3%
Kirundo	20%	59%	1%	18%	87%	9%
Makamba	70%	6%	2%	7%	85%	16%
Muramvya	92%	2%	14%	2%	96%	2%
Muyinga	30%	55%	0%	15%	87%	14%
Mwaro	94%	-	7%	-	98%	4%
Ngozi	28%	34%	1%	31%	88%	9%
Rutana	75%	47%	2%	11%	96%	9%
Ruyigi	59%	62%	1%	14%	89%	9%
Total	**56%**	**24%**	**4%**	**13%**	**89%**	**8%**

Households were asked to name the sources of seeds for the main cereal crops, as well as for the main bean crops. Nearly 40% of households report having purchased the seed for their primary cereal crop, and 32% use their own stock. For beans, 61% of the households were relying on seed purchases while 27% were using their own stocks.

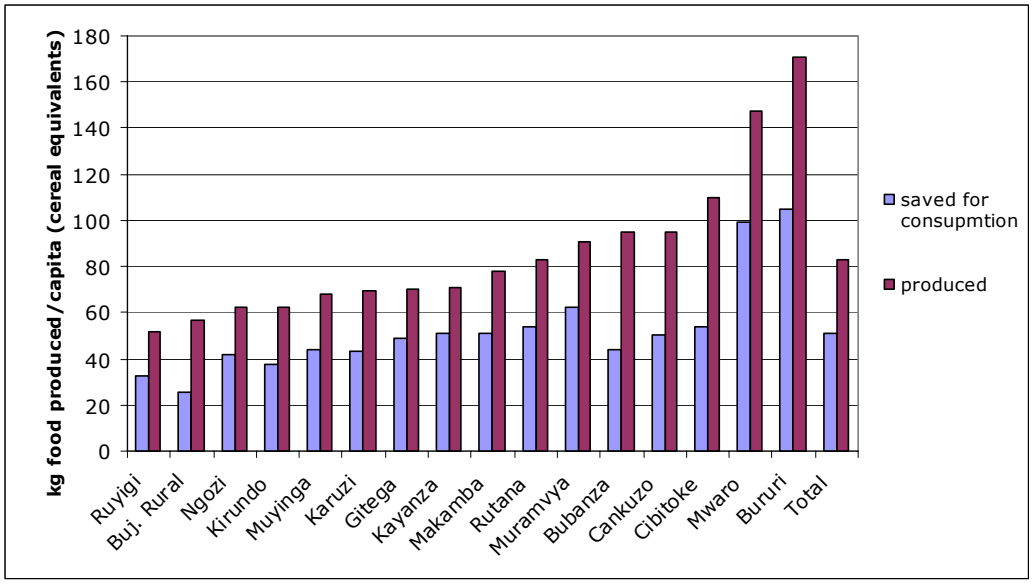
Table 3.9.2b – Percent of households cultivating food crops by province

	Manioc	Sweet Potato	Irish Potato	Plantain	Banana
Bubanza	86%	55%	2%	14%	60%
Bujumbura Rural	71%	37%	15%	8%	59%
Bururi	64%	70%	37%	13%	58%
Cankuzo	38%	51%	7%	3%	66%
Cibitoke	92%	42%	6%	24%	66%
Gitega	84%	91%	23%	10%	88%
Karuzi	45%	62%	10%	10%	83%
Kayanza	74%	93%	19%	13%	76%
Kirundo	12%	48%	4%	7%	62%
Makamba	76%	58%	8%	3%	66%
Muramvya	78%	98%	56%	19%	82%
Muyinga	17%	49%	7%	8%	70%
Mwaro	58%	96%	46%	25%	78%
Ngozi	53%	80%	11%	11%	83%
Rutana	74%	67%	13%	3%	77%
Ruyigi	71%	47%	3%	8%	64%
Total	**61%**	**67%**	**16%**	**11%**	**72%**

Households were asked to estimate the recent harvests of the main agricultural food harvests, as well as the amount reserved for household consumption in the last year

(including the seasons 2003C, 2004A and 2004B). Using the methodology described in Section 4.11, the total agricultural food production for each household was calculated.

Graph 3.9.1 - Mean food total production and food saved for consumption in last year by province



As can be observed in the graph above, *Mwaro* and *Bururi* reported the greatest food harvests in the sample while households in *Ruyigi*, *Bujumbura Rural*, *Ngozi*, and *Kirundo* reported the lowest harvests.

Information was also collected on the cultivation of 18 different cash crops grown by households on a regular basis. The most commonly cultivated cash crops were coffee (36%), beer plantain (42%), manioc (22%), potatoes/sweet potatoes (17%), and corn (12%). Other cash crops limited to only certain areas were tea (*Bujumbura Rural*, *Mwaro*, and *Muramvya*), palm (*Bururi*, *Bubanza*, and *Makamba*), and sorghum (*Cankuzo*, *Rutana*, *Ruyigi*, *Kirundo*). The complete results can be found in Table 3.9.3 in Annex II.

Section 3.10 - Market access and prices

Almost half of the sample communities reported the presence of an active market in the community or less than 1 hour away. Only 7% of communities reported being three or more hours away from the nearest active market. The reduced access to markets is particularly high in *Ngozi* (21%), *Makamba* (13%), Bururi (13%), and Bubanza (10%). The majority of markets in all provinces meet twice per week.

Half of the communities reported that the market supply was good, 25% medium, and 25% poor. This is relatively uniform throughout provincial samples, except for *Makamba*, where 60% of communities reported a poor market supply.

Just over half the communities reported a disruption in market supply at some time during the year. Market supply disruption was most often reported in *Makamba* (87%), *Ruyigi* (80%), *Cankuzo* (77%), and *Kirundo* (74%). Among the communities reporting the disruption, the disruption occurred most often in February, March, and April, as well as August through November. According to key informants, when faced with a break in the market supply, households usually traveled to other markets (58%), or relied on their own production (24%) for food.

Market price surveys were carried out in one or two markets per province during the month of July/August, 2004. Current prices, as well as prices from May 2004 were recorded for 19 basic items. The price of manioc tended to be higher in the north and the prices of almost all items appeared to have risen between May and the time of the survey.

Provincial key informants indicated that food aid, when present, tends to have a stabilizing effect on the rising market prices, keeping food prices at more accessible levels.

Section 3.11 - Household income

During the interview, household heads were asked to provide information on the main income activities, ranked in order of importance (up to four different sources). For each province, the most common sources of income are presented if at least one-quarter of the households named the activity as a primary source. Additionally, the most common primary sources of income are presented along with the percentage of households relying on this income source, and the percent of total income coming from the primary income source.

Table 3.11.1 – Income sources and contribution by province

Province	Main sources of income	Primary source of income	% from primary source
Bubanza	• Sale of cash crops (43%) • Temporary work (40%) • Agricultural production (22%)	Temporary work (29%)	80%
Bujumbura Rural	• Agricultural production (58%) • Sale of cash crops (35%) • Manual labor (33%) • Small business (26%) • Temporary work (26%)	Manual labor (27%)	81%
Bururi	• Sale of cash crops (43%) • Agricultural production (33%)	Sale of cash crops (23%)	75%
Cankuzo	• Sale of cash crops (46%) • Alcohol brewing (31%) • Manual labor (25%)	Sale of cash crops (22%)	65%
Cibitoke	• Sale of cash crops (48%) • Agricultural production (43%) • Manual labor (28%)	Sale of cash crops (27%)	73%
Gitega	• Sale of cash crops (63%) • Manual labor (33%) • Alcohol brewing (27%)	Sale of cash crops (28%)	73%
Karuzi	• Agricultural production (72%) • Manual labor (32%) • Sale of cash crops (32%) • Temporary work (30%) • Alcohol brewing (28%)	Temporary work (26%)	82%
Kayanza	• Sale of cash crops (69%) • Agricultural production (30%) • Manual labor (26%)	Sale of cash crops (39%)	74%
Kirundo	• Temporary work (37%) • Sale of cash crops (36%)	Temporary work (27%)	87%
Makamba	• Sale of cash crops (50%) • Agricultural production (49%)	Sale of cash crops (30%)	72%
Muramvya	• Sale of cash crops (58%) • Agricultural production (37%) • Temporary work (32%)	Sale of cash crops (27%)	68%
Muyinga	• Agricultural production (39%) • Sale of cash crops (38%) • Temporary work (32%)	Temporary work (25%)	88%
Mwaro	• Sale of cash crops (56%) • Agricultural production (40%) • Alcohol brewing (31%)	Sale of cash crops (35%)	69%
Ngozi	• Sale of cash crops (68%) • Agricultural production (56%)	Sale of cash crops (45%)	76%
Rutana	• Sale of cash crops (44%) • Manual labor (31%) • Agricultural production (30%) • Alcohol brewing (28%)	Sale of cash crops (24%)	73%
Ruyigi	• Sale of cash crops (42%) • Manual labor (39%) • Agricultural production (33%)	Manual labor (31%)	82%

Although in most provinces, many households rely on agricultural production for income, it was not always the main source of income. Rather, the sale of cash crops was most commonly named as the primary income source, providing between 65-75% of total income to those households. In *Kiruzi*, *Kirundo* and *Muyinga* provinces, households tend to rely on temporary work for more than 80% of their total income.

Diversifying income can provide a safety net for households. If several sources of income are available, the household will be more capable of handling external shocks which may affect one of their income sources. However, even if a household has many sources of income, but is heavily reliant on only one, this household is more vulnerable to the effects of external shocks.

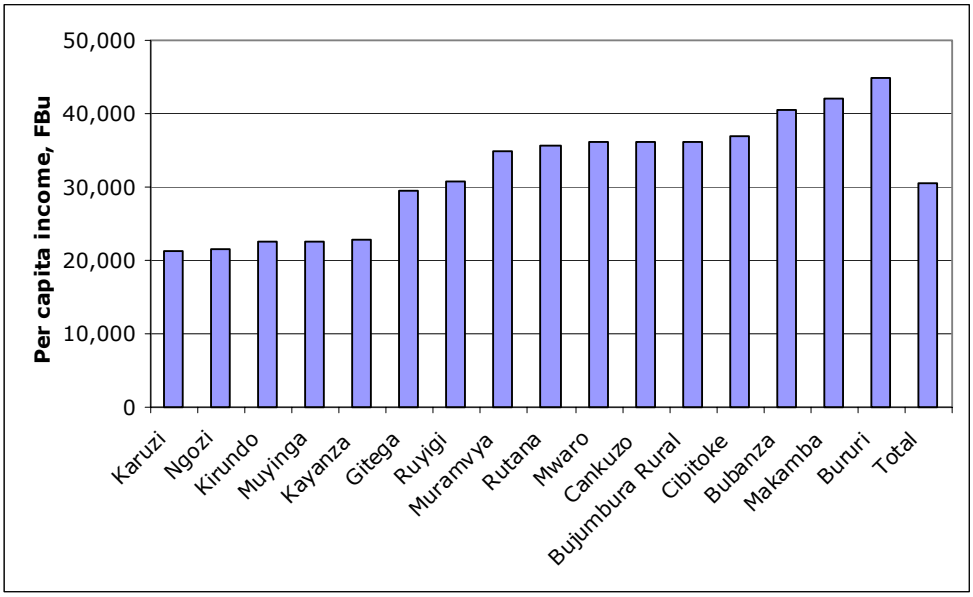
Conversely, diversifying income may be in response to a shock rather than mitigation. When income from one source decreases or halts, households may then be forced to seek secondary and tertiary income sources. Another aspect of analysis of income sources and diversity is whether the income activity provides steady income throughout the year or is only seasonal income. If a household has many sources of income, it may be due to the fact that they are all seasonal sources. Salaried work, small business and skilled labor activities tend to provide income throughout the year while many agricultural activities plus temporary work only provide income in certain times of the year.

One-third of the sample households reported only one source of income. Of those, 20% rely on manual labor, 21% on temporary work, and 24% on the sale of cash crops. The highest percentage of sample households relying on only one source of income are found in *Kirundo* (54%), and *Muyinga* (42%) provinces while the lowest percentage are in *Muramvya* (18%), and *Mwaro* (20%).

Over 20% of the sample households reported three or four income sources with households in *Karuzi* (33%) and *Makamba* (31%) relying more on multiple income sources. *Bubanza* (9%) and *Kirundo* (9%) have the lowest prevalences of multiple income households. More than half of the sample households reported that more than 70% of their income come from a single source while just under half reported having more than 90% of their income come from one source.

One-third of sample households reported that only men participate in the primary income activity - usually temporary work or manual labor. Another third of the households reported that both men and women participate, usually the sale of cash crops. More than 20% of households report that children also participate in the main income activity.

Graph 3.11.1 – Reported mean annual per capita income by province



For the sample, the reported mean income per capita per year is about 30,000 Burundian Francs. However, the median income is only 18,750 FBu/capita/year, meaning that 50% of sample households are below this level. Only 30% of households earn more than the mean of 30,000 FBU, but in general, they are also earning significantly more than the average household, with a mean of 68,000 FBu/capita/year, and a median of 50,000 FBu/capita/year.

Community key informants were asked to categorize households into the major livelihood groups they represent. According to this data, 75% of households rely mainly on agriculture only, and an additional 14% on a combination of agriculture and livestock. The remaining 11% rely mainly on temporary employment, small business, and salaried work.

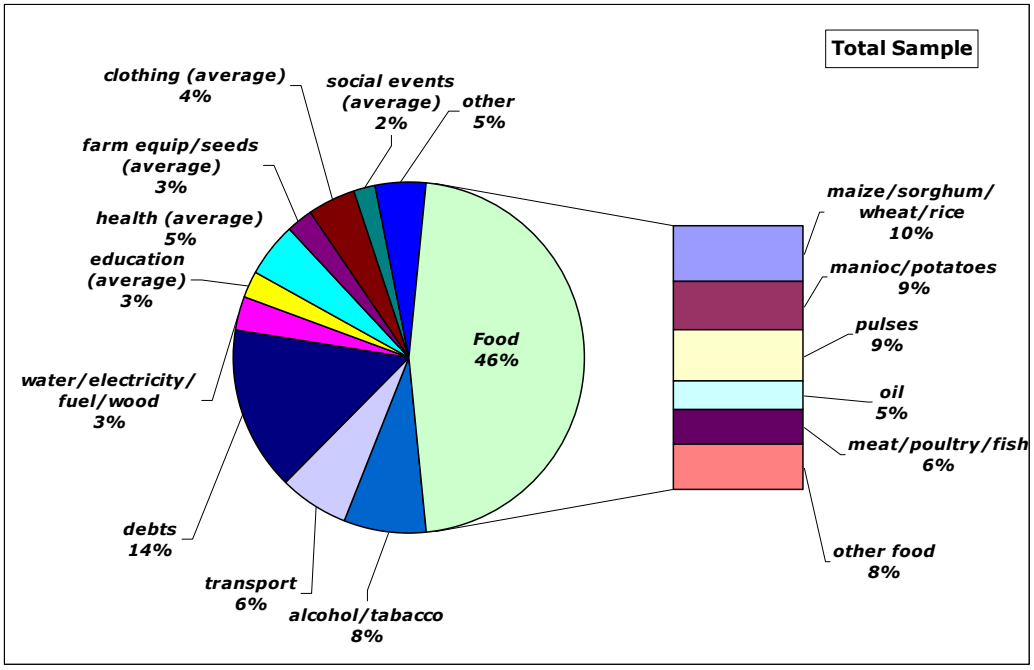
Section 3.12 - Expenditures

The household questionnaire collected information on estimated expenditure in month prior to the interview for several food and non-food items. For a few items that are unlikely to have consistent spending patterns between months, such as education, social events, and health care, households were asked to estimate their expenses in the past year, and this was converted to an average monthly expenditure.

Looking at average household expenditures for the total sample, 46% of expenditures goes to food purchases, and 54% to non-food expenses. Almost 30% of total monthly expenditure is for staple foods such as pulses, manioc, tubers, maize, and rice. After food, the largest monthly expenditure is on debt repayment, at 14% of total expenditure, followed by alcohol & tobacco (8%). Health, education, and other expenses totaled slightly over a quarter of total monthly expenditures.

Although there were some slight differences observed between provinces, the greatest expenses remain food, usually just under 50% of total monthly expenditure, debts, transport, and alcohol & tobacco. Expenditure graphs for each province can be found in Figures 3.12.2 in Annex III.

Graph 3.12.1 – Share of total monthly expenditure by category – total sample



Section 3.13 – Food production, required food consumption, and income

Information from the household survey allows for rough calculations of the ability of households to meet their caloric needs, through information on production saved for consumption, income, and expenses. Although this methodology appears to measure absolute needs, the method is really only used to predict relative needs, due to the

unreliability of information collected (misreporting by households; data collection errors; etc.) during the survey. Reporting errors are likely to be both over- and under-estimations of income and production by households at all levels of food security. However, those errors could cancel each other out to some extent, leaving this yet a fairly strong general indicator of household food security.

To calculate a household's theoretical ability to meet food needs, the basic information on caloric needs, income and production were converted to a common unit, the cereal equivalent[4], based on *Tables of representative values of foods commonly used in Tropical Countries (Platt, 1985).* The basic kilocalorie requirement was estimated at 2,100 Kcalories/capita/day. Current market price data was used to convert income into cereal equivalents. Only crops that were reported by households as those produced and saved for consumption were included in the calculation. They include maize, sorghum, wheat, rice, manioc (dry), sweet potato, Irish potato, plantains/bananas, and pulses/groundnuts[5]. Approximately 10% of household income was subtracted to represent essential non-food expenditure, although this is a very conservative estimate. The amount of food aid received was also included in the calculation.

Correcting for household size, this formula predicts that the average household has the ability to produce and/or buy 1,990 Kcalories/capita/day. The average for households in the provinces of *Karuzi*, *Ngozi*, *Kirundo*, *Muyinga*, and *Kayanza* were well below this sample average.

Section 3.14 - Food consumption

The household survey questionnaire collected information on food consumption at the household level. The recall period was the past seven days and the list contained 18 different foods or food groups. Hence the household head (or spouse) was asked to name the number of days a particular food was consumed by any household member in the seven days prior to the survey. For each food or food group consumed by household members, the enumerator also collected information on the main source of the food(s) including: purchase, own production, gift, exchange, barter or food aid.

Dietary diversity, defined as the number of different foods or food groups consumed in a seven-day period is a good proxy measure of dietary quality. A simple dietary diversity indicator was created using the number of different foods or food groups consumed by household members during the 7-day recall period. The provinces with the highest prevalence of poor dietary diversity[6] are *Kirundo* (41%), *Muyinga* (36%), *Kayanza* (27%), *Ngozi* (27%), and *Bubanza* (26%). Provinces with high dietary diversity[7] are *Rutana* (18%) and *Ngozi* (27%).

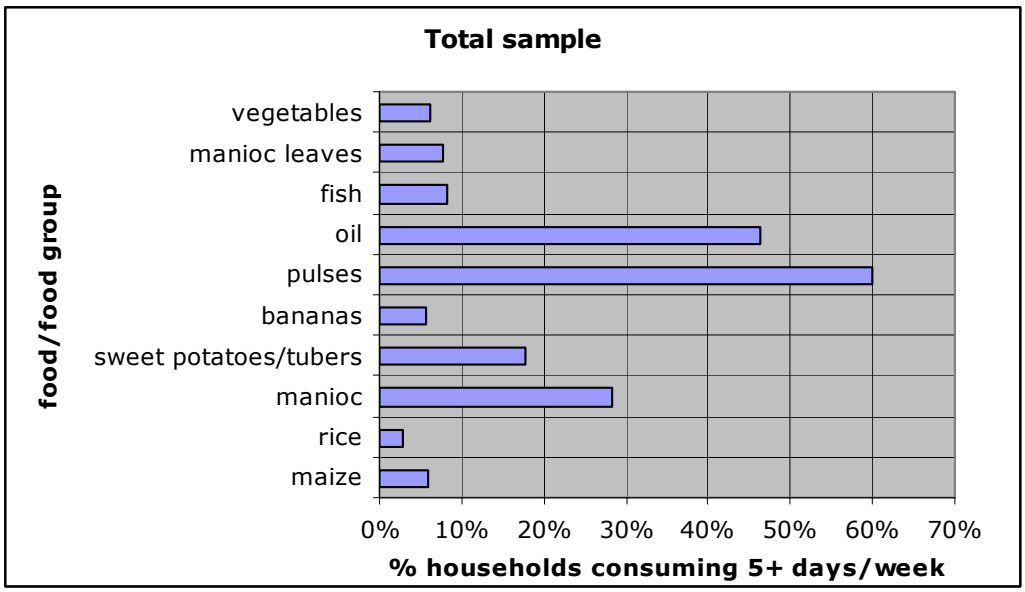
Among the 18 food groups included in the survey, the least commonly eaten foods are wheat, poultry, and meat, which are consumed frequently (5+ days/week) by less than 1% of households. The next least often consumed foods are dairy, bread, and sorghum, frequently consumed by less than 2% of households. Fruit is eaten five or more days/week by only 3% of the sample households.

