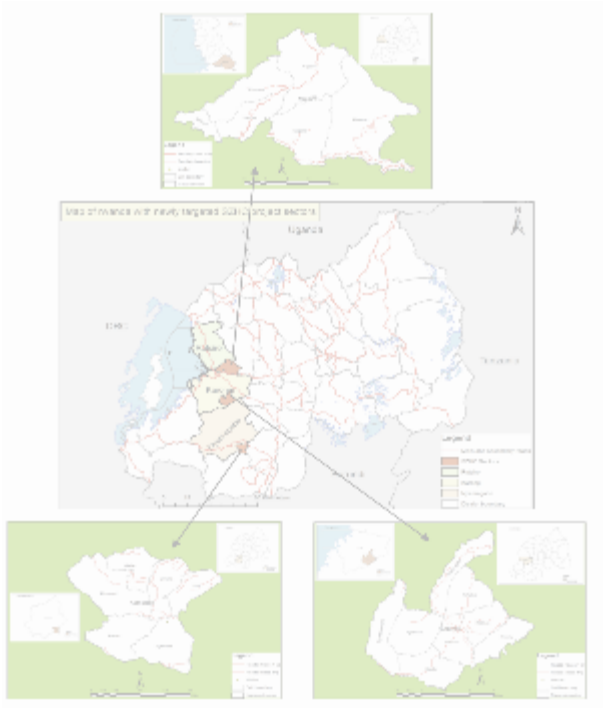

Saemaul Zero Hunger Communities (SZHC)

Nyamagabe , Karongi and Rutsiro

Baseline Survey Report

March 2015

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KOICA
Korea International Cooperation Agency

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Acronyms and abbreviations

CSI	Coping Strategy Index
FCS	Food Consumption Score
GoR	Government of Rwanda
HDDS	Household Dietary Diversity Score
IGAs	Income Generating Activities
KONICA	Korea International Cooperation Agency
LPG	Liquid Petroleum Gas
NGOs	Non-Governmental Organizations
PDAs	Personal Digital Assistants
rCSI	Reduced Coping Strategy Index
RWF	Rwandese Franks
SACCO	Saving and Credit Co-operative Organization
SZHC	Saemuel Zero Hunger Communities
VUP	Vision-2020-Umurenge Programme
WFP	World Food Programme

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1. Executive Summary

The World Food Programme in Rwanda intends to expand the implemention of the Saemuel Zero Hunger Communities (SZHC) project under a second phase in selected sectors of Kamegeri, Ruganda and Mukura in the districts of Nyamagabe, Rutsiro and Karongi districts, respectively. As part of the project cycle management a baseline study was carried out in the selected sectors to provide a situational analysis and provide a basis for monitoring the project implementation. The baseline study collected information from 1,163 selected households in the three sectors using a generated structured questionnaire and focus group discussions.

Demographics: The average household size in surveyed households is moderate at 4.6 persons. Household size is lowest in Kamegeri sector (4.4 persons) and highest in Mukura (4.8 persons). On literacy, a total of 48 percent of the heads of households can read and write, but however, more male head of households are literate (59 percent) compared to the females at 25 percent. A third (32 percent) of the households are female headed, of whom more than two thirds are illiterate, no schooling, are widows; a third are disabled. These factors predispose them to vulnerability compared to the male household heads.

Food Security: On average, 8 percent of the households are severely food insecure in the three Sectors covered by this assessment. Mukura has the highest proportion of the food insecure households, whilst Kamegeri has the lowest. Food insecurity increases with the low level of education. The most food insecure (severe and moderate) are those dependent on pension, public works and social transfers. They also include female headed households, households cultivating small land holdings (<0.2 ha), households headed by heads with low levels of schooling or none, households with disabled heads, or those who are separated, widow/widower or single head of households. These characteristics define some critical criteria for targeting vulnerable households.

Overall, **58 percent of the households have poor and borderline food consumption but with variation across the sectors**. Mukura has the highest people with poor food consumption (69 percent) followed by Ruganda (58 percent). Poor consumption is associated with low consumption of animal products (meat, milk) and vegetables. It also has a gender dimension since more female headed households have poor consumption (26 percent) compared to male headed ones (17 percent).

The food security status can be explained by poor dietary diversity, with over 90 percent of the population having poor dietary diversity, with consumption of meat, fruits and milk very minimal. The most preferred foods are roots and tubers across all sectors. Most households source of food is the market followed by own production. Most households in Kamegeri reported facing food deficit for 2.5 months per year between July and September. In Ruganda Sector, over two thirds of the households reported the problem between September and November, as well as in March to April, with food problems of 3.3 months per year. In Mukura sector, which had the highest proportion of households that reported the problem, food insecurity peaks to about 20 percent of the households from July to October as well as March to May, and on average shortages are experienced 2.3 months per year.

Coping: As half of the households do not have access to adequate food, they apply both consumption and livelihood coping mechanisms. The main consumption coping mechanisms used by most households was limiting portion size at meal times. The main stress coping used by most households was purchase

food on credit or borrowing food. The main crisis coping was harvesting immature crops and consuming seed stocks. However, over 50 percent of the households do not use livelihood coping strategies, but do use consumption coping measured through the rCSI.

Shocks: An estimated 63 percent of the households experienced an unusual situation in the past year. The highest was reported in Ruganda (74 percent) and lowest in Mukura (49 percent). The major shocks affecting most households across all sectors include late rains /long dry spell and serious illness or injury of a member of the household, each affecting about a third of the households. In all the sectors, on average 95 percent of the households indicated that the shock caused a reduction or loss of income and 85 percent indicated a decrease or loss of assets and belongings. At least 42 percent indicated could not recover from the shocks and those that recovered used mechanisms such as increasing casual labour and borrowing money.

Livelihoods: From the sampled households, 87 percent depend on production and sale of agricultural products, this is followed by agricultural daily labour (27 percent) and livestock and animal production. Households have few livelihood sources limited to two or three but most households in Kamegeri had one. Livelihood sources are seasonal in nature and tend to follow the two main seasons (A & B). For instance agricultural production and sale of produce is mainly conducted during season B (January - April) and season A (September – December) while availability agricultural labour follows the cropping seasons and is at its lowest peak July and August. Therefore, appropriate timing of interventions is necessary when addressing the vulnerable groups. Asset holding is very low, with almost all households owning hoes, whilst only half of the households reported having a bed, sofas and chairs. Most households own low valued assets and ownership of high valued assets is minimal in all sectors. This demonstrates levels of poverty across sectors.

Expenditure: On average, a household spends RWF 30,520 per month or USD42.10 (at an exchange rate of 1 USD to 725 Francs by the time of the survey) on food and non-food items. On average, almost 70 percent of the amount is spent on food. Of the amount spent on food approximately a third is on cereals and tubers. Majority of the households incur expenditure on cereals and tubers, vegetables and pulses, condiments and oil, indicative of the household dietary diversity. Given that a high proportion of the household budget is on food, there is limited ability for other developmental, education and health related needs.

Female headed households have less purchasing power as indicated by 40 percent less expenditure on food and non-food purchases compared to male headed households. This may suggest higher incidences of poverty among female headed households. This may explain the incidences of food insecurity among female headed households compared to the males.

Income, savings and credit: Access to credit is limited across the sectors, with only 15 percent of the households reporting having taken credit, with male headed households with better access than the females. The few households that had access to credit used it mainly to purchase agricultural inputs (28 percent) and food (15 percent). The low uptake of credit is as a result of households' lack of colleteral. Credit sources are generally informal such as community savings. Access from formal institutions such as banks and micro-finance institutions are limited. Female headed households secure credit to purchase food more than their male headed counterparts.