For the total sample, the staple foods most frequently (5+ days/week) by households are pulses, oil, manioc, and sweet potatoes/tubers. Other commonly consumed foods are manioc leaves, fish, vegetables, corn, and rice. It is important to note that this is a measure of frequency and not actual amounts. It appears that many households in Burundi rely on a variety of starch staples, coupled with mainly pulses, followed by other foods, particularly fish in areas near lakes. Manioc consumption patters show the greatest diversity between provinces, where households in the northern provinces are much less likely to consume manioc frequently as compared to households in the southern provinces.

[4] 1kg cereal equivalent = 3630 Kilocalories
[5] Maize, sorghum, wheat, rice = 1 cereal equivalent. Dry manioc = 0.9 cereal equivalent. Sweet potato = 0.31 cereal equivalent. Irish potato = 0.21 cereal equivalent. Plantain/banana = 0.35 cereal equivalent. Pulses/groundnuts = 0.9 cereal equivalent.
[6] Poor dietary diversity is defined as households having consumed in the past week 4 or less foods from a possible 18 food categories (such as corn, manioc, pulses, fish, fruit, etc.).
[7] High dietary diversity is defined as having consumed in the past week 10 or more foods from the possible 18 food categories.

This discrepancy in consumption patterns is likely due to the presence of manioc mosaic virus in the north, particularly since 2000, that has severely affected the harvests of manioc tubers and leaves.

Graph 3.13.1 – Percentage HH consuming foods 5 or more times per week



- Households in ***Bubanza*** show a higher than normal frequent consumption of oil, as well as manioc. The level of fish consumption is much higher than the sample average, due to the proximity to Lake Tanganyika. The level of pulses consumption is close to the sample average, as are the other staples.
- The ***Bujumbura Rural*** sample shows similar consumption patterns to households in *Bubanza*, with higher than average consumption of oil, fish, and manioc. Maize consumption is more frequent than *Bubanza*, and slightly higher than the sample average, likely due to food aid in the province.
- ***Bururi*** households show similar consumption patterns to *Bujumbura Rural* and *Bubanza*, with elevated oil, fish, and manioc consumption. The frequency of maize consumption is the highest in the country, after *Cankuzo*.
- ***Cankuzo*** households reported the most frequent consumption of pulses in the country, as well as the most frequent consumption of maize. However, the frequency of manioc consumption is slightly less than the sample level.
- Households in ***Cibitoke*** had a lower frequency of pulse consumption, and a very high frequency of manioc consumption. Manioc leaves and fish are also eaten much more frequently than the sample average.
- ***Gitega*** households showed consumption frequencies very similar to the sample average, with only a slightly higher frequency of sweet potato/tuber consumption
- ***Karuzi***, like the other northern provinces, reports significantly lower percentage of households frequently eating manioc. The consumption frequency of other staples is similar to the sample averages.
- The ***Kayanza*** sample shows consumption patterns similar to the other northern provinces, with a much lower frequency consumption of manioc than the sample average.
- ***Kirundo*** shows the lowest prevalence of households that are frequently consuming manioc. Oil consumption is also much lower than the sample average.
- The households in ***Makamba*** have quite high prevalences of frequent manioc, pulse, and fish consumption as compared to sample averages.
- ***Muramvya*** also has low percentage of households that are frequently consuming manioc, but a higher consumption of sweet potatoes/tubers than the sample average, with the consumption patterns of the other staples similar to sample levels.
- The ***Muyinga*** sample analysis shows patterns similar to the sample levels, except for manioc, which is eaten much less frequently and oil, which is consumed slightly less frequently.

- ***Mwaro*** households show a higher frequency of consumption of pulses, as well as sweet potatoes and tubers, and a much lower consumption frequency of manioc than the sample levels.
- The **Ngozi** sample presents a lower frequency of consumption of many food groups compared to the sample averages including oil, pulses, manioc, fish, manioc leaves, and vegetables.
- ***Rutana*** households have a frequency of consumption of pulses much higher than the sample levels. Manioc, manioc leaves, and corn are also eaten with greater frequency.
- ***Ruyigi*** also shows high a level of pulses consumption compared to the sample average. Manioc and manioc leaves are also eaten with greater frequency.

Graphs showing food frequency of food consumption for each province can be found in Figures 3.14.1 in Annex III

In addition to food frequency data, households were asked to estimate the quantity of foods they had eaten in the past 7 days. These weight amounts were then converted into kilocalories, using the values found in *Tables of Representative Values of Foods Commonly Used in Tropical Countries* (Platt, 1985). However, the survey questionnaire collected information on food groups rather than individual foods, so an estimation of the most frequently consumed food in the group was made, in order select a kilocalorie conversion rate. The rough estimates of caloric consumption presented in Section 4.11 should be interpreted with caution, only to be used for relative comparisons, rather than as absolute values.

According to the 7 day recall consumption data, the national average consumption at the individual level is 1945 kcal/capita/day, which is corrected for the number of people in the household. The household size corrected data is provided in the table below. It is important to note that this is an estimated population level mean, data was gathered at the household level and not at the individual level. Additionally, higher mean calorie consumption does not mean that there are necessarily fewer households with lower caloric consumption in that area.

Table 3.14.1 – Kilocalorie/capita/day estimations from 7-day recall

Province	Population level mean kcal/cap/day	Province	Population level mean kcal/cap/day
Bubanza	2,104	Kirundo	1,845
Bujumbura Rural	1,824	Makamba	2,365
Bururi	1,788	Muramvya	2,003
Cankuzo	1,949	Muyinga	1,968
Cibitoke	2,149	Mwaro	1,965
Gitega	1,956	Ngozi	1,682
Karuzi	2,134	Rutana	2,283
Kayanza	1,681	Ruyigi	2,049

Section 3.15 - Household shocks and coping strategies

Also included in the household questionnaire was a section which was designed to collection information on whether the household had experienced any of ten different covariate shocks (shocks that effect several households or communities, such as drought, hail, market price fluctuation, etc.) in the past year. Of the shocks experienced, households were asked to rank the top three shocks. For each of these three shocks, households were then asked to identify the effect on household revenue and assets, if the shock affected the household's capacity to acquire enough food, the coping strategies used in response to each shock, and if the household has recovered from the shock. This process was then repeated for idiosyncratic shocks (shocks that effect individual households, such as the loss of employment, death of a household member, etc.)

3.15.1 - Covariate shocks and coping strategies

The most common covariate shock named by households was drought, experienced almost 70% of sample households, and cited in every province. One quarter of the sample households were affected by plant pests or diseases. This was experienced more often in Northern provinces, which are more affected by the manioc mosaic virus. Just over 20% of households are affected by hail, again more commonly in the Northern provinces. Flooding was reported by 16% of households, and was most commonly seen in *Kayanza*,

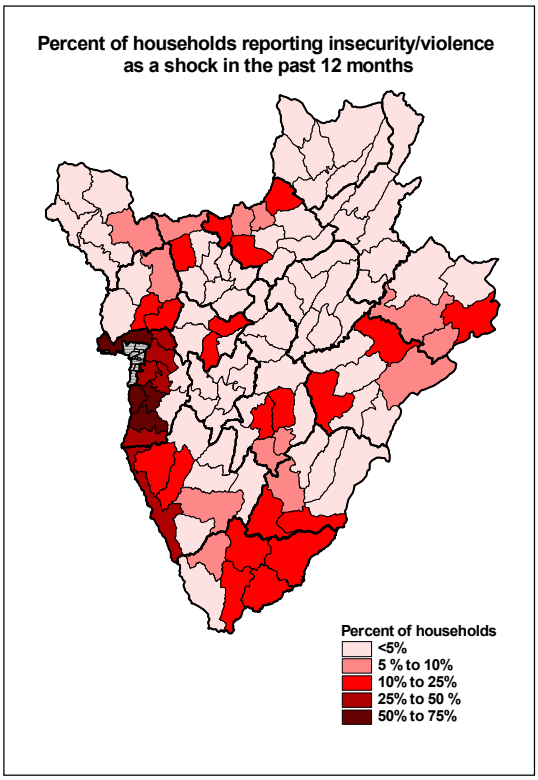
Ngozi, *Gitega*, and *Kirundo*. Insecurity was reported by only 7% of households, but was more common in *Bujumbura Rural*[8] (32%), and *Makamba* (14%). Table 3.15.1.1 in Annex II shows the percentage of households affected by these covariate shocks by province.

Drought is the number one covariate shock experienced for 59% of households. Almost all of the affected households reported that this shock caused a decrease in household food security. More than 80% reported a loss of revenue due to drought, and 13% a loss of revenue and assets. To cope with the effects of drought, 45% of households reported a modification in diet (reducing the quality and/or quantity of food consumed), 21% reported reliance on temporary work, and 20% reported reduced expenditures. At the time of the survey, only 4% of households affected by drought reported being fully recovered, 40% reported partial recovery, and 56% reported not having recovered at all.

Ten percent of households reported **hail** as a primary shock with almost all affected households suffering a decrease in household food security. Three-quarters reported a loss of revenue due to hail, and 20% a lost of both revenue and assets. In response to hail, half the households modified their diet, 21% a decreased expenditures, and 19% relied on temporary work to manage the shock. At the time of the survey, 10% of households affected by hail reported complete recovery, 34% partial recovery, and 56% reported not having recovered at all.

Plant insects and disease - most likely the manioc mosaic virus – was the main shock experienced by 9% of the sample households. Of these households, almost all reported that it had seriously impacted household food security. Of these households, three-quarters reported a loss of revenue due to plant insects and disease and over 10% reported a loss of both revenue and assets while 8% reported a loss of assets only. The most commonly used strategies used to manage the effects of this shock were diet modification (47%), and decreasing expenditures (25%). Only 5% of households reported being fully recovered, 30% had recovered partially, and 65% had not recovered at all.

Only 8% of the households reported **insecurity or violence** as a shock experienced in the past year. It is important to note that the perception of the question may differ. Households in an area of continued insecurity may not report it as a household shock if there had been no direct impact on the household. However, the same households could still be indirectly affected through decreased access to land or the destruction of community infrastructure. Alternatively, a household may cite insecurity or violence as a shock in the past year in reference to tension or non-physical conflict in the community, even in the absence of physical conflict or combat.



The map on the left shows the percentage of households reporting insecurity or violence as a shock experienced in the past year. Some communes are clustered together where the sample size was too small. The highest incidence of violent shocks are in communes in the central western part of the country.

Below, for each province, the percentage of households affected by at least one covariate shock is presented, followed by the most commonly reported shocks (>20% of households) are listed along with the percentage of households in the

[8] Does not include the communes of *Muhuta*, *Mutambu*, or *Kabezi*

province listing those shocks. Then, the four most often used strategies to manage the shock are presented (households could name up to nine strategies).

In ***Bubanza***, 95% of households reported experiencing one or more covariate shocks in the past 12 months. The most common primary shocks were:
- Drought (83%)
- Plant insects/disease (30%)

The most common coping strategies were:
- Diet modification (70%)
- Temporary work (40%)
- Decrease expenditures (23%)
- Loans from family and friends (23%)

In ***Bujumbura Rural***, 94% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:
- Drought (53%)
- Plant insects/disease (33%)
- Insecurity/violence (31%)
- Hail (21%)

The most common coping strategies were:
- Diet modification (67%)
- Decrease in expenditures (31%)
- Temporary work (31%)
- Loans from family and friends (24%)

In ***Bururi***, 94% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:
- Drought (80%)
- Plant insects/disease (37%)

The most common coping strategies were:
- Diet modification (91%)
- Decrease in expenditures (53%)
- Loans from family/friends (32%)
- Temporary work (32%)

In ***Cankuzo***, 86% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:
- Drought (86%)
- Plant insects/disease (40%)
- Hail (29%)

The most common coping strategies were:
- Diet modification (92%)
- Decrease expenditures (53%)
- Temporary work (46%)
- Aid from others (20%)

In ***Cibitoke***, 96% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:
- Drought (82%)
- Hail (22%)
- Plant insects/disease (20%)

The most common coping strategies were:
- Diet modification (62%)
- Temporary work (44%)
- Working for food (22%)
- Small commerce (22%)

In ***Gitega***, 91% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:
- Drought (73%)
- Flooding (23%)
- Other shock (unidentified) (23%)

The most common coping strategies were:

- Diet modification (86%)
- Decrease expenditures (45%)
- Early sale of crops (24%)
- Temporary work (20%)

In ***Karuzi***, 95% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:

- Drought (68%)
- Plant insects/disease (31%)

The most common coping strategies were:

- Diet modification (55%)
- Decrease expenditures (39%)
- Work for food (38%)
- Temporary work (23%)

In ***Kayanza***, 98% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:

- Drought (78%)
- Flooding (45%)
- Hail (22%)

The most common coping strategies were:

- Diet modification (64%)
- Temporary work (41%)
- Loans from family/friends (28%)
- Work for food (24%)

In ***Kirundo***, 91% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:

- Drought (77%)
- Plant insects/disease (39%)
- Hail (23%)
- Flooding (22%)

The most common coping strategies were:

- Diet modification (63%)
- Decrease expenditures (41%)
- Temporary work (39%)
- Work for food (31%)

In ***Makamba***, 89% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shock was:

- Drought (82%)

The most common coping strategies were:

- Temporary work (47%)
- Diet modification (41%)
- Small commerce (36%)
- Decrease expenditures (26%)

In ***Muramvya***, 98% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:

- Drought (79%)
- Hail (27%)

The most common coping strategies were:

- Diet modification (86%)
- Buy food on credit (38%)
- Decrease expenditures (37%)
- Temporary work (37%)

In ***Muyinga***, 90% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:

- Drought (71%)
- Plant insects/disease (39%)

The most common coping strategies were:

- Diet modification (54%)
- Decrease expenditures (33%)
- Temporary work (32%)
- Work for food (30%)

In ***Mwaro***, 97% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:
- Drought (60%)
- Hail (49%)

The most common coping strategies were:
- Diet modification (86%)
- Loans from family/friends (49%)
- Decrease expenditures (43%)
- Buy food on credit (38%)

In **Ngozi**, 98% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:
- Drought (72%)
- Plant insects/disease (37%)
- Hail (33%)
- Flooding (20%)

The most common coping strategies were:
- Diet modification (63%)
- Loans from family/friends (34%)
- Work for food (30%)
- Temporary work (29%)

In ***Rutana***, 94% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:
- Drought (92%)
- Hail (27%)
- Plant insects/disease (20%)

The most common coping strategies were:
- Temporary work (59%)
- Diet modification (57%)
- Decrease expenditures (57%)
- Work for food (20%)

In ***Ruyigi***, 91% of households reported experiencing one or more covariate shocks in the past 12 months. The most prevalent primary shocks were:
- Drought (92%)
- Plant insects/disease (21%)

The most common coping strategies were:
- Diet modification (71%)
- Temporary work (37%)
- Decrease expenditures (35%)
- Buy food on credit (20%)

3.15.2 – Idiosyncratic shocks and coping strategies

The most common idiosyncratic shock experienced by households in the entire sample, and in every province is the illness or accident of a productive household member – affecting one-quarter of the sample households. Another 11% of households reported the theft of crops and/or livestock. This was particularly common in *Ngozi*, where 20% of households reported this problem in the past year, as well as in *Cankuzo* (18%), *Bujumbura Rural* (16%), and *Kayanza* (15%). All other idiosyncratic shocks are experienced by 6% or less of households within the overall sample. Important exceptions are localized insecurity/violence, reported by 27% of households in *Bujumbura Rural* and 12% of households in *Bururi*, as well as recent resettlement of the household, reported by 13% of households in *Makamba*. Table 3.15.2.1 in Annex II presents the percentage of households experiencing each of the idiosyncratic shocks by province.

Sickness or accident of a productive household member was the most commonly cited primary idiosyncratic shock, experienced by 40% of sample households. As a result,

87% reported a loss of revenue, 8% a loss of revenue and assets, and 5% a loss of assets only. Nearly all of these households reported a negative impact on household food security. In response, 30% of households managed the shock by taking loans from family or friends, while 20% cited diet modification and 16% relied on temporary work. Nearly 20% of these households report being fully recovered from the shock, 34% reported being partially recovered while the rest had not yet recovered at all.

The second most common idiosyncratic shock experienced by households was **stolen crops and/or livestock** reported by 13% of households. The shock resulted in a loss of revenue for 41% of households, 35% a lost assets, and 18% a lost both revenue and assets. All reported that the theft had negatively affected the food security situation of the household. To manage the shock, 37% reported a modification in diet, 16% a decrease in expenditures, 13% early sale of crops, and 13% loans from family or friends.

3.15.3 – Community data shocks and coping strategies

Community key informants were asked to name the significant shocks that households in the communities had experienced in the previous year. Then they were asked how the households in the community managed the effects of those shocks.

Drought was experienced in nearly 70% of the entire sample of communities and was experienced by more than half the communities in each of the provinces.

Plant disease was reported as a shock in 44% of communities and was most commonly observed in *Cibitoke*, *Karuzi*, and *Kirundo*, where over 60% of communities in each province reported this shock.

Thirty percent of the communities had been negatively affected by **hail** and it was most frequently reported in *Kirundo*, *Muyinga*, *Mwaro*, *Ngozi*, and *Kayanza*, where 40% or more of communities reported this shock.

Flooding was named by 28% of households, primarily in Karuzi, *Muramvya*, and *Mwaro*, where more than 40% of communities had been affected in the past year.

Human disease was reported as a common shock by 55% of communities, and was relatively frequent in all provinces.

An **increase in food prices** was reported by 43% of communities, and was particularly high in *Ngozi*, *Cibitoke*, and *Kayanza*.

The most commonly used consumption-related coping strategies named by community key informants were reduction in the volume and quality of foods eaten, and the reduction in the number of meals eaten per day. Other commonly used coping strategies named were: loans, selling of livestock, increasing the amount of work done (for cash or for food).

Section 3.16 - Coping Strategies Index (CSI)

The coping strategies index (CSI) is calculated using information from a series of 14 questions where the households are asked to name the frequency, in terms of days in the past week, in which they used different coping strategies related to access and consumption of food. These coping strategies are then assigned weights[9] from 1 to 4, depending on the perceived severity of the coping strategies, with 4 being the most severe. The frequency of use is multiplied by the severity of each strategy and are added together to give a composite score. In this survey, the maximum score is 280 for household that reported the use all coping strategies every day in the past week, and a minimum score of 0, for households that reported using no coping strategies at all.

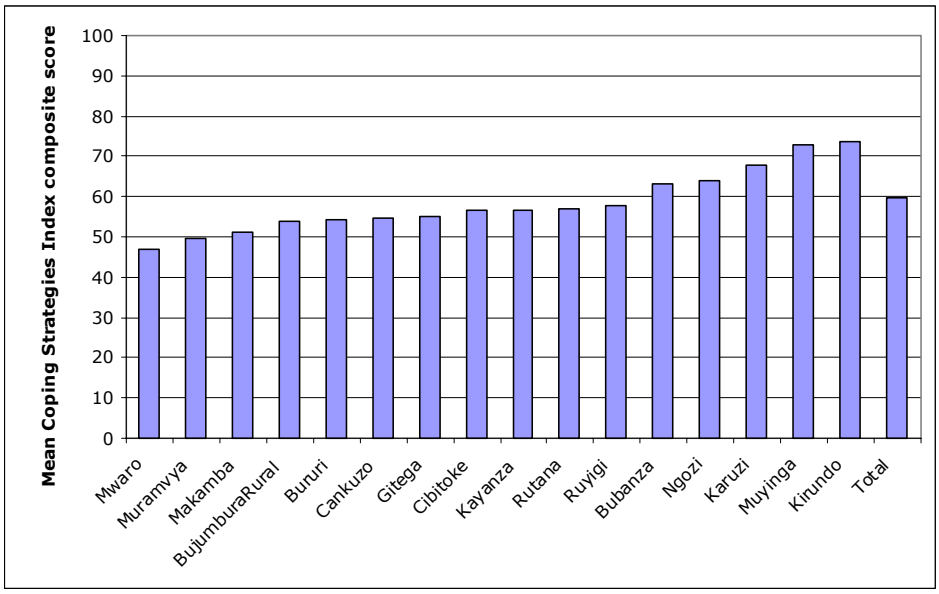
This indicator is primarily used as a monitoring tool, where changes in scores over time are more important that the absolute score. The main purpose of including this indicator in this survey is to provide a baseline against which future assessments can be measured. However, it also provides an interesting comparative indicator. That is, a score of 50 means little alone, but comparing a score of 50 in one province to a score of 70 in another indicates that the province with the higher score may currently be more food insecure, as

[9] These relative weights were calculated using data gathered during previous focus group interviews.

indicated by the increased frequency/severity of the food access and consumption coping strategies.

The overall mean CSI score in the sapmle is 60. The lowest scores are found in *Mwaro*, *Muramvya*, and *Makamba* while the highest scores are found in *Kirundo*, *Muyinga*, and *Karuzi*. Slightly higher mean scores are also found in *Ngozi* and *Bubanza*.

Graph 3.16.1 – Mean Coping Strategies Index composite score by province



Section 3.17 - Maternal and child health and nutrition

Another important indicator of food security, in terms of utilization is the nutritional status of children 0-59 months of age. The sampling plan for selecting households with children under 5 was not rigorous, and the prevalence of malnutrition from this survey is not meant to update or replace recent or future nutritional surveys but rather it is used as an outcome measure of individual food security. Anthropometry is used here to assess nutritional well being of children in relation to other food security and livelihood indicators at the household level.