On average, 22 percent of the households reported having savings that are about 50,000 Rwanda francs. The level of savings varied across the sectors, sex and the education level of the head of household. Male headed households save three times more than the female headed households.

Housing: Most households (95 percent) own the houses they live and are permanent in nature. The structures are characterized by clay tile roofs (82 percent), earth/mud floors (95 percent), and walls made of mud bricks (44 percent) or tree trunks with mud (31 percent). Majority of the households (66 percent) live in the new settlements/Umudugudu, with 63 percent having settled there for more than one year. The average crowding, which is the number of persons per room, is high at 2.5 with male headed households being more crowded (2.3) than those headed by females (2.1).

Energy sources: Households have limited sources of lighting and cooking energy with majority of them relying on battery flashlight (47 percent), firewood (17 percent) and lantern (14 percent) for lighting; and firewood for cooking (99 percent). There is low usage of alternative sources such as solar, electricity and petroleum based fuels. Use of firewood for cooking and lighting energy may exert pressure on environment in addition to exposing household members to smoke related health risks.

Water access: Majority of the households in the sectors rely on boreholes (40 – 60 percent) and unprotected well/springs (19 – 30 percent) for water throughout the year. Households access the water resource by walking to the watering points, a task that takes on average 37 minutes. The task is mainly undertaken by children (50 percent) and women (19 percent). However, most households do not access sufficient amount of water for their use. The average amount being 32 litres per household and per capita consumption of 8.8 litres, which is far less than the recommended SPHERE standards.

Agriculture: Majority of the households (90 percent) have access to land and practice agriculture. Most of them (89 percent) cultivated during Season A but the land holdings accessed are relatively small (<0.5 ha) for 62 percent of the households. Despite having small land holdings only a few households are renting land and the parcels rented are less than 0.2 hectares (23 percent). Use of irrigation in crop production is low (14 percent) considering the 12 months period and only 3 percent during season A. Moreover, households have not invested in modern irrigation systems but instead rely on traditional ones.

The number of crops grown is few (two to three) for most households which signify low crop diversification. Lack of diversification may negatively impact on food availability in case the few grown crops are affected by shocks. Majority of the households are engaged in producing beans (61 percent) and sweet potatoes (60 percent) with the other crops being grown by relatively few number of households. Most households cultivate these crops during Season A and B and only a few during season C.

Most households (>50 percent) allocate relatively small sections of their cultivated land (<25 percent) to any particular cultivated crop a situation that may be attributed to small land holdings. Production of cereals, pulses and vegetables is generally low for over 90 percent of the households since they produced less than 250Kgs during Season A with the exception of roots and tubers where 89 percent of households produced up to a maximum 500Kgs. Majority of the households consumed more than 75 percent of the production and it's estimated that the stock would last them a few months (2 to 5 months) for any cultivated crop. The relatively low production and short period of availability may compromise household food availability unless there is capacity to access food through markets.

While a moderate number of households is using fertiliser in crop production (65 percent) and implement soil fertility measures on their farms (65 percent) use of other agronomic practices such as pesticides (18

percent) and improved crop varieties (21 percent) is low. This may be a limiting factor to improved production.

Livestock: Majority of the households (77 percent) own/manage at least one type of livestock but ownership of each livestock type is relatively low across all sectors even for the small stock such as goats, sheep and chicken. Supporting households keep small stock may improve their livelihood status. Compared to last year the number of livestock owned/managed has not significantly changed for most households (53 percent). However, only a few households are selling livestock or livestock products (19 percent) suggesting that households keep livestock for subsistence rather than for commercial purposes.

While majority of households (89 percent) face no major challenges in livestock production, there is need to support households address shortage of feeds, enhance productivity of local breeds, adopt improved breeds, and contain parasites and disease incidences that hamper livestock keeping. Most households (about 90 percent) do not engage in other on-farm income generating activities on farm but there is expressed willingness to initiate ventures such as rearing improved dairy cows (52 percent), rabbit and pigs (37 percent), vegetable and fruit production (30 percent), improved poultry (20 percent), shoat fattening and reproduction (19 percent).