The results of the anthropometric analysis show that boys and girls are affected equally by malnutrition as illustrated by the high prevalence of stunting among children of both sexes, although slightly higher in male children. Additionally, 2.7% of children (3.2% male, 2.1% female) are suffering from bilateral edema, a characteristic of kwashiorkor, another form of severe malnutrition.

	Moderate and severe (<-2.0 SD)			Severe (<-3.0 SD)		
	Underweight[10]	**Stunting[11]**	**Wasting[12]**	**Underweight**	**Stunting**	**Wasting**
male	37.2%	53.6%	7.1%	10.7%	25.3%	1.0%
female	34.6%	49.8%	7.2%	9.6%	22.5%	1.2%
Total	***35.9%***	***51.7%***	***7.1%***	***10.2%***	***23.8%***	***1.1%***

These results are similar to those from the 2000 MICS national prevalence of wasting (8.1%), underweight (45.1%), and severe stunting (54.9%), although slightly better. The

[10] An **underweight child** has a weight-for-age Z-score below -2.0 SD based on the NCHS/CDC/WHO reference population. This condition can result from acute or chronic malnutrition or a combination of both.
[11] A **stunted child** has a height-for-age Z-score below -2.0 SD based on the NCHS/CDC/WHO reference population. Chronic malnutrition is a result of inadequate food intake over an extended period of time, and may be exacerbated by chronic illness.
[12] A **wasted child** has a weight-for-height Z-score below -2.0 SD based on the NCHS/CDC/WHO reference population. Acute malnutrition is the result of a recent failure to receive adequate nutrition, and may be affected by acute illness, especially diarrhea.

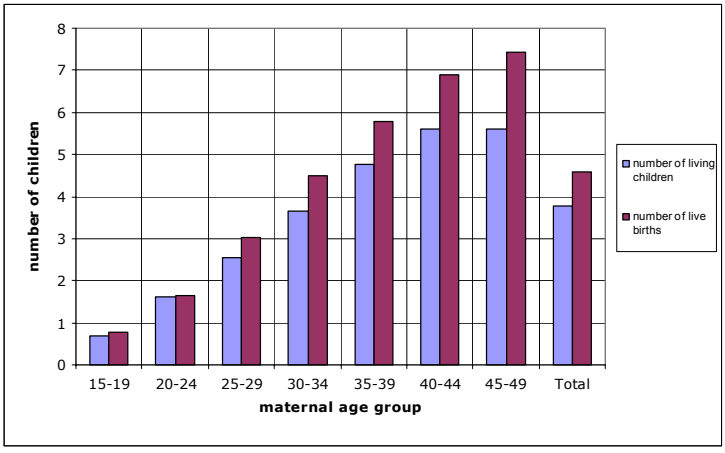
MICS anthropometry reports for children ages 6-59 months, which would likely give slightly higher prevalences, due to the exclusion of children 0-6 months usually protected from disease and malnutrition by breastfeeding.

The prevalence of wasting and underweight are significantly related to the sex of the household head, with female-headed households having higher levels of both as compared to male-headed households. However, there is no relationship between stunting and the sex of the head of household. Mother's education is also related to stunting, with the prevalence of stunting decreasing with increases in maternal education levels.

However, in this sample, wasting, stunting, and underweight z-scores are not significantly related to the amount of food gap or to the Kcalories/capita/day levels as calculated with the 7-day recall. This may indicate that, generally, malnutrition among children in the sample may not be so closely related to household food security but rather to access and utilization of health care, use of safe water and sanitation or maternal caring practices, such as breastfeeding and timely introduction of complementary foods during weaning.

The questionnaire included a section on maternal health, including access and utilization of antenatal care and pregnancy history. Only 4% of women reported **never** having any health consults during their pregnancies while 81% of women reported having seen a nurse/sage femme at least once during their pregnancy. Nearly 10% of women reported **never** having been to the health center during their pregnancies. However, only 20% reported four of more visits. Only 28% of mothers in the survey report having received a single dose of vitamin A in the 4 weeks following their most recent delivery.

Figure 3.17.1 – Average number of living children and births by age group



The chart on the left outlines the average number of births and the average number of living children for women between 15 and 49 years old. The trends seen in the chart indicate that women in the older age groups are more likely to have lost a child either shortly after birth or later in life, although the causes of death (and age) were not documented. In fact, women in the 45-59 year old age group had, on average, lost 2 children. There is little doubt that the conflict had contributed to the deaths of children through disease, malnutrition or physical violence.

Part IV – Program participation and perceptions

Section 4.1 – Program participation

In the sample, 16% of households reported having received food aid in the past 6 months. Of these households, 74% reported receiving food aid as part of a general distribution program, and 11% from other sources. The remaining households had mainly received food aid from either a nutritional center or a social center. The receipt of food aid was highest in *Muyinga* (35%), *Ruyigi* (23%), *Kirundo* (23%), *Bujumbura Rural* (22%), and *Rutana* (21%).

More than 70% of those that received food aid in the previous 6 months reported no difficulties in receiving the food items. Among the households that reported difficulties in receiving aid, half cited problems with registration as one of the main difficulties, while 17% cited lack of food, which could indicate a pipeline break, or simply a desire for larger distribution quantities. Less than 5% cited insecurity or lack of transport as a difficulty in receiving food aid.

Section 4.2 - Food aid sales

Households that had received food aid were asked if they had sold any of the rations. Only 12% of those receiving food aid reported that they had sold a portion of what they received. This is likely to be an underestimate, as most beneficiary households have been made aware that the sale of food aid is discouraged, and so may give biased answers. The most common reason cited for selling food aid was to buy other food items (50%) while 23% cited milling costs as a reason for selling food aid. Another 15% reported selling food aid to buy non-food items and less than 10% of households cited insecurity, transport costs, or school/health costs as a reason for selling food aid.

For beneficiary households selling food aid, they sold about 26% of maize, 25% of pulses, and 50% of the oil received, which is not surprising as vegetable oil usually has the highest market value. However, these results are from a very small sample of households. According to the community key informants, among the communities receiving food aid in the past 6 months, 65% of communities reported that at least some households sold food aid. The primary reasons for selling are to buy non-food items (46%), to buy other food items (62%), and to pay milling costs (24%).

Section 4.3 - Perceptions of aid

In communities that had received food aid in the last 6 months, the community key informants were asked if the general perceptions of food aid are favorable or unfavorable, and to explain their answers. Nearly 60% of community informants reported that the perception was generally positive. Common reasons for those reporting the perception as unfavorable were insufficient amounts of food distributed, misappropriation or poor targeting during distributions, and infrequent distribution.

In the household interview, households were asked to rank the top three priorities in their community from a list of possible assistance/development options. This list included health, education, housing, roads, security, income generating projects, agriculture, livestock, and food aid.

Nearly 60% of the households named healthcare as the most important area of assistance needed, followed by housing (19%), and education (10%). There was little difference between provinces in 1st priority assistance/development needs. The most commonly cited 2nd assistance/development needs were agriculture production, housing, income generating projects, and livestock. Food aid was commonly named as the 3rd most important assistance/development need, by 57% of households. The call for assistance with physical insecurity appears only as a secondary request by households in *Bujumbura Rural* (22%), *Cibitoke* (15%), *Bubanza* (15%), and *Muramvya* (12%). Improvement in roads is mentioned as a first, second, or third assistance/development priority by only 4% of households.

The first, second, and third priority intervention priorities by province are presented in Table 4.3.1 in Annex II.

Part V – Household food security profiling

In WFP, the Vulnerability Analysis and Mapping Unit (VAM) analyzes food security and Vulnerability in order to provide decision-makers with key programming information. In broad terms there are five key questions that need to be answered:

- Who are the hungry poor?
- How many are they?
- Where do they live?
- Why are they hungry?
- How can food aid make a difference?

Both food security and vulnerability cannot be captured by a single indicator as they lack of a benchmark of reference and vulnerability is a direct result of uncertainty. There are no unique indicators to measure the three food security components: ***availability***, ***access*** and ***utilization***. Therefore, the VAM methodology uses proxies and outcome indicators to measure food availability, access and utilization at the household level.

Typical indicators of ***food security*** include:

- Food consumption**:**
  - Food diversity;
  - Frequency of consumption;
  - Sources of food.
- Income, expenditure and assets (estimating people's purchasing power):
  - Income diversification;
  - Shares of income expenditure, income savings and/or investment;
  - Shares of food expenditure by commodities;
  - Asset ownership;
  - Access to credit and social assets.
- Anthropometry
  - Wasting, Stunting, Underweight;
  - Body mass index.

While typical indicators of ***risk*** are:

- Risk and responses:
  - Past/Current shocks and main responses;
  - Future shocks and planned responses.

Because of the multi-dimensionality of the problem, there is the need to analyse several variables and to understand the intra- and inter-variables relationship. To capture these relationships VAM uses multivariate statistical techniques, in particular principal component analysis (PCA). The objectives of a PCA are:

- To discover or reduce the dimensionality of the data set;
- To identify new meaningful underlying variables.

Principal Components Analysis helps to simultaneously envision all variables selected to describe a statistical unit (e.g. a district, a household, etc). The PCA process intends to identify the maximum data variability and project onto new orthogonal axes. PCA takes the cloud of data points and rotates it such that maximum variability is visible. New factors (principal components) are created by rotating the data plotted on orthogonal axes. In so doing, PCA helps to determine whether there is/are hidden factor(s) or components along which the data vary. It computes a compact and optimal description of the data set.

Before rotating the data cloud, the PCA standardize the data by subtracting the mean and dividing by the standard deviation. Thus the centroid of the whole data set is zero. By standardizing we give all variables the same variation, i.e. standard deviation of 1. When variables measured in different units are used it is necessary to standardize the data. Basically a PCA transforms a set of more or less correlated variables into a set of uncorrelated variables which are ordered by reducing variability. The uncorrelated variables are linear combinations of the original variables and the last of these variables can be removed with minimum loss of real data.

The software used for the PCA is called **ADDATI** (Italian: Analisi Dei DATI - Data Analysis) is a menu-driven collection of Multivariate Analysis routines. It consists of a **Menu of Analysis**, that offers Distributions, Cross-tabulations, construction of Typologies, Principal Component Analysis, Analysis of Correspondences, hierarchical and non-hierarchical Clustering, and a **Menu of Utilities**. It was developed by Silvio Griguolo, IUAV Venice, Italy. Version 5.01 was written with the support of the Vulnerability Analysis and Mapping (VAM) Unit of the World Food Program.

For the Burundi analysis, the following variables were analysed in order to classify households into homogeneous food consumption typologies:

1. frequency of consumption of staple and non-staple foods such as pulses, meat, vegetables and fruits;
2. the sources of each food item;
3. the share of household expenditure for food and other basic needs (e.g. health, education, etc.); and
4. share of expenditure for individual food items

For the food frequency data, since each of these variables is composed of a combination of different data, (i.e. people eat more than one food item with different frequencies), multivariate techniques (PCA and cluster analyses) were used to analyze these data taking into account the inter- and intra-variable relationship within each household.

Then, sources of the foods consumed (e.g. purchased, own production, food aid, etc.) were introduced in order to understand the role of food sources has on household food consumption.

The objective of the household data analysis was to create household food security profiles where each profile is a description of the food consumption level achieved by the households in each group. In other words, households were clustered based on the four variables, creating relatively homogeneous household food security profiles.

A few of the food items were excluded from the final analysis after an exploratory analysis indicated that very few households had consumed them in the 7-day recall period. Just 3% of the surveyed households had eaten wheat, 9% sorghum, 3% poultry, 3% eggs, 4% dairy products and 7% bread. Nevertheless, information on some of those items could provide interesting integrations because their consumption seems to be geographically related. For example, only 3% of the sampled households had eaten wheat and 9% had eaten sorghum, regardless the frequency, from 1 to 7 times per week. Despite the low incidence of consumption, it appears that wheat is more likely to be consumed in the central-west part of the country: 13% of surveyed households in *Muramvya*, 10% in *Bujumbura Rural*, and 8% in *Bururi* eat wheat at least once a week. Sorghum consumption is more common in northern-east areas: 35% of surveyed households eat this food in *Kirundo*, 20% in *Cankuzo*, and 16% each in *Muyinga* and *Rutana*. Areas in the central-east zone report about 10% of households eating sorghum (11% in *Ngozi*, 11% in *Karuzi* and 9% in *Ruyigi*).

Specifically, the final analysis used information on the frequency of consumption (0 to 7 days) for twelve food items or food groups: **maize, rice, manioc, sweet potatoes/tubers, plantains/bananas, pulses, vegetable/palm oil, fish, meat, manioc leaves, vegetables, and fruit**.

Based on this methodology, six distinct groups of households were identified and characterized by their different food consumption, acquisition, and livelihood patterns.

Section 5.1 - Chronically food insecure households- Group A

Summary: Most households in this group have trouble meeting at least part of their food needs, and even those that meet their food needs have poor dietary diversity. Access to income is limited, and total income is very low. Additionally, agricultural production is poor or non-existent. This group is the most in need of food aid, during most or all of the year. Development programs for households in this group should include not only health, nutrition, and agriculture programs, but also programs that will give access to income to those households with no able-bodied workers.

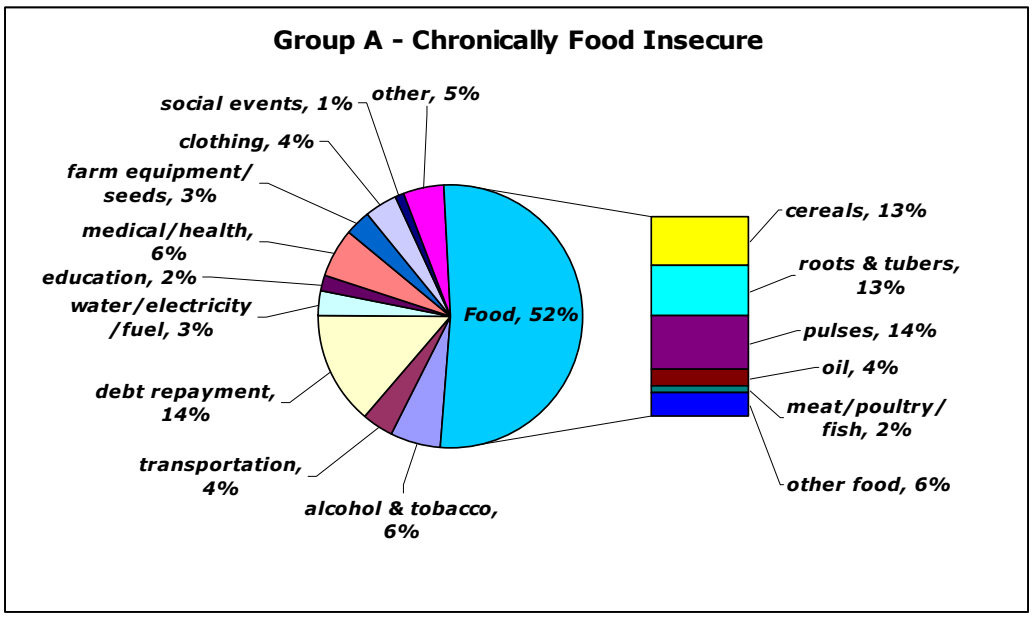
Group A - 16% of the surveyed households barely manage to eat a staple food (maize, rice, manioc, tubers and plantains) on a daily basis. Among these households, the average cumulate frequency of these items accounts for 6 days out of the week. Pulses are consumed twice per week, oil once while manioc leaves and other vegetables less the once a week on average.

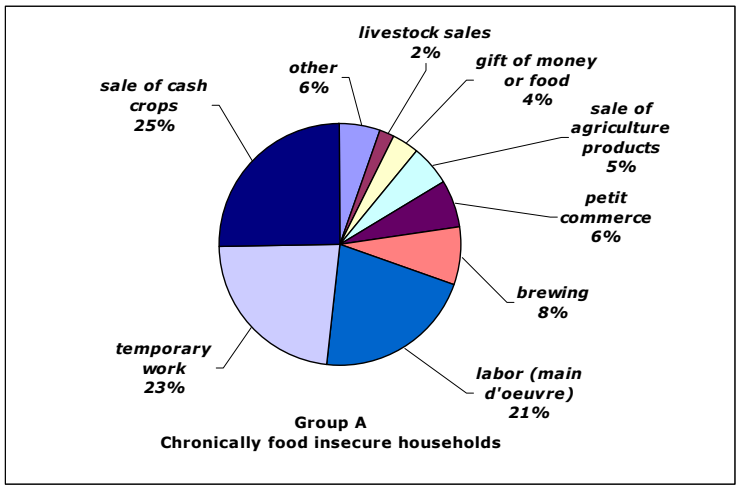
	Never	Rarely (1-2 days/week)	Sometimes (3-4 days/week)	Often (5-6 days/week)	Daily (7 days/week)
Maize					
Rice					
Manioc					
Tubers					
Plantains					
Pulses					
Oil					
Fish					
Meat					
Leaves					
Vegetables					
Fruit					

For all the foods eaten by these households, about half are purchased. In particular, rice is purchased in 69% of households, pulses in 58%, manioc in 55 percent. However, over 70% of the households consuming plantains access this food from own production as well as 57% of the households consuming tubers. Food aid is an important source of food for only 10% of the maize eaters and, to a much lesser extent, plantains (6%), pulses (2%), and 1% for rice, manioc and vegetable oil. Gifts of food also appear to be an important food source, accounting for 7% of the total food source responses and were reported specifically for 15% of those eating leaves, 13% for vegetables, 11% for maize, 10% for rice, and 7% for pulses.

These households have the highest share of total monthly expenditures on food (51%), and the lowest average absolute expenditure per capita per month (1,798 Burundi Franc) among the six food consumption groups. This group also has the lowest absolute value for non-food expenditure (1,551 Burundi FBu/cap/month) and for total expenditure (3,348 FBu/capita/month).

The second greatest share of expenditure is for debts (14%), followed by health (6%) and alcohol/tobacco (6%). This group of households also presents the highest share of monthly expenditure for medical expenses. Of the foods, pulses account for 14% of total expenditure, followed by cereals (maize, wheat, rice or sorghum) and roots & tubers at 13% each.





The estimated annual mean income for Group A is 19,200 FBu per capita, which is approximately 2/3 that of the vulnerable groups (B, C, D), and about 1/3 that of the food secure group (F). The main sources of income are cash crops, temporary work, and manual labor. About one-quarter of the households report the sale of cash crops as the main source of income, 24% rely on temporary work, 22% for manual labor, and 4% rely on gifts of food or money. Group A has the highest percent share of income from gifts of food/money, as well as the percent of households listing it as the primary source of income.

When considering income and production (Section 3.13), theoretically, the amount of food that could be purchased and produced at the ***individual*** level for households in this group is 1,310 kcals/day. This is similar to the findings from the food consumption data (7-day recall) where the average individual consumption is about 1,190 kcals/day, the lowest of any group. This is likely to be an underestimate of the true caloric consumption in these households; otherwise, the prevalence of child malnutrition would be much higher. However, as explained in Section 3.14, this estimate of caloric consumption is best use as a relative measure rather than an absolute amount.

Group A – Chronically food insecure - 16% of the sample

- Estimated consumption of 1190 kcals/capita/day
- Mean production and purchase of 1310 kcals/capita/day
- Mean annual per capita income estimate of 19,200 FBu, the lowest in the sample
- Mean CSI composite score of 77, the highest in the sample
- Average number of assets per household is 3, the lowest in the sample
- Average annual household food production estimate is 323 kg cereal equivalents
- 25% are female headed households, the highest in the sample
- Highest dependency on temporary work and manual labor for income
- As a response to shock, they are the most likely to modify their eating habits, or work for food.
- This group presents the lowest prevalence of households having experienced displacement in the last 2 years (13%).
- Among the households experiencing displacement in the past 2 years, this group has the highest prevalence of displacement in search of employment (17%), the 2nd highest percent of households displaced outside of the commune of origin, and the highest prevalence of current displacement (30%).
- High prevalence of wasting, underweight and stunting in children, but not the highest in the sample.

Although the number of shocks experienced in the past year is similar between groups, 20% of the households in Group A report a loss of both assets and revenue as a result of their primary shock, the highest in the sample. Among the possible coping mechanisms, these households are the most likely to modify their diet, the most likely to buy food on credit, and the most likely to work for food. They are the least likely to do nothing, an indication that the household is more vulnerable to the effect of shocks. Nearly 70% had not recovered at all from the effects of the shock, the highest of all groups.

Group A has the lowest percentage of literate household heads – only 40 percent. The enrollment of children between 5 and 15 years in primary school is also the lowest of all groups, at 38 percent.

One-fifth of the households have corrugated metal roofs, the lowest in the sample, and about half use firewood as their main source of lighting, the highest in the sample. Only 21% own a radio, and 5% a bicycle, the lowest in the sample.