Recommendations: To address the identified problems and improve food security and livelihoods a number of policy and programmatic recommendations should be considered.

- Cash based interventions including cash for work should be targeted during the labour slack period (July and August). Targeting should consider the most vulnerable and seasonality. Given the small land holding and poor dietary diversity, kitchen gardens, fruits, diversifying small ruminant should be undertaken.
- Government should take a concerted effort to improve the road network supported by the project through community assets, to improve household access to markets.
- Facilitate the formation of community based credit and savings schemes and encourage households' participation.
- Expand livelihoods through projects so that the income levels of households is increased.
- Support communities access to sustainable energy sources
- Increase land reclamation and soil erosion protection
- Provide training to households and communities to improve agricultural practices, animal husbandry, soil conservation, use of credit and saving.

2. Introduction

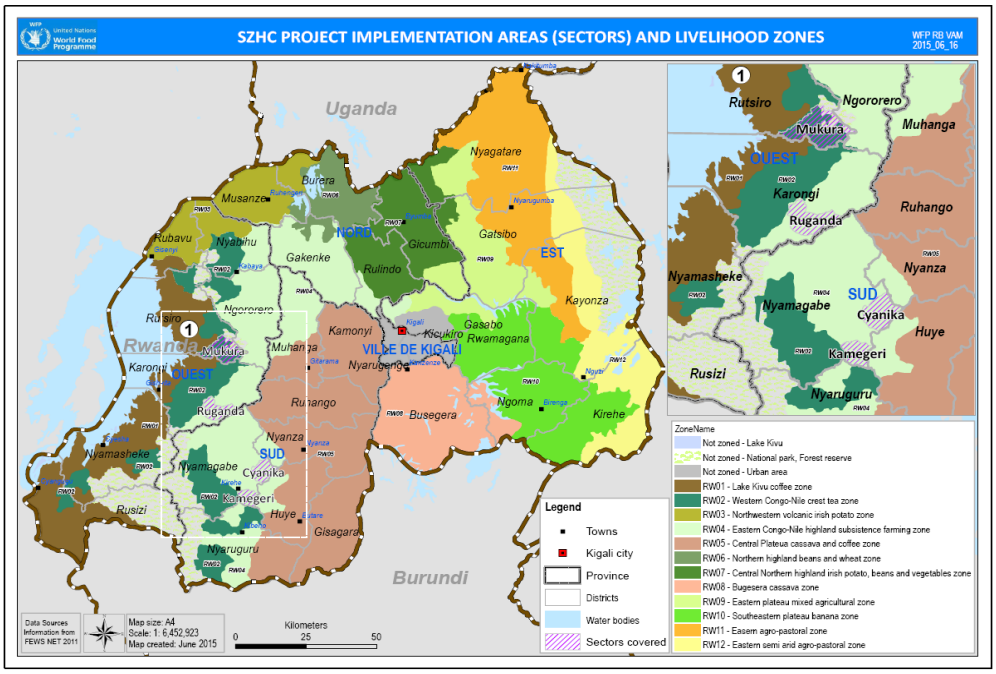
2.1. Background

Rutsiro and Karongi districts are located in the western part of Rwanda bordering Lake Kivu, whilst Nyamagabe is mainly part of the southern highlands. These districts have three main livelihood activities. The areas of Rutsiro and Karongi districts along Lake Kivu depend on coffee, whilst parts of foothills of the highlands of the three districts produce tea as well. The highlands (Congo-Nile Crest) of Karongi and Nyamagabe rely mainly on subsistence farming. Floods and landslides are regular problems affecting communities in the three districts. Furthermore, Karongi and Nyamagabe faces high levels of high levels of land degradation, soil acidity, low soil fertility and significant slopes ranging from 20 to 60 percent in the highlands that further threaten livelihoods for these communities. The three districts have the highest levels of poverty, poor food consumption and high levels of chronic malnutrition that are associated with less development and limited farm-based livelihood options. Due to the terrain and high population density, most farmers have less than 0.5 hectares of arable land.