Section 5.2 – Households vulnerable to food insecurity- Groups B, C, D

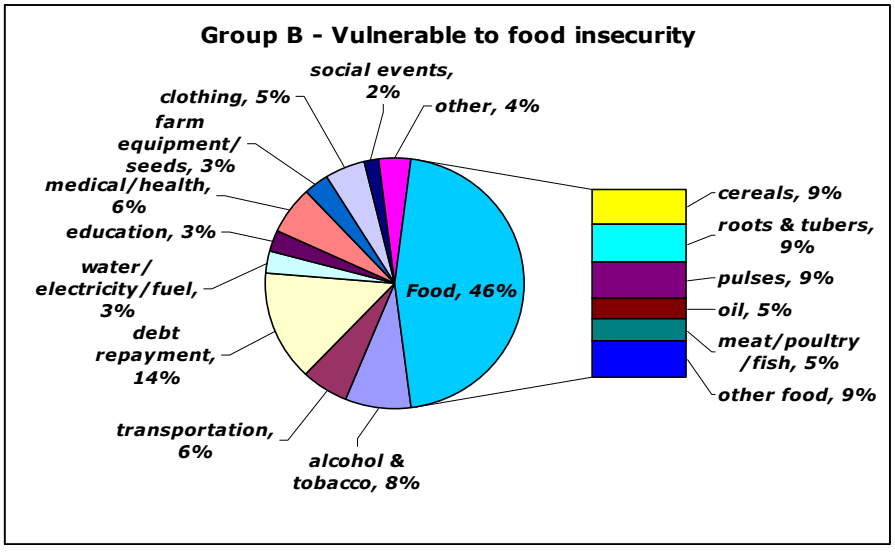
Summary: These households are borderline food secure, and vulnerable to future shocks. They are likely to need food aid during extended lean periods, or when encountering moderate or severe household shocks. They are also most likely to benefit from development programs, both in improving agriculture and in diversifying and increasing income opportunities.

Group B - A group of **19% of households** bases their diet on a daily consumption of a staple food and pulses, while oil is consumed 5-6 days per week. Manioc is their most commonly eaten staple food, on average 3-4 times per week. Cereals, tubers or plantains are eaten less often, but these items together make up the weekly household starch needs. Fish, leaves, and vegetables are rarely consumed and some of the households eat fruit often while the large majority of households in this group hardly consumed any fruit.

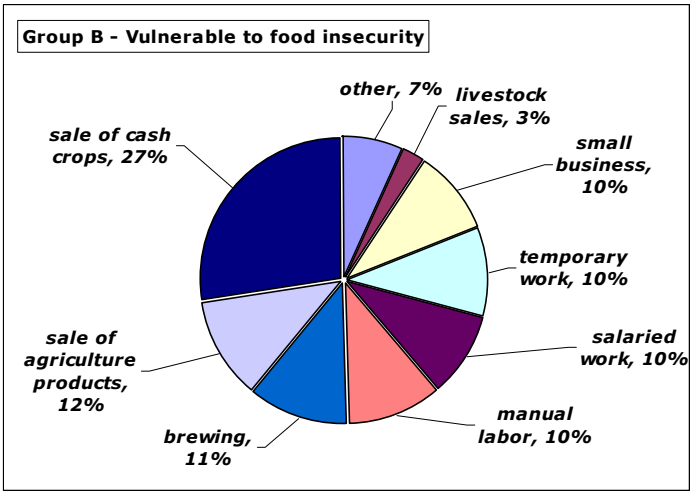
Most household access their food through purchase and production, making up nearly half of the total responses. However, the relative importance of purchase and own production depends on the type of food. Oil and rice are mostly purchased (95% and 78% of the responses), while manioc, tubers, plantains, pulses and fruit are mainly produced at home. Food gifts account for only 3% of the total food source responses. Fruit is the most donated food item.

Group B	Never	Rarely (1-2 days/week)	Sometimes (3-4 days/week)	Often (5-6 days/week)	Daily (7 days/week)
Maize					
Rice					
Manioc					
Tubers					
Plantains					
Pulses					
Oil					
Fish					
Meat					
Leaves					
Vegetables					
Fruit					

Forty-six percent of their total monthly expenditure is for food. Due to the high share of their diet coming from own production, there is less expenditure for cereals, roots & tubers and pulses and more spent on other foods, as compared to the Group A households.



The second largest expenditure share is for debts (10%), while alcohol and tobacco account for 8% of the monthly expenditure. Health costs account for 7%, the second highest figure among the six households food group.



The relative average income for households in this group is about 29,900 FBU per capita annually. Main sources of income for the group as a whole include cash crops, sale of agricultural products, brewing, and manual labor. Salaried work and temporary work are also important contributors. Almost 30% of households report the sale of cash crops as the ***primary*** source of income, 15% report temporary work, 14% report manual labor, 12% sale of agriculture, and 11% alcohol brewing. When combining the potential contribution of purchase and production (Section 3.13), the theoretical from purchase or production by households in this group is 1,940 kcals/capita/day. Analysis of the food consumption data from the 7-day recall produces similar findings; with an average consumption is 1940 kcals/capita/day.

Group B –Vulnerable to food insecurity
19% of the sample

- Relative estimated consumption of 1,930 kcals/capita/day
- Relative estimate food availability from purchase and production is 1,940 kcals/capita/day
- Estimated average annual per capita income of 29,900 FBU
- Mean composite CSI score of 56
- Average of 4 assets per household
- Estimated average annual household food production of 488 kg cereal equivalents
- 18% are female headed households
- Primary sources of income are sale of cash crops, temporary work, manual labor, sale of agriculture, and beer brewing.
- Children have the highest prevalence of wasting (9%), underweight (40%) and stunting (53%) in the sample.

The occurrence of shocks, and the primary shock experienced by households in this group are similar to those found in the overall sample. Similar responses are also found for the effect of shocks, coping mechanisms, and recovery status.

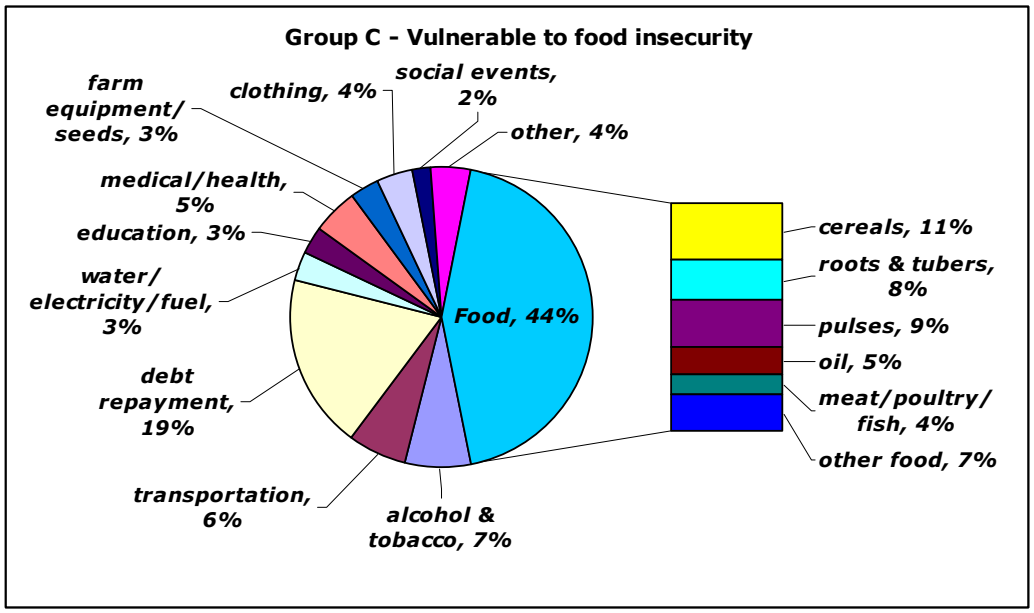
About half the household heads in Group B are literate and about 52% of children 5 to 15 years of age are enrolled in primary school, which is close to the sample average. One-third of these households have homes with corrugated metal roofs and one-third use firewood as the main lighting source. Thirty percent own radios, and 15% have bicycles.

Group C - The largest group of households in the sample (**32%**) bases their diet on a large consumption of starch. The cumulate frequency of maize, rice, manioc, tubers and plantains is high among these households, even though **two different dietary patterns** are found.

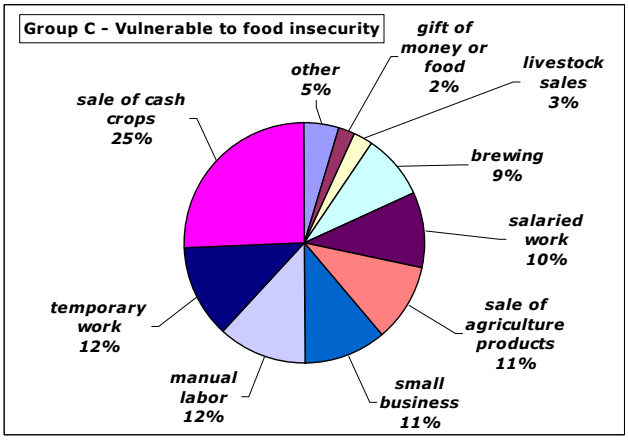
Half of this group bases their diet mainly on **tubers or plantains** and sometimes they consume oil. The other half eats primarily **maize or rice** mixed with lesser quantities of tubers and/or plantains. These households consume oil at least 4-5 times per week. On average, households in this group often consume pulses, while rarely eating leaves or vegetables or fish.

Group C	Never	Rarely (1-2 days/week)	Sometimes (3-4 days/week)	Often (5-6 days/week)	Daily (7 days/week)
Maize					
Rice					
Manioc					
Tubers					
Plantains					
Pulses					
Oil					
Fish					
Meat					
Leaves					
Vegetables					
Fruit					

The two different starch-based dietary patterns could depend on the livelihood system of the households. Tubers and plantains, together with leaves, come generally from own production. Maize, rice, and manioc are more commonly purchased. Food gifts appear to be less common among these households, even though a few households receive food as a gift is an important food source. Seven percent of the total leaf source and 6% of maize and rice are gifts.



Expenditure for food accounts for 44% of the total household expenditures. The aggregate figures about food expenditure per item are probably smooth due to the average between households relying on maize or rice (included into "grains" category) and households eating mainly tubers or plantains. Both the food groups account for about 20% of the total expenditure, but the average share are quite surely biased by the fact that households eating more cereals commonly buy them, while households relying on tubers most of the time produce those items. Nine percent of monthly expenditure is for pulses while expenditures on other foods is about 7 percent of total. The second biggest share of expenditure goes to debts, at 19%, followed by alcohol and tobacco (7%) and health (5%) expenditure.



On average households in Group C earn an estimated 29,300 FBu per capita annually. About one-quarter of this income comes from the sale of cash crops. Just over half of the income in this

group comes from an even mix of temporary work, manual labor, small commerce, sale of agricultural products, and salaried work. Brewing is also an important source of income. One-quarter of households report the sale of cash crops as the ***primary*** source of income, 16% temporary work, 14% manual labor, 10% sale of agricultural products, and 10% alcohol brewing.

When considering income and food production together (Section 3.13) the theoretical amount of food that the households in this group could access is 1,970 kcals/capita/day. This is similar to the amount calculated using the household food consumption data from the 7-day recall which is estimated at 2,080 kcals/capita/day.

The occurrence of shocks, and the primary shock experienced by households in this group are similar to the overall sample. Similar responses are also found for the effect of shocks, coping mechanisms, and recovery status.

Group C –Vulnerable to food insecurity
32% of the sample

- Estimated average consumption of 2,080 kcals/capita/day
- Relative estimate food availability from purchase and production is 1,970 kcals/capita/day
- Estimated annual per capita income is 29,300 FBu
- Mean CSI composite score of 58
- Average number of assets per household is 4
- Estimated average annual household food production of 487 kg cereal equivalents
- 16% are female headed households
- Primary sources of income include sale of cash crops, temporary work, manual labor, and sale of agricultural products
- Prevalence of wasting and underweight is high while prevalence of stunting is highest (53%) in the sample.
- Highest percentage of food aid recipients (19%).

Approximately 47% of the heads of household in Group C are literate while 49% of the children 5-15 years of age are enrolled in primary school. One-third of the households in Group C use firewood as their main lighting source, 32% have houses with corrugated metal roofs, 33% own a radio, and 12% own a bicycle.

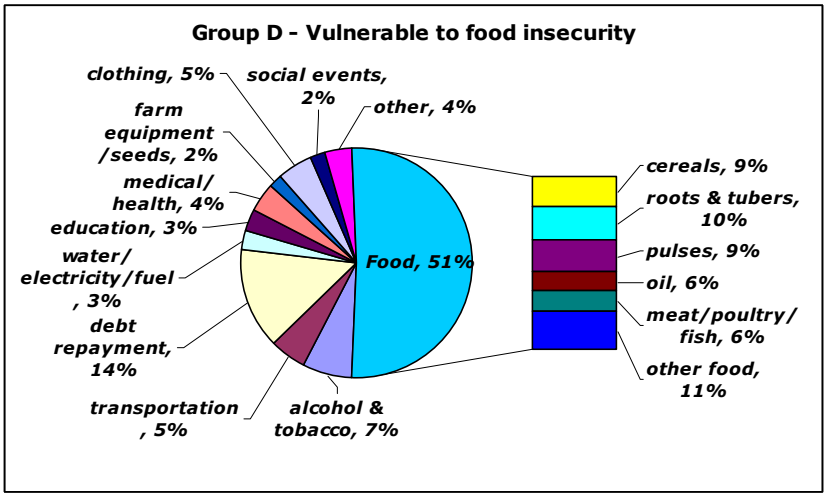
Group D - Another **16% of surveyed households** are characterized by consumption patterns based on frequent consumption of manioc (4-5 times per week) and tubers (3 times per week). Pulses and oil are consumed 4-5 times per week, while leaves or vegetables more often - 5 times per week on average. Maize, rice, plantains, and fish are rarely eaten, on average less than once a week.

Group D	Never	Rarely (1-2 days/week)	Sometimes (3-4 days/week)	Often (5-6 days/week)	Daily (7 days/week)
Maize					
Rice					
Manioc					
Tubers					
Plantains					
Pulses					
Oil					
Fish					
Meat					
Leaves					
Vegetables					
Fruit					

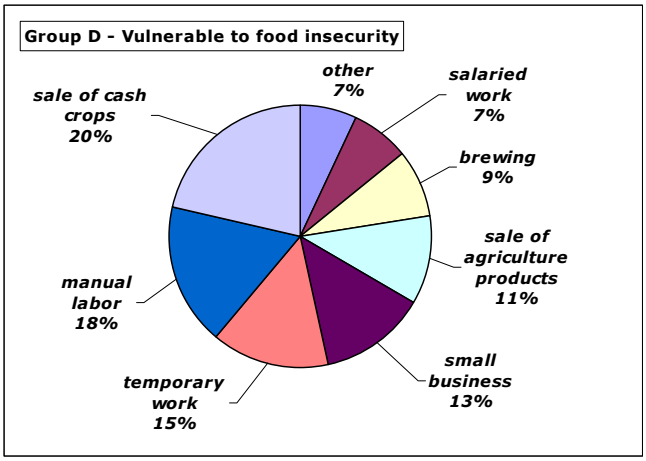
Tubers and leaves come largely from own production. Manioc, pulses and vegetables are purchased on average half of the time while slightly less than the other times are own produced. The difference is due to food gift as source of these items. Gifts as a source of food is fairly common for leaves (13% of the total information about leaf sources).

The monthly share for food is 51% of the total expenditure. It is important to note that the absolute value per capita per month of the total household expenditures is lower than the expenditures in the previous groups (5265 Burundi Francs compared to 5507 BFs). These considerations allow inferring that food expenses are much heavier in average for households in this group than in the previous one, although the per capita different in absolute terms is not very high.

Within the food expenditure items, the highest allocation is for other foods, followed by roots and tubers, cereals and pulses. For non-food, the highest share of monthly expenditure is for debt repayment (14%), followed by alcohol and tobacco (7%) and transportation (5%).



Households in this group earn an estimated average of 31,700 FBu per capita annually. The majority of this income, as illustrated in the graph below, comes from the sale of cash crops. However, manual labor, temporary work, small business, and the sale of agricultural products are also important contributors. Over 20% of households report the sale of cash crops as the ***primary*** source of income (the lowest among the groups), 21% rely on manual labor, and on 18% temporary work.



When estimating potential access to food through purchase and production (Section 3.13), the theoretical amount of food that could accessed by households in this group is 2,010 kcals/capita/day. This is similar to the amount calculated from the 7-day food frequency, which was 2,050 kcal/capita/day.

The prevalence of shocks, and the primary shock experienced by households in this group reflect levels close to the overall sample. Similar responses are also found for the effect of shocks, coping mechanisms, and recovery status.

Group D –Vulnerable to food insecurity
16% of the sample

- Estimated average consumption of 2,050 kcals/capita/day
- Relative estimate food availability from purchase and production is 2,010 kcals/capita/day
- Estimated annual per capita income of 31,700 FBu
- Estimated average annual household food production of 488 kg cereal equivalents
- Mean CSI composite score of 58
- Average number of assets per household is 4
- 21% are female headed households
- Main sources of income are the sale of cash crops, temporary work, and manual labor.
- Elevated prevalence of wasting in children, high levels of underweight (38%) and stunting (51%).

In Group D, 46% of household heads are literate, 54% of children between 5 and 15 years old attend primary school. Nearly 30% of the households have homes with a corrugated metal roof, 29% own a radio and 8% own a bicycle.

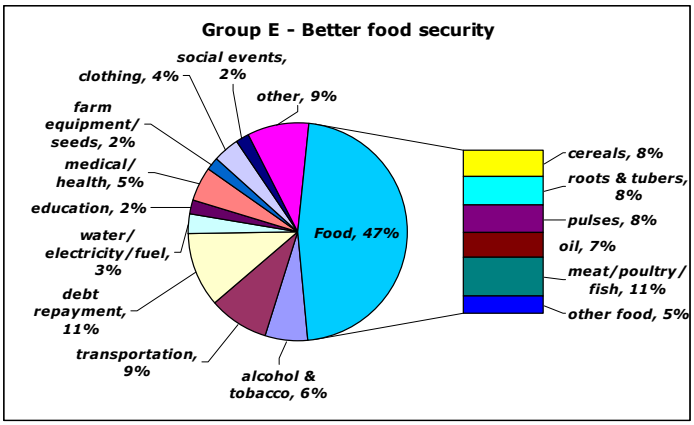
Section 5.3 - Households with better food security- Group E

Summary: These households enjoy better levels of food security than previous groups and their livelihoods are generally stable. These households are unlikely to require food aid unless faced with extreme or numerous household shocks. However, intervention in the areas of agriculture, health, and income generation will greatly benefit this group.

Group E - 11% of households present a dietary pattern based on frequent consumption of manioc, pulses and fish. These households consume oil every day, while other starches, leaves, and vegetables are eaten once or twice per week.

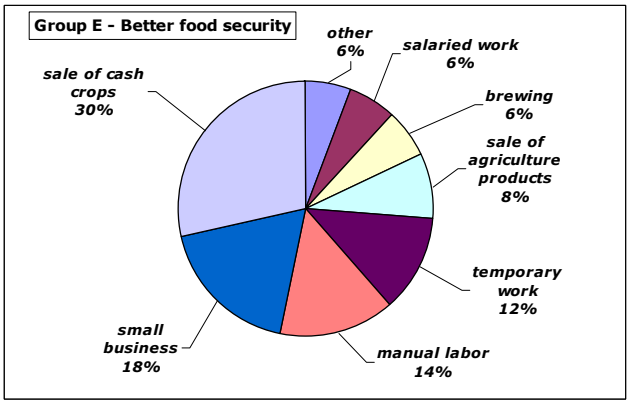
Group E	Never	Rarely (1-2 days/week)	Sometimes (3-4 days/week)	Often (5-6 days/week)	Daily (7 days/week)
Maize					
Rice					
Manioc					
Tubers					
Plantains					
Pulses					
Oil					
Fish					
Meat					
Leaves					
Vegetables					
Fruit					

Fifty-two percent of the total responses about manioc sources attest that most access this staple item through own production. On the other hand, manioc comes from purchase in 46% of the responses. Tubers, plantains and leaves are largely from production, while cereals (maize and rice), pulses, oil and fish are mainly purchased. The foods most often received as gifts are leaves (7% of the responses) and rice (5%).



Expenditure on food accounts for 47% of the total monthly household expenditure. It is important to note that in absolute per capita value, households in Group E have an income higher than the previous ones and double that of the first group. The estimated average per capita expenditure on food is 3,270 Burundi Francs per month, and the estimated total expenditure is 6,791 FBu per capita per month.

Considering these figures, it is possible to understand why these different groups all show an expenditure share for food around 50% of the total, but households in this group are able to diversify their consumption by spending more on meat/fish (11%), followed by pulses (8%) and tubers (8%), as well as cereals (8%) and oil (7%). Debts accounts for 11% of monthly expenditure share, followed by transport (9%), other (9%), alcohol and tobacco (6%), and medical/health (5%).



Considering income, the households in this group earn an estimated average of 39,700 FBu per capita annually. They generally earn slightly more money than the Vulnerable households (Groups B, C, D), and double that of the Chronically food insecure group

(Group A). They rely largely on the sale of cash crops as well as small business. Manual labor and temporary work are also important sources of income. Almost 30% of households report sales of cash crops as their ***primary*** source of income, 17% manual labor, 16% temporary work, and 14% small business.

When considering the amount of food produced and purchased (Section 3.13) by these households, the theoretical amount of food that could be accessed is 2,490 kcals/capita/day, which is higher than Groups A to D, but much lower than Group F. This daily kilocalorie estimate of access is similar to that calculated from the household 7-day food frequency data, which is about 2,180 kcals/capita/day.

Group E – Better food security
11% of the sample

- Estimated average consumption of 2,180 kcals/capita/day
- Relative estimated food availability from purchase and production is 2,490 kcals/capita/day
- Estimated annual per capita income of 39,700 FBu
- Mean CSI composite score of 52
- Average number of assets per household is 4
- Estimated average annual household food production of 615 kg cereal equivalents
- 17% are female headed households
- High reliance on cash crops and small business for income, followed by temporary work and manual labor.
- Lower prevalence of wasting and underweight but high prevalence of stunting (51%) in children under five.

The prevalence of shocks, and the primary shock experienced by households in this group reflect levels close to the overall sample. Similar responses are also found for the effect of shocks, coping mechanisms, and recovery status.

Approximately 53% of the household heads in this group are literate and 54% of children 5-15 years old are attending primary school. Forty percent of the households in this group have homes with corrugated roofs, 26% use firewood as the main lighting source, 34% own a radio, and 14% own a bicycle.

Section 5.4 – Most food secure households- Group F

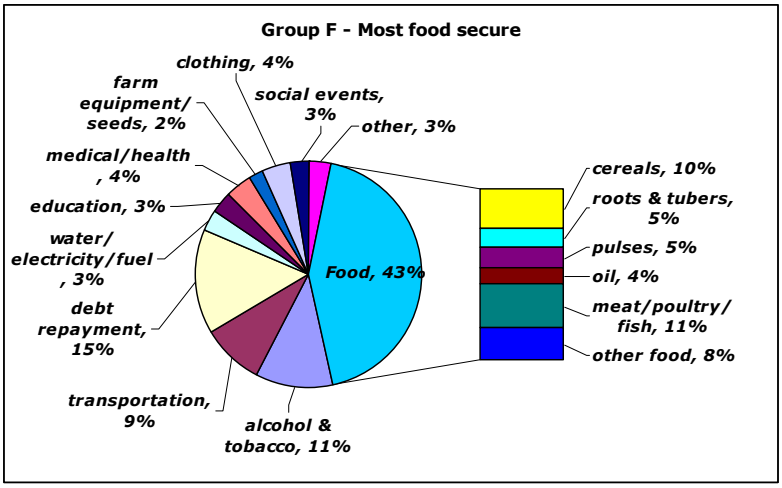
Summary: These households are the most food secure, the least vulnerable to future shocks, and generally NOT in need of food aid. However, they may still benefit from development programs.

Group F - The **smallest group** clusters **5% of the sample households**. Their consumption pattern appears to be quite diversified and with good nutritional intake from a variety of food groups. These households manage to eat starch everyday even if they do not consume a fixed unique staple. They eat manioc 4 times per week, rice, tubers and plantains twice a week and maize once a week. Oil and pulses are consumed 6 days per week. Fish and meat seem to be complementary in their diet: each of these items is consumed 3 times per week on average. Leaves and vegetables are eaten twice a week; fruit even less often - once a week on average.

Group F	Never	Rarely (1-2 days/week)	Sometimes (3-4 days/week)	Often (5-6 days/week)	Daily (7 days/week)
Maize					
Rice					
Manioc					
Tubers					
Plantains					
Pulses					
Oil					
Fish					
Meat					
Leaves					
Vegetables					
Fruit					

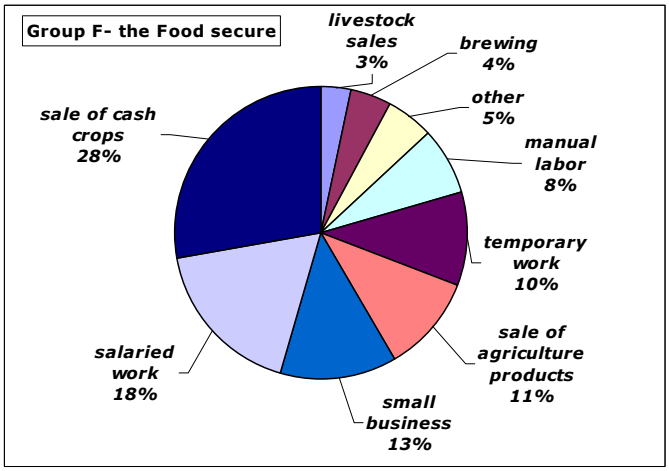
Rice, oil, fish and meat, as well vegetables and fruit are usually purchased. Half of the responses about maize source shows this item is from own production. However, another large share of households (44%) purchase maize, while just 4% receive as a gift. Leaves, tubers and plantains, and, to a lesser extent, manioc and pulses, are generally from household production.

This group of households has the lowest share of expenditure for food, at 43% of monthly total. In absolute values, per capita food expenditure per month is 5,546 Burundi Francs



and the total expenditure figure is 11,868 FBu - nearly double that of Group E and more than three times that of Group A. Thus, these, households have relatively higher cash availability. The analysis of food expenditures shows that 11% of total expenditure is for meat or fish, followed then by cereals and other foods. Debts are the second biggest expenditure category (15%), followed by alcohol and tobacco (11%) and transportation (9%). The share of monthly expenditure for social events, although quite low (3%), is the highest among the six groups.

The analysis of income and income sources shows that households in this group earns an estimated mean of 54,200 FBu/capita annually, which is 33% more than the Vulnerable groups (B, C, D), and 3 times that of the Chronically food insecure (A). As illustrated in the graph below, the largest contributor to income in this group is the sale of cash crops (28%), followed by salaried work (18%), the most of any group. Small business and sale of agricultural products are also important income sources for households in this group. Nearly 40% of households report the sale of cash crops as the ***primary*** source of income (the highest among the groups), 13% report small business, and 11% salaried work (the highest in the sample).



When considering the possible food accessed through purchase and own production (Section 3.13), the theoretical maximum amount of food that accessed by these households is 3,140 kcals/capita/day.

When compared to the household food frequency data, the average consumption for the group during the 7-day recall period is 2,368 kcals/capita/day.

Households in this group have experienced shocks of similar type and frequency as the other groups. However, they are the least likely to modify their diets, the most likely to modify their expenditures (implying that they have choices about what non-essential expenditures can be eliminated or altered), and the most likely to spend savings or investments. Regarding their state of recovery from the primary shock, 40% of households reported they had not yet recovered, the lowest in the sample, while 11% reported that they had completely recovered, the highest in the sample.

Nearly 30% of households in this group had experienced displacement in the past 2 years, the second highest of the groups. However, among the displaced households, most had been displaced within their home commune (65%). Most had been displaced for reasons of security (84%), and the least to search for employment (2%).

More than 60% of household heads in this group are literate, the highest in the sample. Nearly 60% of children between 5 and 15 years old attend primary school, the highest in the sample.

Households in this group also tend to have the best quality housing with 11% of houses having fired brick walls, the highest in the sample and 49% having corrugated metal roofs, also the highest in the sample.

Only 21% of households report using firewood as the main lighting source, the lowest in the sample. Nearly half the households own a radio, and 25% a bicycle, the highest in the sample.

Group F – the Most food secure
5 % of the sample

- Estimated average consumption of 2,368 kcals/capita/day
- Relative estimated food availability from purchase and production is 3,140 kcals/capita/day
- Estimated annual per capita income of 54,200 FBu, the highest in the sample
- Mean CSI composite score of 49, the lowest in the sample
- Mean number of assets per household is 5, the highest in the sample
- Estimated average annual household food production of 870 kg cereal equivalents, the highest in the sample
- 6% are female headed households, the lowest in the sample
- Highest reliance on sale of cash crops and salaried work as main income source
- Lowest reliance on temporary work or physical labor of all groups as main income source
- In response to shocks, these households are the most likely to rely on savings/investments, or on expenditure modifications of all groups
- This group presents the 2nd highest rate of displacement of all groups, 29%. However, among the displaced, it also presents the highest rates of displacement within the commune
- Very low prevalence of wasting (3%), low prevalence of underweight (24%) and medium prevalence of stunting (45%) among children.

Section 5.5 – Summary tables and maps of food security groups

Table 5.5.1 – Food security groups and child malnutrition by province

	Availability and access						*Utilization*		
	Chronic-ally food insecure	Vulnerable to food insecurity			Better food security	Food secure	Child malnutrition (0-59 months)		
	Group A	Group B	Group C	Group D	Group E	Group F	Wasted	Under-weight	Stunted
Bubanza	8%	16%	21%	15%	31%	9%	6%	44%	67%
Bujumbura Rural	10%	8%	24%	16%	33%	9%	2%	17%	44%
Bururi	12%	14%	37%	12%	19%	7%	10%	33%	44%
Cankuzo	7%	33%	49%	9%	1%	2%	9%	38%	46%
Cibitoke	4%	11%	11%	29%	36%	8%	3%	27%	60%
Gitega	11%	24%	27%	26%	9%	3%	10%	38%	46%
Karuzi	22%	16%	38%	15%	6%	4%	6%	43%	48%
Kayanza	30%	11%	35%	17%	8%	1%	6%	37%	61%
Kirundo	27%	19%	37%	10%	1%	6%	10%	32%	50%
Makamba	4%	24%	19%	29%	19%	7%	9%	30%	43%
Muramvya	20%	16%	40%	19%	2%	4%	10%	50%	53%
Muyinga	18%	24%	43%	9%	3%	3%	9%	37%	46%
Mwaro	11%	17%	45%	21%	3%	4%	5%	35%	51%
Ngozi	30%	18%	40%	6%	4%	2%	3%	41%	62%
Rutana	6%	34%	28%	23%	4%	4%	10%	43%	55%
Ruyigi	5%	38%	26%	23%	4%	3%	8%	41%	49%
Total	***16%***	***19%***	***32%***	***17%***	***11%***	***5%***	***7%***	***36%***	***52%***

Table 5.5.2 – Estimated kcal consumption and estimated acquisition capability by group

	7-day recall consumption data	Theoretical capacity to produce and purchase
	mean kcals/capita/day	mean kcals/capita/day
Group A	1,188	1,312
Group B	1,926	1,938
Group C	2,083	1,969
Group D	2,050	2,014
Group E	2,180	2,492
Group F	2,368	3,144
Total	**1,945**	**2,206**

Table 5.5.3 – Child anthropometry by food security group

		Wasting	Underweight	Stunting	Mean weight-for-height z-score	Mean weight-for-age z-score	Mean height-for-age z-score
Food insecure	Group A	8%	38%	51%	-0.24	-1.57	-2.00
Vulnerable to food insecurity	Group B	9%	40%	53%	-0.41	-1.65	-1.96
	Group C	7%	37%	53%	-0.34	-1.53	-1.86
	Group D	7%	38%	51%	-0.20	-1.58	-1.80
Better food security	Group E	5%	26%	51%	0.02	-1.30	-2.04
Food secure	Group F	3%	24%	45%	0.27	-1.07	-1.42
Total		***7%***	***36%***	***52%***	***-0.24***	***-1.52***	***-1.9***

*For wasting, group F is significantly different from groups A, B, and C ($p < 0.05$).
**For underweight, F is significantly different from all other groups ($p < 0.05$).
***For stunting, no significant differences (between A and F, $p=.06$)

Table 5.5.4 – Households receiving food aid in past 6 months by food security group

	% households that received food aid in last 6 months
Group A	18%
Group B	16%
Group C	19%
Group D	12%
Group E	11%
Group F	8%
Total	***16%***

Table 5.5.5 – First, second and third priority interventions by food security profile group

1st priority	**health**	**education**	**habitat**	**roads**	**security**	**income generating projects**	**agricultural production**	**livestock**	**food**
Group A	59%	10%	18%	0%	1%	4%	6%	0%	0%
Group B	57%	8%	21%	1%	2%	6%	5%	1%	0%
Group C	60%	10%	16%	1%	1%	4%	5%	1%	1%
Group D	55%	10%	19%	1%	2%	6%	6%	1%	0%
Group E	46%	11%	28%	1%	4%	8%	1%	0%	1%
Group F	66%	11%	13%	2%	1%	3%	3%	1%	0%
Total	***57%***	***10%***	***19%***	***1%***	***2%***	***5%***	***5%***	***1%***	***0%***
2nd priority	**health**	**education**	**habitat**	**roads**	**security**	**income generating projects**	**agricultural production**	**livestock**	**food**
Group A	0%	9%	18%	1%	7%	16%	24%	19%	6%
Group B	1%	10%	23%	2%	6%	15%	24%	16%	4%
Group C	1%	12%	21%	2%	8%	17%	20%	16%	4%
Group D	0%	9%	18%	1%	9%	19%	27%	14%	2%
Group E	0%	9%	18%	1%	12%	24%	21%	13%	1%
Group F	1%	19%	17%	4%	14%	18%	18%	8%	2%
Total	***0%***	***10%***	***20%***	***2%***	***9%***	***18%***	***23%***	***15%***	***4%***
3rd priority	**health**	**education**	**habitat**	**roads**	**security**	**income generating projects**	**agricultural production**	**livestock**	**food**
Group A	1%	0%	3%	1%	3%	5%	7%	14%	68%
Group B	1%	0%	3%	1%	2%	8%	6%	21%	59%
Group C	1%	0%	2%	1%	2%	10%	9%	21%	55%
Group D	0%	0%	2%	0%	1%	7%	9%	21%	59%
Group E	1%	0%	3%	1%	5%	7%	10%	26%	48%
Group F	2%	1%	3%	2%	5%	13%	7%	22%	45%
Total	***1%***	***0%***	***2%***	***1%***	***2%***	***8%***	***8%***	***20%***	***57%***

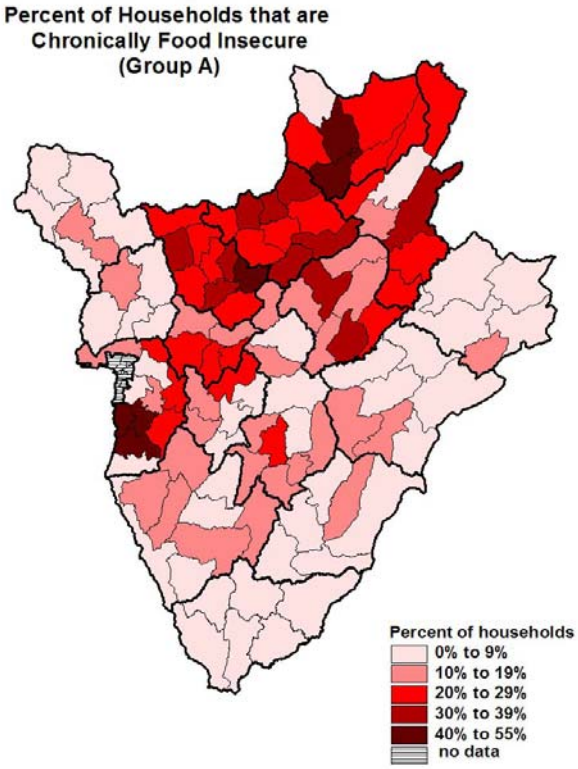


Figure 5.5.1 – Percent of chronically food insecure households (Group A) by commune

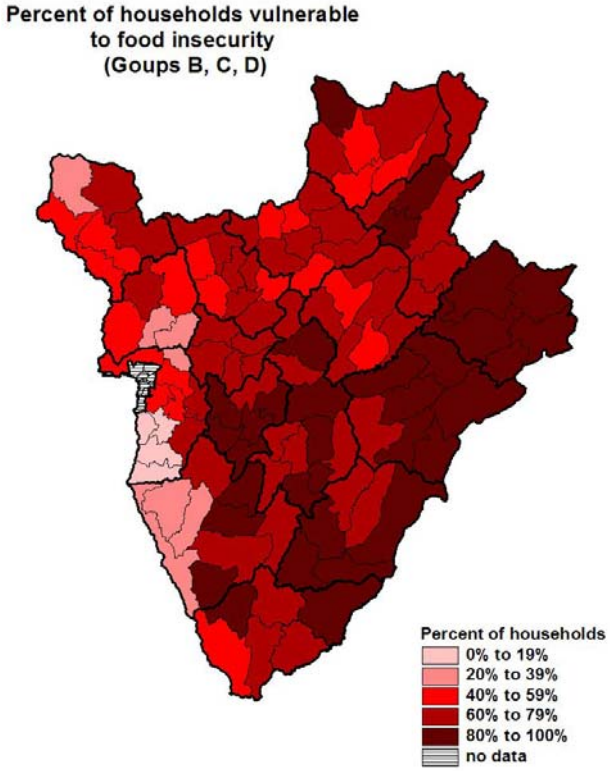


Figure 5.5.2 – Percent of households Vulnerable to food insecurity (Groups B, C, D)

Part VI – Conclusions and recommendations

Burundi is still in transition from emergency to development. There are many areas of the country where adequate food is not available and where households do not have adequate access to sufficient and/or nutritious foods. The future of this situation is unclear, with threats of continued violence, climatic instability, lack of sufficient productive land, returning refugees and IDPs, and the progression of the manioc mosaic virus and the sweet potato virus threatening many parts of the country. Food utilization also continues to be a problem, as indicated by high levels of stunting and wasting in young children, even among those with relatively good access to adequate and nutritious foods.

Food security profiles

The household food security profiles presented in this report show that there is not much difference between the chronically food insecure and those vulnerable to food security. Additionally, the largest percentage of the sample households is found in these vulnerable groups. Only a small portion of the population has been identified as food secure.

If the severity and/or frequency of shocks experienced by these households remain at current levels, these vulnerable groups should generally be able to access sufficient and adequate foods. Should there be more frequent or more severe shocks, they should be monitored closely, and food aid may be an appropriate intervention to prevent the erosion of assets and livelihoods. These people would benefit the most from development programs and likely from food for work, particularly as a self-targeting program that will include only those households that need the food, have someone that can do the work, and improve rural infrastructure leading to decreased vulnerability.

It is also important to note that the differences in food access between the chronically food insecure, the vulnerable to food insecurity and the more food secure households. The transition of a household from more food secure to vulnerable or to chronically food insecure can be brought about by many factors. The change in the size and distribution of these food security typologies is heavily influenced by season and may change dramatically from one year to the next.

Additionally, the differences in the prevalences of stunting and wasting between food security profile groups is small, with a few exceptions. As described in Table 5.5.3 in section 5.5, the only significant differences seen are in wasting when comparing Group F to Groups A, B, and C, and in underweight when comparing Group F to all other groups. Although the Food secure group has the lowest levels of stunting, wasting, and underweight children, the levels of chronic malnutrition are still quite high. Again, this emphasizes the relatively small differences between the groups, particularly the Vulnerable and Chronically food insecure. Child malnutrition may be related to factors such as diet quantity and quality, but they are also closely linked to cross-cutting issues such as water & sanitation, health practices, weaning practices, micronutrient deficiencies and access to health care.

Intervention recommendations

Targeted food assistance is necessary in certain areas of the country. However, as many parts of the country have entered or are entering a transitional state from conflict to recovery and development, the role of food aid must change as well. Where security allows, food aid should be used to address the specific vulnerability issues.

Food aid is appropriate for the most chronically food insecure households. These households are likely to have trouble meeting their caloric needs, and are most likely to use unsustainable coping strategies. Food aid would also allow these households to increase the quality of their diet through consumption of a greater variety of foods. Food aid will be needed for an indefinite period of time, either until these households are able to secure other means of access to appropriate and sufficient food, or until the national or local social support systems are in place and functioning. Development programs for these chronically food insecure households should specifically target those households without productive members (female headed households, households with handicapped members, the elderly). These households may not benefit from agricultural development, nor from

the usual income generating projects; programs must be designed to give these most vulnerable households and opportunity to participate.

For the households vulnerable to food insecurity, food aid may be appropriate during certain times of the year, particularly during the lean periods or after the occurrence of repeated and/or severe shocks, such as drought or flood. These households are likely to benefit from food-for-work programs aimed at improving livelihoods. However, it is important to implement these programs only during times of need when the targeted beneficiaries will have the time to participate.

For the households less vulnerable to food insecurity, food aid is less likely to have a role. These households should be targeted only in the case of extreme or prolonged shock, primarily to prevent the erosion of assets and loss of livelihoods. The food secure households do not need food aid in all with the possible exception of extreme situations. However, most food incentive programs are not likely to attract households from this group.

Almost all households in every food security group would benefit from health and development programs. Improving agricultural practices will benefit both the small and large scale farmers, as well as halting or reversing land degradation, and claiming more land for agricultural uses. Maternal and child health programs have a potential impact to all households regardless of food security status.

Other food-based programs may include school feeding, food for education, food for training (particularly in the area of training in new income generating activities). Other important non-food programs may include agriculture development, physical health care infrastructure improvements, livestock programs, and income generating projects.

Provincial key informants in all provinces consistently identified several key priority needs that should be addressed by the local authorities. Agriculture and livestock are most commonly cited. Specifically, agriculture diversification, increase in cash crop production, and the improvement of agriculture practices through better access to seeds, tools, and fertilizers, training, irrigation of cropland (particularly in plains areas), and the rehabilitation of swamp areas. Interventions related to livestock are usually identified as the simple re-population of livestock. This re-population of livestock has the added benefit of increasing the amount of manure available for agricultural fertilizers.

Provincial key informants also commonly cite education, health, and housing as priority needs. These areas of intervention simply require improved infrastructures and resources. Income generating projects are also commonly cited as priority needs by community key informants.

The key role of UN agencies and NGOs is supplying the cash and material resources that are unavailable at the community level. Training and organization are also key roles that humanitarian organizations can play. At the community level, manual labor is readily available, as is the ability for community mobilization. Additionally, communities have the resources and need to participate in the planning, implementation, and targeting of any project.

Many of the provincial key informants are part of the DPAE (*Departement Provincial de Agriculture et Elevage*) which name their branch of the government as a key player in addressing food insecurity, primarily through agricultural and livestock related programs, which is often overlooked, underused, and poorly funded.

The impact of the manioc mosaic virus, as well as the sweet potato virus in the north, and the threat of the continued spread of these plant diseases should be mitigated in the affected areas, and preventative measures should be initiated in areas yet to be infected. The introduction of alternative crops or resistant strains should be implemented in affected areas, as well as in areas yet to be affected. One possibility is the introduction of resistant strains of sweet potato, particularly those with orange flesh. Several varieties of orange-fleshed sweet potatoes require similar agricultural techniques, are resistant to many of the common plant diseases, and are much higher in vitamin A than the white or yellow-fleshed sweet potatoes currently cultivated in Burundi.

Targeting recommendations & targeting criteria

Targeting criteria for delivery of food aid are difficult to define. The most food insecure households tend to be those with the lowest production and income, but the reasons behind this are myriad, and heterogeneous. The below list of targeting criteria is neither complete, nor is each criteria an absolute (For example, not all female headed households with no support are food insecure). These are simply meant as general guidance.

- Female headed households, particularly those with few or no productive members or external support
- Households with a physically or mentally disabled member, particularly if a non-productive member, and with no external support
- Households with a chronically ill member, particularly those without a productive member and/or those with no external support
- Other households with no productive member and no external support
- Households with little land (approximately <0.5 ha), particularly those without access to sufficient income
- Households with production that has been severely impacted by the manioc mosaic virus and/or sweet potato virus, or other shock (drought, hail, etc.)
- Currently displaced households, particularly those displaced a distance from their place of origin that prevents continued access to their land
- Recently resettled households (< 3 to 4 months), particularly those that have not yet benefited from a harvest.
- Households with malnourished children, particularly those suffering from acute malnutrition.

Targeting geographically in addition to targeting at the household level will be a good way to focus programming as well, both in areas suffering from greater levels chronic food insecurity, as well as a response to severe/prolonged shocks.

Food aid sales

The most common reasons of the sale of food aid is to purchase other food items, to purchase other non-food items, and to pay for milling costs. The most commonly sold food items is vegetable oil. It can be inferred that the reasons behind these sales may be related to a dissatisfaction with the current food aid items. Palm oil is generally preferred over vegetable oil, and other staple items, other than maize, are often preferred. This can be seen in the typical food consumption frequency patterns. Additionally, the current targeting of households may not be ideal, allowing the those with better access to food to sell food aid to satisfy other needs or wants. It does not appear from the data that households are selling food aid to pay for things such as medical or school related costs.

To decrease the sale of food aid, targeting practices need to be improved. The food aid basket could also be modified to include food items that are more commonly included in the typical Burundian diet. Sale related to milling costs can be minimized by providing milled grain, providing for milling costs as part of the distribution, or accepting the sale of small amounts of food aid in order for households to meet this need.

Areas of further research

The system of social sharing needs to be further explored. The presence of a strong social sharing system, coupled with the relatively small differences between rich and poor, may support geographic rather than vulnerable group targeting in some areas, protecting intra community livelihood structures by allowing the richer to help the poor, particularly when a shock effects the whole community. Additionally, protecting the better off from resorting to non sustainable coping strategies in time of severe shortage will allow them to continue helping the poorer households in the community.

Land access is another area of particular importance. The data in this survey regarding land access suffered from errors in collection and data entry. It is important to consider not only the amount of land, but also the quality and productivity of this land when targeting households for food and non-food intervention programs. Further research as to the minimum amount of land sufficient to support a typical household in different areas of

the country will provide better targeting criteria for both food aid programs and agricultural development programs.

Recommendations for future assessments, monitoring, and surveillance

Several indicators used in this survey will be appropriate to use in future assessments. The choice of appropriate indicators depends on the purpose and scope of the survey, the resources available, and the capacities present in analysis.

The Coping Strategies Index (CSI) is an important indicator both for further assessments and for monitoring and surveillance. This indicator has already been used successfully in the region, and has the benefit of being easily implemented and calculated. This current survey establishes a baseline that can be used as a comparison in future assessments to measure change. Data in relation to the lean periods vs. harvest periods can be compiled, as well as information comparing one year to the next, using this tool. It will be important to maintain consistency in the application of this indicator to ensure that the results are indeed comparable, both in the design of the tool and the calculation of the composite score, and in the sampling methodology.

Key shocks need to be monitored, both in frequency and in severity, throughout the country. This data will allow for modifications of programming in a timely fashion to mitigate the effects of these shocks. The frequency and severity of shocks in different parts of the country will also allow for better information as to what kind of development programs need to be implemented to decrease the vulnerability of households to the common shocks in the area.

Continued monitoring of food and non-food market prices will provide key data for food security early warning. If prices of staple food items continue to rise, more and more households will no longer have access to the same quantities of food from the markets. Additionally, prices for agricultural products such as fertilizer should be monitored. Increases in prices restrict access to these products by the poor households who may benefit the most from the agricultural inputs.

Anthropometry can be used in future food security assessments, but only if the methodology is strictly followed, and a sufficient sample size is used to provide accurate prevalence estimates. However, it is recommended that any nutritional survey should include a food security component as well.

Information relating to production, income, and expenditures provides key data, but also is very difficult to gather accurately and in sufficient quantity to provide accurate data that can be extrapolated to higher levels.

A key area of missing information is census data. Several different population estimates are currently in use, and they often conflict with each other. This information is important, both for conducting future assessments in a representative fashion, and in determining needs based on reported population distributions. A coordinating body needs to compile the current information into a centralized database, which can then be updated as information comes in from national or local studies. Although such a database will not replace a complete country census, it will provide a more accurate and standardized assessment and programming tool.

To make the distinction between chronic and transitory vulnerability in assessments, the root cause, and the depth of the present food insecurity, as well as the sustainability of the coping strategies all need to be taken into consideration. Additionally, short ephemeral shocks are more likely to bring about only transitory food insecurity, particularly for households that have sustainable coping strategies that they can employ, which do not negatively affect future livelihoods.

Annex I - Kabezi, Mutambu, and Muhuta communes in Bujumbura Rural

In the initial data collection, these three communes were considered inaccessible due to the heightened levels of insecurity at that time. These communities were visited September 6, 7, and 8. Rather than going from community to community, local administrators were asked to provide lists of households in the collines which were selected in the original sample, and a random sample of households was then drawn from these lists. These households were asked to send a representative to a central location to participate in the survey. A truncated version of the household survey was administered, to maximize the number of households interviewed during the limited time WFP staff was allowed to be in these communities.

A total of 66 households were surveyed (the original sampling plan called for 110 households in these three communes). The analysis is based on all households surveyed in these three communes. A separate analysis was done on these households. The data was not incorporated into the larger data set for several reasons. First, as the questionnaire used in these communes was a truncated version, much data will be missing if incorporated into the national database. Second, due to time constraints, the analysis had been performed on the main database before the data from these three communes were collected, entered, and ready for analysis.

Similar to the main sample of households, 27% of households are headed by women. The mean household size is 6.5 members, slightly higher than the sample average. Nearly 20% of households report having a physically or mentally disabled member.

More than 40% of households report the sale of agricultural products as the primary source of income, 24% rely on cash crop sales, 12% use manual labor and 6% each report small business and temporary work. Important second and third sources of income include small business, manual labor, and alcohol brewing.

The shocks experienced by this group in the past year, followed patterns similar to those of other areas of the country. Fifty-six percent of households reported drought, 33% reported plant insects or disease, 24% reported hail. However, 73% reported insecurity as a shock in the past year, significantly more elevated than the 7% for the rest of the country. The composite score from the coping strategies index (CSI) was 66 – higher than the 60 for the rest of the sample.

Approximately 80% of households in these communes report receiving food aid in the past 6 months. Of the households receiving food aid, 40% report selling some or all of their food aid. When asked what the main reasons for selling food aid were, 76% reported to buy other food items, 38% sold to buy non-food items while 5% of households each sold food aid due to insecurity and to pay for transport costs.

When asked to rank the top three aid/development intervention needs, 49% of households reported habitat, and 31% reported health as the number one priority. Only 6% cited improving physical security. However, as a secondary priority, 40% of households cited security, 20% habitat, and 11% agriculture. As a third priority, 62% of households cited food aid, and 14% cited security.

This food security profiling analysis identifies 4 different groups:

Group 1: Food insecure, more dependent on food aid - 11% of households

The majority of the group consumes maize 4 times per week supplemented by manioc about twice a week. Pulses are eaten 3 times per week. They have infrequent consumption of oil, leaves and vegetables. The main source of maize is food aid for 86% of these households; rice is gotten through exchange/work for food for the few households that consume it. Pulses are mainly received as food aid.

- Mean CSI is 88
- 43% are female headed households
- Main sources of income are sale of agriculture, sale of cash crops, manual labor, as well as temporary work and small business

Group 2: Food insecure, little dependence on food aid - 44% of households

These households barely manage to consume starchy foods everyday - frequency of consumption for maize, rice, manioc, tubers, and plantains together averages about 6 days per week. They rarely eat pulses, oil and fish and they just supplement their diet through frequent consumption of leaves. The main source of manioc is household production in 64% of cases while 21% of households purchase it and 11% received it through exchange or work for food. Pulses, oil and fish are mostly purchased, while leaves are from own production or received as gift.

- Mean CSI is 67
- 31% are female headed households
- Main sources of income are sale of agriculture, sale of cash crops, manual labor, as well as temporary work and small business

Group 3: Vulnerable to food insecurity - 17% of households

These households base their diet on frequent consumption of manioc (4 times per week), tubers and plantains (1-2 times per week) and more rarely maize or rice (less than once a week on average). Pulses and vegetables are sometimes eaten (4 and 3 times per week respectively). These households have regular consumption of oil and fish (5-6 times per week). With the exception of manioc and leaves, purchasing is the common way to access the diverse food items among households in this group. Half of them produce the manioc they consumed. This percentage is much higher for leaves – 85% of these households produce leaves they eat.

- Mean CSI is 56
- 36% are female headed households
- Main sources of income are sale of agriculture, sale of cash crops, manual labor, as well as temporary work, alcohol production, salaried work, and small business

Group 4: More food secure households - 29% of households

These households have good access to starch for their diet. Manioc is the most commonly consumed staple (from 4 to 6 times per week). Just few households consume tubers and plantains everyday. The majority of the group supplements their consumption of manioc with maize, rice, tubers and plantains. Pulses, oil and fish are consumed at least three times per week (some households even more frequently). Meat is eaten twice a week on average. The same frequency is observed for leaves, vegetables and fruits. Manioc is mainly from own production, just as tubers and plantains (applicable to the few households that consume those last two items). Half of households in this group also produce the pulses they consume. Another one-quarter have consume pulses from the food aid ration while the remaining 25% rely on purchases. Oil, fish and meat are generally purchased. Leaves are mainly from own production, while vegetables and fruit are purchased.

- Mean CSI is 60
- 11% are female headed households
- Main sources of income are sale of agriculture and sale of cash crops, as well as manual labor

Comparing these groups to those developed from the main survey sample, Groups 1 and 2 are most similar to Group A, the chronically food insecure. The main difference between Groups 1 and 2 is simply that Group 1 receives more food aid. Group 3 is most similar to Groups B, C, and D, the vulnerable to food insecurity. Group 4 is most similar to Groups E and F, the better food security and the food secure. This means that the level of chronic food insecurity in these areas is very high. Additionally, the middle vulnerable group is relatively small. These areas have suffered many shocks, particularly related to the insecurity in the area. Many of the households in the area that might otherwise be among the vulnerable are likely to have suffered sufficient shocks to cause them to exhaust their coping strategies, and fall into a more food insecure group.

Annex II – Additional tables

Table 3.8.1a – Household asset ownership and mean total number of assets by province

	hoe	machete	chair	table	ax	serpette	radio	faucille
Bubanza	91%	43%	36%	29%	29%	35%	24%	14%
Bujumbura Rural	84%	19%	42%	42%	36%	50%	32%	12%
Bururi	95%	65%	67%	61%	42%	43%	47%	19%
Cankuzo	90%	47%	50%	40%	38%	30%	32%	26%
Cibitoke	91%	50%	37%	36%	34%	31%	31%	16%
Gitega	91%	41%	50%	44%	53%	39%	32%	30%
Karuzi	90%	28%	34%	34%	40%	33%	17%	22%
Kayanza	97%	40%	46%	42%	54%	49%	25%	28%
Kirundo	89%	60%	54%	50%	31%	16%	27%	15%
Makamba	89%	61%	46%	35%	30%	14%	36%	12%
Muramvya	89%	34%	51%	53%	53%	72%	36%	29%
Muyinga	88%	52%	45%	41%	37%	10%	30%	15%
Mwaro	96%	61%	58%	59%	57%	55%	44%	27%
Ngozi	91%	66%	40%	32%	45%	26%	28%	31%
Rutana	94%	54%	52%	36%	45%	31%	27%	23%
Ruyigi	82%	46%	44%	37%	40%	33%	28%	17%
Total	**91%**	**48%**	**47%**	**42%**	**42%**	**34%**	**30%**	**21%**

Table 3.8.1b – Household asset ownership and mean total number of assets by province

	bicycle	iron	gas lamp	sewing machine	moped	TV	car	mill	mean total number of assets
Bubanza	11%	4%	-	1%	2%	1%	-	1%	3.2
Bujumbura Rural	4%	6%	-	2%	<1%	1%	-	<1%	3.3
Bururi	9%	8%	-	<1%	<1%	<1%	-	-	4.6
Cankuzo	19%	6%	7%	5%	4%	2%	2%	2%	4.0
Cibitoke	8%	5%	<1%	1%	<1%	-	-	<1%	3.4
Gitega	11%	8%	8%	5%	1%	-	-	-	4.1
Karuzi	9%	3%	<1%	3%	-	-	-	-	3.1
Kayanza	8%	5%	<1%	2%	-	<1%	-	-	4.0
Kirundo	18%	7%	-	1%	<1%	-	-	-	3.7
Makamba	23%	5%	13%	3%	4%	-	-	<1%	3.7
Muramvya	5%	5%	-	2%	2%	2%	2%	3%	4.4
Muyinga	18%	7%	<1%	2%	<1%	-	-	<1%	3.5
Mwaro	4%	6%	<1%	2%	-	-	-	-	4.7
Ngozi	11%	5%	3%	4%	<1%	<1%	<1%	<1%	3.8
Rutana	9%	5%	7%	2%	<1%	-	-	2%	3.9
Ruyigi	17%	7%	9%	6%	2%	2%	-	-	3.7
Total	**11%**	**6%**	**3%**	**3%**	**<1%**	**<1%**	**<1%**	**<1%**	**3.8**

Table 3.9.3a – Percent of households producing cash crops

	beer plantain	coffee	manioc	potatoes	maize	sorghum	rice	peanuts
Bubanza	41%	25%	45%	15%	24%	3%	10%	7%
Bujumbura Rural	35%	9%	33%	14%	7%	0%	4%	2%
Bururi	39%	10%	24%	22%	21%	1%	2%	0%
Cankuzo	33%	13%	9%	10%	12%	31%	10%	9%
Cibitoke	50%	22%	49%	17%	18%	2%	7%	5%
Gitega	53%	50%	26%	23%	11%	1%	3%	4%
Karuzi	34%	48%	10%	4%	3%	5%	4%	3%
Kayanza	45%	66%	16%	23%	5%	2%	3%	3%
Kirundo	29%	37%	2%	2%	1%	14%	5%	2%
Makamba	36%	9%	39%	15%	22%	3%	5%	6%
Muramvya	66%	49%	32%	45%	27%	1%	0%	4%
Muyinga	29%	39%	5%	4%	2%	9%	4%	4%
Mwaro	53%	32%	27%	41%	30%	0%	0%	4%
Ngozi	46%	66%	15%	18%	6%	9%	14%	3%
Rutana	46%	12%	38%	25%	28%	23%	6%	6%
Ruyigi	26%	20%	16%	7%	5%	19%	4%	7%
Total	**42%**	**36%**	**22%**	**17%**	**12%**	**7%**	**5%**	**4%**

Table 3.9.3b – Percent of households producing cash crops

	tea	fruit	legumes	palm	tobacco	cotton	honey	wheat	other
Bubanza	1%	2%	3%	10%	1%	1%	0%	0%	16%
Bujumbura Rural	12%	1%	2%	4%	0%	0%	0%	3%	17%
Bururi	4%	2%	1%	17%	1%	0%	0%	1%	9%
Cankuzo	0%	2%	2%	0%	3%	0%	1%	2%	27%
Cibitoke	2%	4%	5%	0%	0%	4%	0%	1%	17%
Gitega	0%	4%	2%	0%	1%	1%	1%	0%	14%
Karuzi	0%	1%	2%	0%	1%	0%	0%	0%	12%
Kayanza	8%	3%	3%	0%	3%	1%	1%	1%	4%
Kirundo	0%	3%	1%	0%	3%	0%	1%	0%	12%
Makamba	0%	3%	8%	7%	1%	1%	1%	1%	21%
Muramvya	11%	3%	1%	1%	1%	2%	0%	7%	11%
Muyinga	0%	1%	6%	0%	0%	0%	1%	0%	14%
Mwaro	20%	3%	1%	0%	1%	2%	0%	3%	9%
Ngozi	0%	4%	2%	0%	2%	1%	1%	0%	10%
Rutana	0%	2%	7%	0%	2%	6%	0%	1%	19%
Ruyigi	1%	3%	5%	1%	4%	2%	1%	1%	21%
Total	**3%**	**3%**	**3%**	**2%**	**1%**	**1%**	**1%**	**1%**	**13%**

Annex II

Table 3.15.1.1a Percent of households experiencing covariate shocks by province

	drought	plant insects diseases	hail	flooding	insecurity/ violence	human disease epidemic
Bubanza	76%	29%	7%	2%	6%	3%
Bujumbura Rural	51%	33%	24%	12%	32%	4%
Bururi	60%	29%	14%	4%	11%	2%
Cankuzo	81%	34%	24%	1%	6%	4%
Cibitoke	76%	22%	20%	8%	4%	5%
Gitega	62%	11%	16%	21%	5%	3%
Karuzi	66%	32%	19%	19%	0%	11%
Kayanza	77%	20%	23%	44%	4%	7%
Kirundo	68%	35%	21%	20%	0%	5%
Makamba	69%	15%	13%	4%	14%	9%
Muramvya	75%	11%	28%	6%	7%	1%
Muyinga	61%	35%	12%	16%	0%	9%
Mwaro	45%	13%	35%	11%	1%	3%
Ngozi	72%	42%	36%	23%	7%	14%
Rutana	77%	17%	23%	13%	6%	4%
Ruyigi	79%	21%	9%	7%	8%	3%
Total	**68%**	**26%**	**21%**	**16%**	**7%**	**6%**

Table 3.15.1.1b Percent of households experiencing covariate shocks by province

	livestock disease	erosion	lowering of market prices	brush fires	other	no shock
Bubanza	2%	1%	3%	1%	7%	5%
Bujumbura Rural	5%	2%	1%	0%	7%	6%
Bururi	6%	0%	1%	1%	3%	6%
Cankuzo	2%	1%	0%	0%	6%	14%
Cibitoke	3%	0%	2%	0%	7%	4%
Gitega	3%	1%	0%	1%	18%	9%
Karuzi	11%	6%	0%	3%	14%	5%
Kayanza	4%	1%	2%	0%	3%	2%
Kirundo	1%	4%	1%	0%	5%	9%
Makamba	4%	1%	2%	3%	7%	11%
Muramvya	5%	2%	1%	1%	20%	2%
Muyinga	3%	5%	0%	1%	9%	10%
Mwaro	6%	1%	1%	1%	8%	3%
Ngozi	10%	6%	1%	0%	2%	2%
Rutana	7%	4%	0%	1%	3%	6%
Ruyigi	3%	1%	0%	3%	7%	9%
Total	**5%**	**2%**	**1%**	**1%**	**8%**	**6%**

Table 3.15.2.1a - Percent of households experiencing idiosyncratic shocks by province

	loss of employment	reduced salary	lost of hh capital	Sickness/ accident of productive member	death of productive member	death of other hh member
Bubanza	**3%**	**1%**	**7%**	**31%**	**5%**	**4%**
Bujumbura Rural	**4%**	**3%**	**8%**	**25%**	**4%**	**3%**
Bururi	**9%**	**6%**	**9%**	**21%**	**5%**	**5%**
Cankuzo	**0%**	**0%**	**5%**	**25%**	**4%**	**1%**
Cibitoke	**4%**	**1%**	**6%**	**38%**	**7%**	**2%**
Gitega	**2%**	**0%**	**3%**	**28%**	**3%**	**2%**
Karuzi	**2%**	**2%**	**4%**	**19%**	**4%**	**3%**
Kayanza	**3%**	**1%**	**3%**	**38%**	**2%**	**1%**
Kirundo	**6%**	**1%**	**9%**	**17%**	**2%**	**4%**
Makamba	**1%**	**0%**	**2%**	**18%**	**3%**	**4%**
Muramvya	**4%**	**2%**	**7%**	**29%**	**4%**	**3%**
Muyinga	**3%**	**0%**	**5%**	**11%**	**1%**	**3%**
Mwaro	**5%**	**3%**	**9%**	**25%**	**2%**	**3%**
Ngozi	**4%**	**1%**	**5%**	**40%**	**3%**	**3%**
Rutana	**1%**	**1%**	**2%**	**13%**	**6%**	**1%**
Ruyigi	**0%**	**1%**	**5%**	**27%**	**5%**	**1%**
Total	**3%**	**1%**	**6%**	**26%**	**4%**	**3%**

Table 3.15.2.1b - Percent of households experiencing idiosyncratic shocks by province

	localized insecurity/ violence	stolen crops/ animals	displacement	return to home colline	other	no shocks
Bubanza	8%	9%	4%	1%	6%	29%
Bujumbura Rural	27%	16%	3%	3%	7%	20%
Bururi	12%	8%	3%	4%	2%	18%
Cankuzo	5%	18%	2%	3%	5%	40%
Cibitoke	4%	8%	2%	1%	6%	29%
Gitega	4%	13%	2%	0%	5%	39%
Karuzi	1%	7%	1%	1%	11%	50%
Kayanza	6%	15%	1%	2%	3%	32%
Kirundo	0%	5%	1%	1%	3%	57%
Makamba	9%	10%	6%	13%	4%	29%
Muramvya	4%	11%	2%	1%	9%	29%
Muyinga	0%	8%	0%	1%	9%	56%
Mwaro	1%	4%	1%	0%	6%	15%
Ngozi	5%	20%	1%	1%	2%	28%
Rutana	6%	11%	6%	3%	2%	35%
Ruyigi	2%	8%	4%	4%	3%	41%
Total	**6%**	**11%**	**2%**	**2%**	**5%**	**35%**

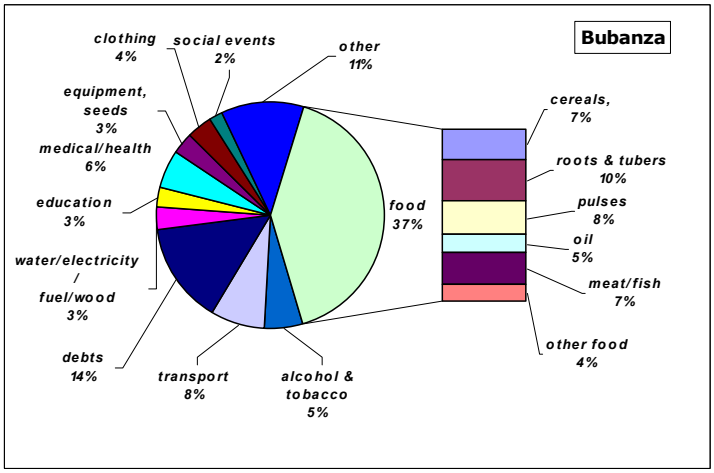
Annex II

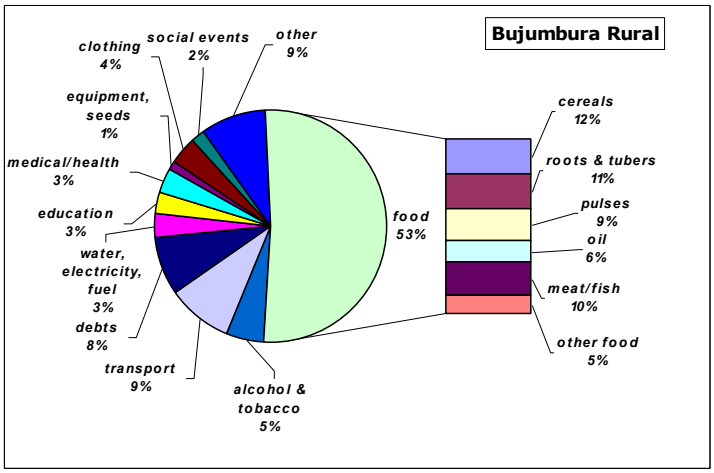
Table 4.3.1 - First, second, and third priority interventions by province

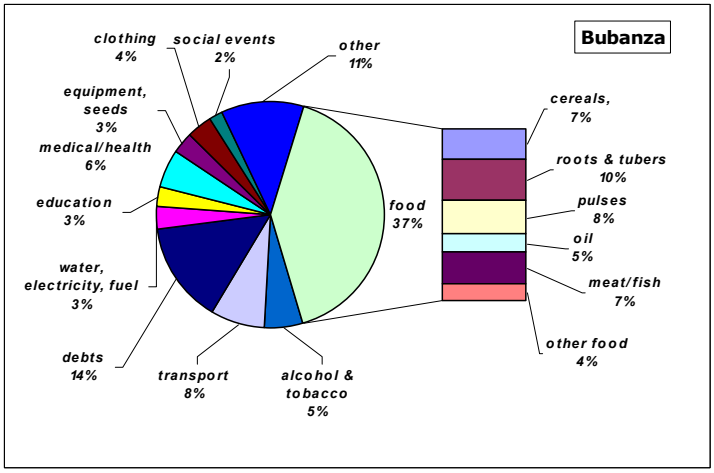
1st priority	health	education	habitat	roads	security	income generation	agricultural production	livestock	food
Bubanza	42%	10%	34%	0%	1%	9%	3%	1%	0%
Bujumbura Rural	49%	10%	25%	0%	6%	7%	1%	0%	0%
Bururi	55%	11%	21%	5%	1%	5%	2%	0%	0%
Cankuzo	63%	9%	19%	4%	0%	2%	4%	0%	0%
Cibitoke	48%	11%	29%	0%	4%	4%	3%	0%	0%
Gitega	56%	10%	15%	1%	2%	4%	11%	1%	0%
Karuzi	65%	13%	14%	1%	0%	2%	4%	0%	0%
Kayanza	55%	8%	11%	1%	2%	9%	11%	2%	1%
Kirundo	62%	13%	18%	0%	1%	1%	5%	1%	0%
Makamba	67%	11%	18%	0%	3%	2%	0%	0%	0%
Muramvya	46%	19%	10%	1%	0%	18%	6%	1%	0%
Muyinga	59%	5%	25%	1%	1%	4%	4%	0%	0%
Mwaro	47%	13%	17%	1%	1%	15%	6%	0%	0%
Ngozi	65%	6%	14%	2%	2%	5%	4%	1%	1%
Rutana	61%	9%	22%	1%	1%	1%	2%	1%	1%
Ruyigi	64%	6%	25%	1%	2%	1%	2%	1%	0%
Total	***57%***	***10%***	***19%***	***1%***	***2%***	***5%***	***5%***	***1%***	***0%***
2nd priority	**health**	**education**	**habitat**	**roads**	**security**	**income generation**	**agricultural production**	**livestock**	**food**
Bubanza	1%	4%	14%	2%	15%	34%	20%	9%	2%
Bujumbura Rural	1%	15%	9%	0%	22%	21%	18%	13%	2%
Bururi	0%	12%	32%	3%	8%	25%	13%	7%	0%
Cankuzo	0%	6%	30%	7%	5%	6%	29%	14%	3%
Cibitoke	0%	9%	14%	0%	15%	31%	20%	9%	1%
Gitega	0%	10%	22%	2%	6%	8%	29%	21%	1%
Karuzi	0%	9%	36%	3%	4%	15%	19%	11%	2%
Kayanza	0%	5%	6%	1%	7%	19%	25%	27%	11%
Kirundo	1%	22%	23%	2%	3%	12%	20%	15%	2%
Makamba	0%	16%	29%	2%	8%	13%	23%	7%	3%
Muramvya	0%	6%	9%	3%	12%	22%	29%	18%	1%
Muyinga	2%	11%	26%	2%	5%	17%	20%	15%	3%
Mwaro	1%	13%	11%	0%	3%	24%	29%	17%	2%
Ngozi	0%	4%	12%	2%	7%	19%	23%	20%	13%
Rutana	0%	11%	31%	1%	9%	10%	25%	12%	1%
Ruyigi	1%	8%	33%	2%	8%	5%	29%	14%	1%
Total	***0%***	***10%***	***20%***	***2%***	***9%***	***18%***	***23%***	***15%***	***4%***
3rd priority	**health**	**education**	**habitat**	**roads**	**security**	**income generation**	**agricultural production**	**livestock**	**food**
Bubanza	1%	0%	1%	1%	2%	8%	7%	33%	48%
Bujumbura Rural	3%	0%	1%	0%	3%	12%	9%	19%	53%
Bururi	0%	0%	4%	2%	6%	18%	10%	26%	34%
Cankuzo	2%	0%	1%	2%	0%	9%	7%	15%	65%
Cibitoke	1%	0%	2%	1%	4%	4%	10%	25%	53%
Gitega	0%	0%	2%	0%	3%	4%	10%	22%	59%
Karuzi	1%	0%	3%	0%	5%	19%	7%	17%	48%
Kayanza	1%	0%	1%	1%	1%	1%	3%	23%	69%
Kirundo	1%	0%	4%	1%	3%	14%	9%	10%	59%
Makamba	1%	1%	6%	1%	3%	3%	10%	20%	56%
Muramvya	0%	1%	1%	0%	1%	1%	4%	41%	53%
Muyinga	2%	0%	4%	1%	2%	13%	6%	9%	62%
Mwaro	0%	0%	0%	1%	0%	11%	7%	31%	50%
Ngozi	1%	0%	1%	0%	1%	3%	9%	18%	66%
Rutana	0%	0%	4%	1%	1%	5%	9%	14%	66%
Ruyigi	0%	0%	3%	0%	1%	3%	12%	17%	64%
Total	***1%***	***0%***	***2%***	***1%***	***2%***	***8%***	***8%***	***20%***	***57%***

Annex III – Additional graphs

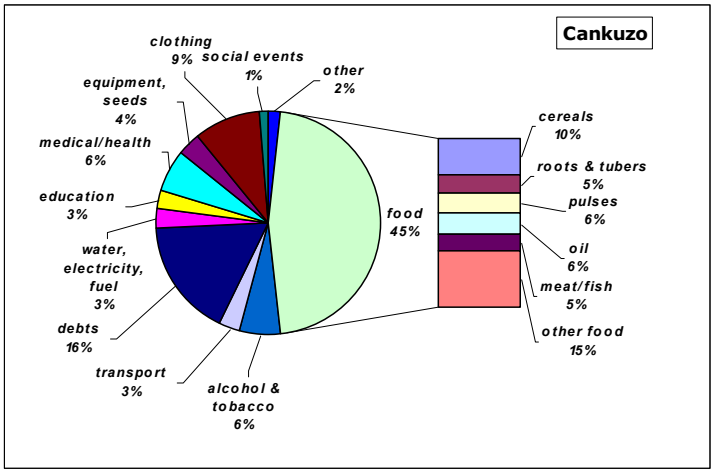
Figures 3.12.2 - Average household expenditures, by province

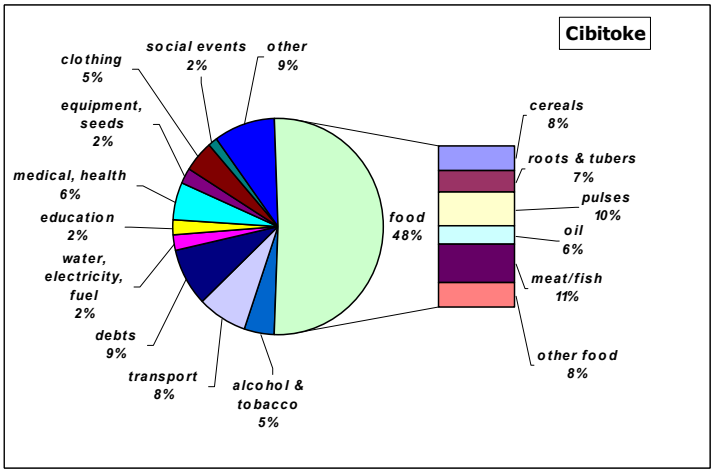


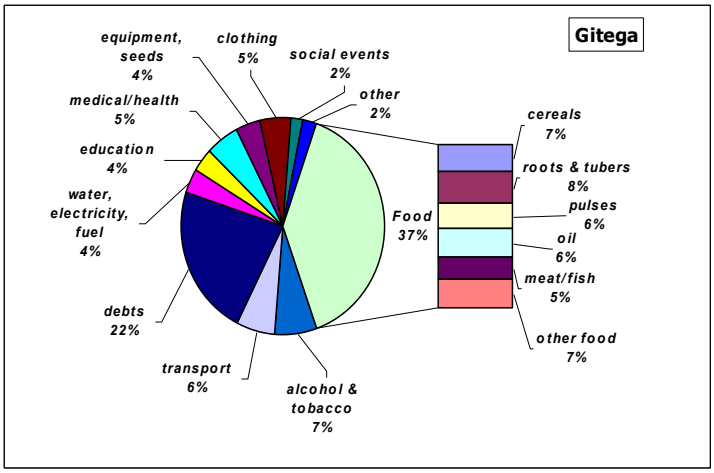


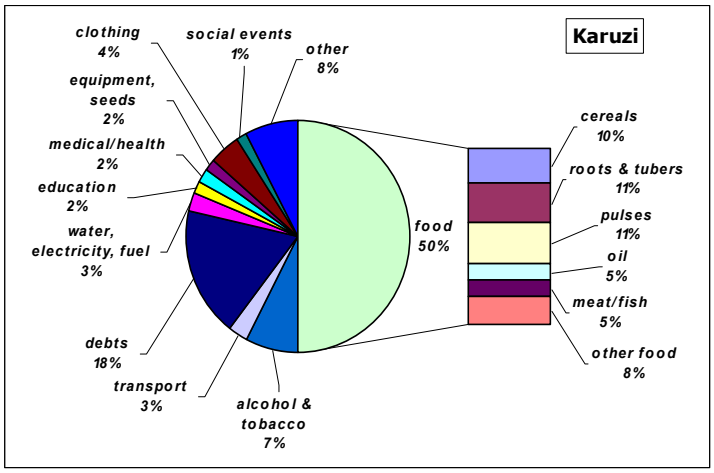


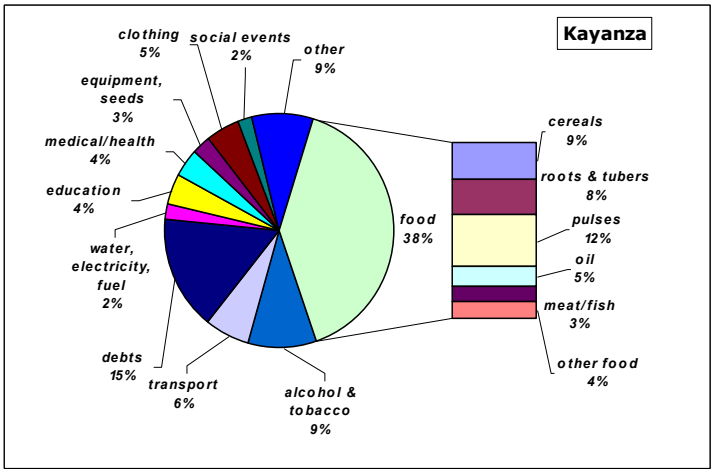
Annex III

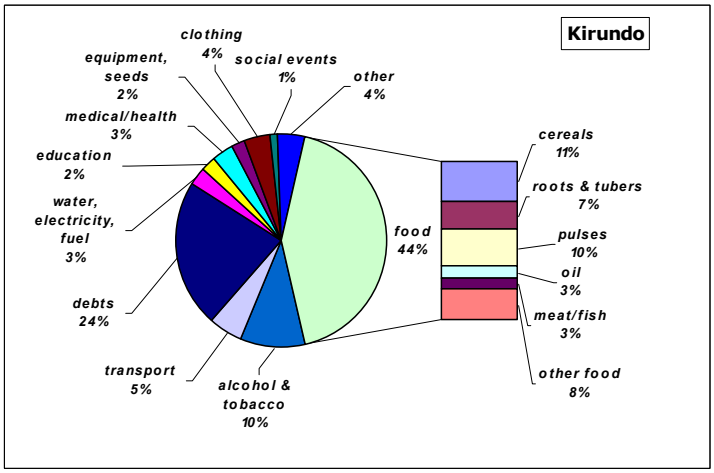

Cankuzo
clothing 9%
social events 1%
other 2%
equipment, seeds 4%
medical/health 6%
education 3%
water, electricity, fuel 3%
debts 16%
transport 3%
alcohol & tobacco 6%
food 45%
cereals 10%
roots & tubers 5%
pulses 6%
oil 6%
meat/fish 5%
other food 15%


Cibitoke
clothing 5%
social events 2%
other 9%
equipment, seeds 2%
medical, health 6%
education 2%
water, electricity, fuel 2%
debts 9%
transport 8%
alcohol & tobacco 5%
food 48%
cereals 8%
roots & tubers 7%
pulses 10%
oil 6%
meat/fish 11%
other food 8%

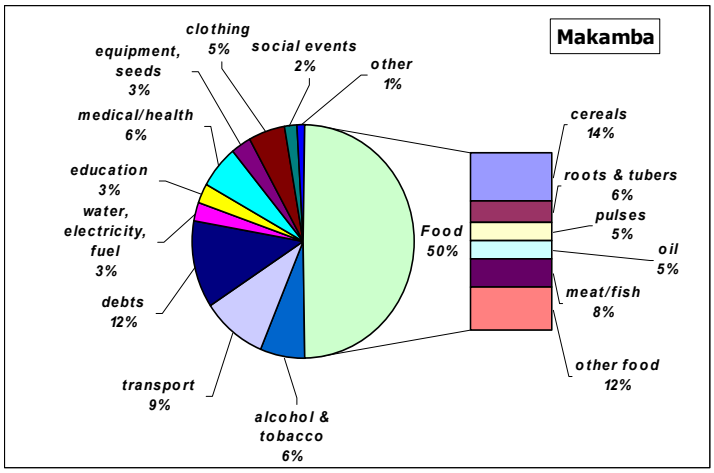

Gitega
equipment, seeds 4%
clothing 5%
social events 2%
other 2%
medical/health 5%
education 4%
water, electricity, fuel 4%
debts 22%
transport 6%
alcohol & tobacco 7%
Food 37%
cereals 7%
roots & tubers 8%
pulses 6%
oil 6%
meat/fish 5%
other food 7%

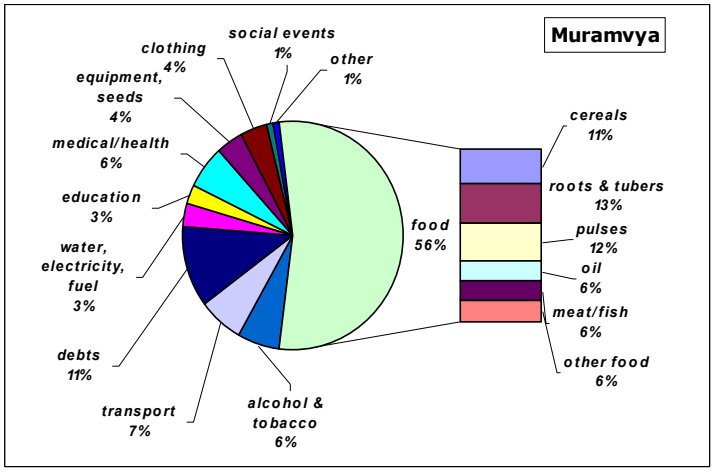

Karuzi
clothing 4%
social events 1%
other 8%
equipment, seeds 2%
medical/health 2%
education 2%
water, electricity, fuel 3%
debts 18%
transport 3%
alcohol & tobacco 7%
food 50%
cereals 10%
roots & tubers 11%
pulses 11%
oil 5%
meat/fish 5%
other food 8%

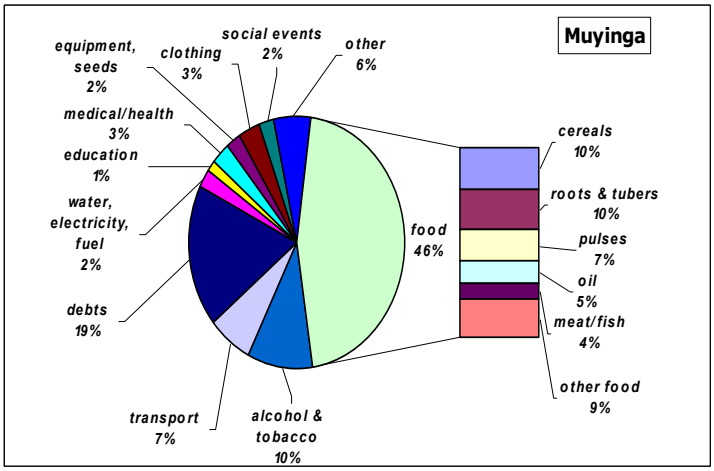

Kayanza
clothing 5%
social events 2%
other 9%
equipment, seeds 3%
medical/health 4%
education 4%
water, electricity, fuel 2%
debts 15%
transport 6%
alcohol & tobacco 9%
food 38%
cereals 9%
roots & tubers 8%
pulses 12%
oil 5%
meat/fish 3%
other food 4%

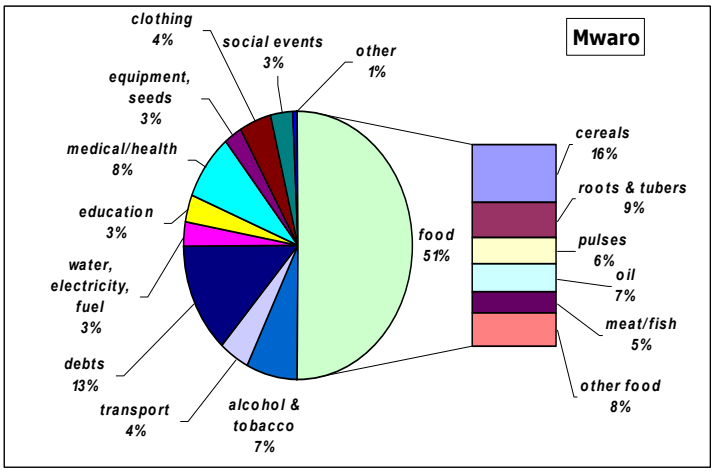

Kirundo
clothing 4%
equipment, seeds 2%
social events 1%
other 4%
medical/health 3%
education 2%
water, electricity, fuel 3%
debts 24%
transport 5%
alcohol & tobacco 10%
food 44%
cereals 11%
roots & tubers 7%
pulses 10%
oil 3%
meat/fish 3%
other food 8%

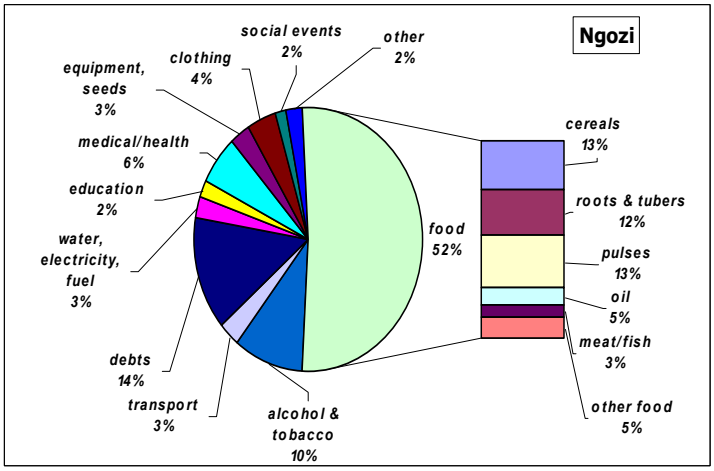
Annex III

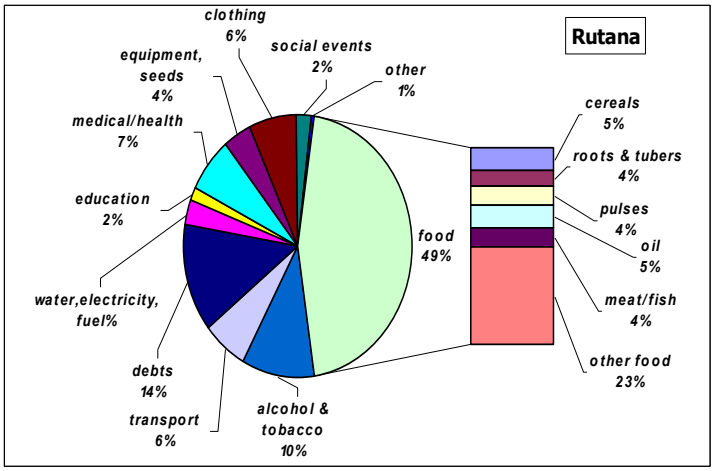

Makamba
clothing 5%
social events 2%
other 1%
equipment, seeds 3%
medical/health 6%
education 3%
water, electricity, fuel 3%
debts 12%
transport 9%
alcohol & tobacco 6%
Food 50%
cereals 14%
roots & tubers 6%
pulses 5%
oil 5%
meat/fish 8%
other food 12%


Muramvya
social events 1%
clothing 4%
other 1%
equipment, seeds 4%
medical/health 6%
education 3%
water, electricity, fuel 3%
debts 11%
transport 7%
alcohol & tobacco 6%
food 56%
cereals 11%
roots & tubers 13%
pulses 12%
oil 6%
meat/fish 6%
other food 6%

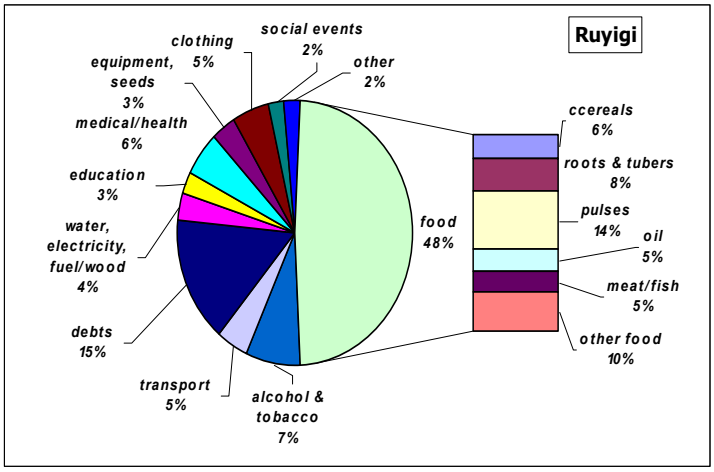

Muyinga
social events 2%
equipment, seeds 2%
clothing 3%
other 6%
medical/health 3%
education 1%
water, electricity, fuel 2%
debts 19%
transport 7%
alcohol & tobacco 10%
food 46%
cereals 10%
roots & tubers 10%
pulses 7%
oil 5%
meat/fish 4%
other food 9%


Mwaro
clothing 4%
social events 3%
other 1%
equipment, seeds 3%
medical/health 8%
education 3%
water, electricity, fuel 3%
debts 13%
transport 4%
alcohol & tobacco 7%
food 51%
cereals 16%
roots & tubers 9%
pulses 6%
oil 7%
meat/fish 5%
other food 8%

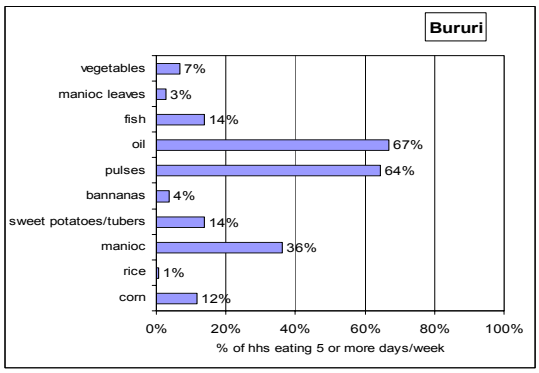

Ngozi
social events 2%
other 2%
clothing 4%
equipment, seeds 3%
medical/health 6%
education 2%
water, electricity, fuel 3%
debts 14%
transport 3%
alcohol & tobacco 10%
food 52%
cereals 13%
roots & tubers 12%
pulses 13%
oil 5%
meat/fish 3%
other food 5%

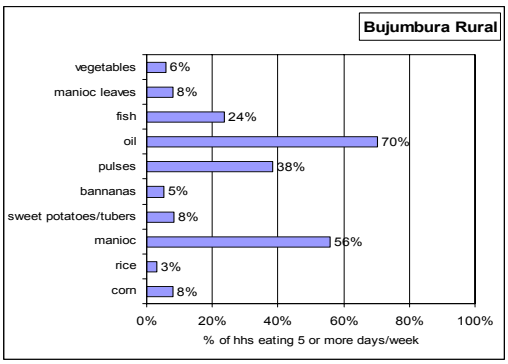

Rutana
clothing 6%
social events 2%
other 1%
equipment, seeds 4%
medical/health 7%
education 2%
water,electricity, fuel%
debts 14%
transport 6%
alcohol & tobacco 10%
food 49%
cereals 5%
roots & tubers 4%
pulses 4%
oil 5%
meat/fish 4%
other food 23%

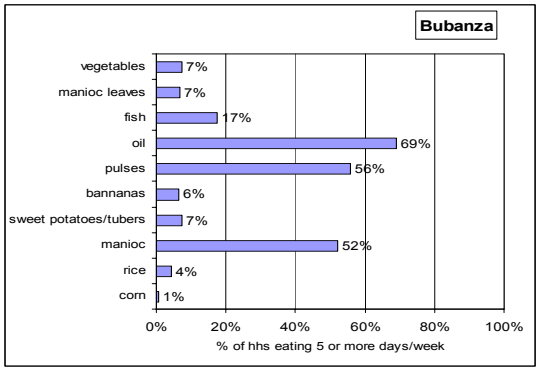
Annex III

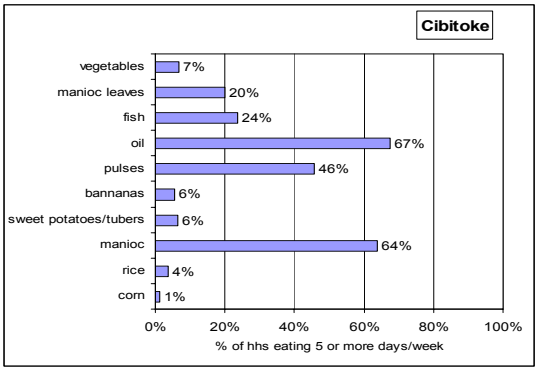


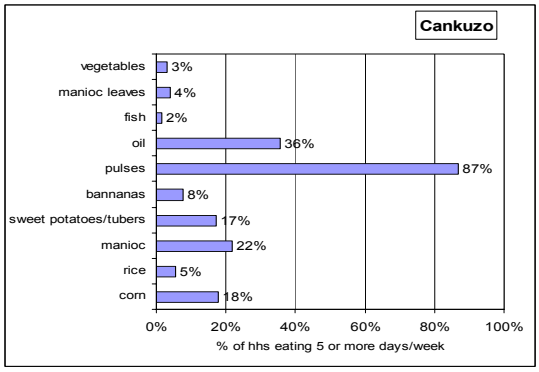
Figures 3.14.1 – Percent of households eating food groups more than 5 days a week by province

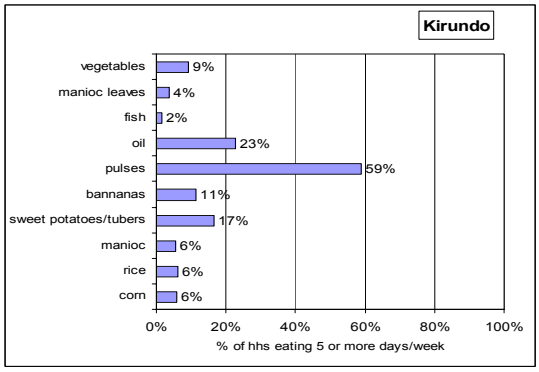


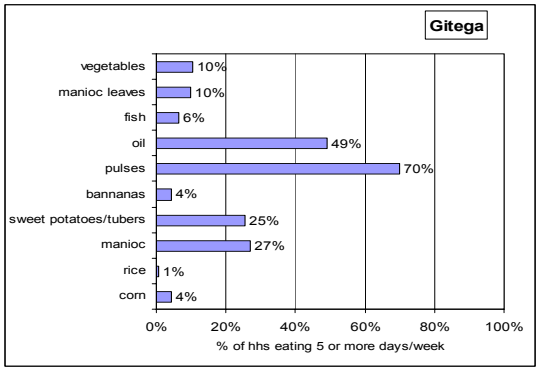


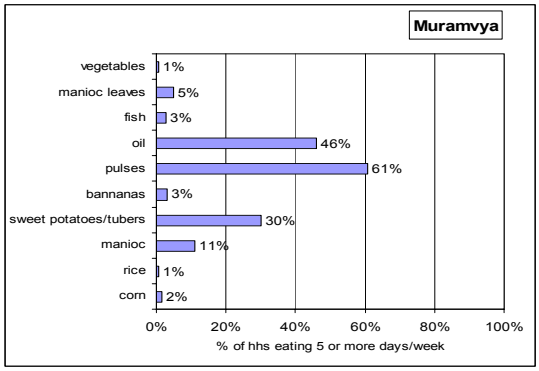


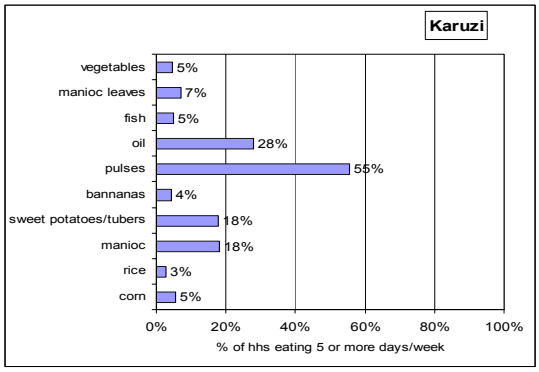


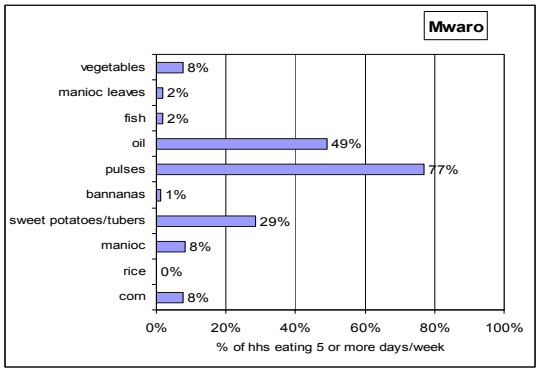

Cankuzo
vegetables 3%
manioc leaves 4%
fish 2%
oil 36%
pulses 87%
bannanas 8%
sweet potatoes/tubers 17%
manioc 22%
rice 5%
corn 18%
0% 20% 40% 60% 80% 100%
% of hhs eating 5 or more days/week

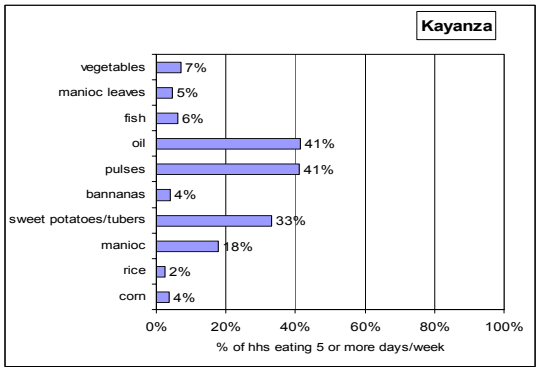

Kirundo
vegetables 9%
manioc leaves 4%
fish 2%
oil 23%
pulses 59%
bannanas 11%
sweet potatoes/tubers 17%
manioc 6%
rice 6%
corn 6%
0% 20% 40% 60% 80% 100%
% of hhs eating 5 or more days/week

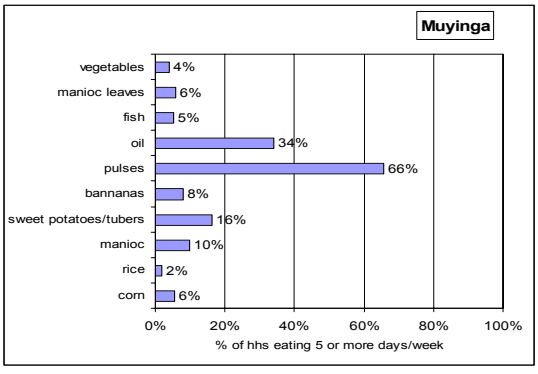

Gitega
vegetables 10%
manioc leaves 10%
fish 6%
oil 49%
pulses 70%
bannanas 4%
sweet potatoes/tubers 25%
manioc 27%
rice 1%
corn 4%
0% 20% 40% 60% 80% 100%
% of hhs eating 5 or more days/week


Muramvya
vegetables 1%
manioc leaves 5%
fish 3%
oil 46%
pulses 61%
bannanas 3%
sweet potatoes/tubers 30%
manioc 11%
rice 1%
corn 2%
0% 20% 40% 60% 80% 100%
% of hhs eating 5 or more days/week

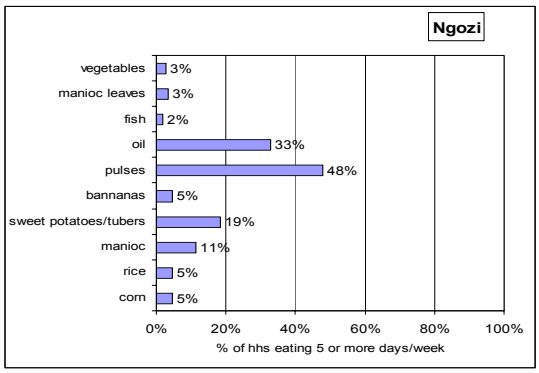

Karuzi
vegetables 5%
manioc leaves 7%
fish 5%
oil 28%
pulses 55%
bannanas 4%
sweet potatoes/tubers 18%
manioc 18%
rice 3%
corn 5%
0% 20% 40% 60% 80% 100%
% of hhs eating 5 or more days/week

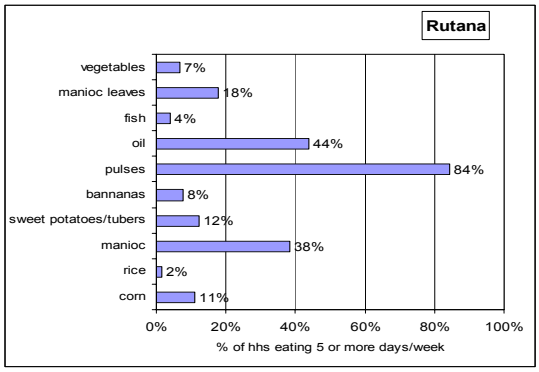

Mwaro
vegetables 8%
manioc leaves 2%
fish 2%
oil 49%
pulses 77%
bannanas 1%
sweet potatoes/tubers 29%
manioc 8%
rice 0%
corn 8%
0% 20% 40% 60% 80% 100%
% of hhs eating 5 or more days/week

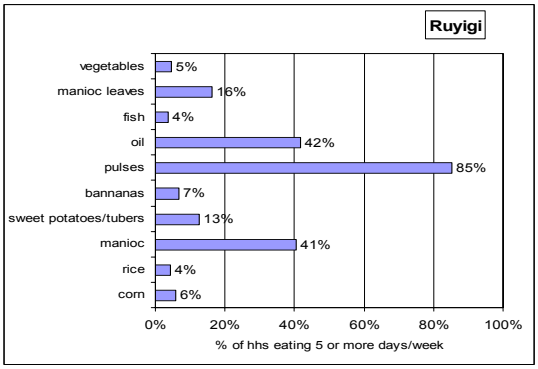

Kayanza
vegetables 7%
manioc leaves 5%
fish 6%
oil 41%
pulses 41%
bannanas 4%
sweet potatoes/tubers 33%
manioc 18%
rice 2%
corn 4%
0% 20% 40% 60% 80% 100%
% of hhs eating 5 or more days/week


Muyinga
vegetables 4%
manioc leaves 6%
fish 5%
oil 34%
pulses 66%
bannanas 8%
sweet potatoes/tubers 16%
manioc 10%
rice 2%
corn 6%
0% 20% 40% 60% 80% 100%
% of hhs eating 5 or more days/week

Annex III


Ngozi
vegetables
manioc leaves
fish
oil
pulses
bannanas
sweet potatoes/tubers
manioc
rice
corn
3%
3%
2%
33%
48%
5%
19%
11%
5%
5%
0%
20%
40%
60%
80%
100%
% of hhs eating 5 or more days/week


Rutana
vegetables
manioc leaves
fish
oil
pulses
bannanas
sweet potatoes/tubers
manioc
rice
corn
7%
18%
4%
44%
84%
8%
12%
38%
2%
11%
0%
20%
40%
60%
80%
100%
% of hhs eating 5 or more days/week


Ruyigi
vegetables
manioc leaves
fish
oil
pulses
bannanas
sweet potatoes/tubers
manioc
rice
corn
5%
16%
4%
42%
85%
7%
13%
41%
4%
6%
0%
20%
40%
60%
80%
100%
% of hhs eating 5 or more days/week