Considering achievements and lessons learned from the first phase, Korea International Cooperation Agency (KONICA) has agreed to expand the project to additional two districts in the second phase for three years starting 2015 until 2017. To address the food and nutrition problems and enhance self-reliance for the most vulnerable communities, KOICA together with the WFP will implemented the Saemuel Zero Hunger Communities (SZHC) in these three districts. Within each district, the project will be implemented in one Sector each in Karongi (Ruganda Sector) and Rutsiro (Mukura Sector) of Western Province and Nyamagabe (Kamegeri Sector) of Southern Province (Figure 1). The project will also be implemented for only one year in Cyanika Sector of Nyamagabe district, to consolidate the achievements of the asset creation 2012 to 2014 project.

Before implementing the project, a socio-economic baseline survey was undertaken from April - May 2015 to develop clear bench marks which will enable to measure the achievement of the project (outputs and outcomes).

Figure 1: Location of the Study Area



2.2. Anticipated Project Beneficiaries

The SZHC project is expected to directly benefit about 31,000 people living in 113 villages through cash for work activities. An additional 100,000 people or nearly 14,000 households will indirectly benefit from the project in the targeted villages and the surrounding villages. The direct beneficiaries include participants and their family members who will receive the cash for work payments. The beneficiaries of the project are the most vulnerable and the poor households identified through the community members coordinated by the village development committees. The final list will be established during the community based planning. In each district, entire parts of a selected Sector will be considered and project activities would be implemented in 113 villages of the three sectors in three districts (Table 1).

Table 1: Distribution of Project Beneficiaries

District	Sector	Targeted population (% of total)	Male	Female	Number of households	Area km2	Population density (persons per km2)
Karongi	Ruganda	18,543 (100%)	8,558	9,985	4,072	61.8	300
Nyamagabe	Kamegeri	14,543 (100%)	7,005	7,538	3,235	32	454
Cyanika*		3,503	1641	1862	798		335
Rutsiro	Mukura	34,031 (100%)	16,849	17,182	6,511	103	330
TOTAL		70,620	34053	36567	14,616		

' Only 6 villages targeted in year 1 included for Cyanika.*

2.3. Objectives

The purpose of the SZHC project is to reduce hunger and under nutrition in the targeted food insecure areas through improvement of household access to livelihood assets and enable the participants to meet their food and nutrition needs (see Annex 1 for the project log frame and the benchmarks for the outputs). The project has the following specific objectives;

- Improve household access to productive assets
- Increase agricultural production, income generation and livelihood opportunities for the targeted households
- Empower vulnerable and marginalized groups;
- Build capacity of the community and local government to own and manage home grown development initiatives.

This report is aimed to provide a baseline to the project areas, providing a basis of measuring the objectives and outputs of the SZHC project during the period 2015 to 2017. The socio-economic survey was therefore designed to meet the following objectives:

- To understand local situations in relation to the relative importance of the project activities for households and communities;
- To get in touch with the grass root and make adjustments to some of the project interventions when deemed necessary;
- Develop a clear benchmark to measure project outputs and outcomes;

2.4. Methodology

The SZHC baseline survey was conducted in three sectors of the three districts of Karongi (Ruganda), Nyamagabe (Kamegeri) and Rutsiro (Mukura). A total of 1,163 households were sampled, 373 in Karongi (Ruganda Sector); 380 in Rutsiro (Mukura Sector) of Western Province and 410 in Nyamagabe (Kamegeri Sector). In each sector, five Cells were selected (Table 2). The sample distribution is such that 377 female and 786 male headed households were interviewed. In addition 34 Focus Group discussion were held in these districts, of which 8 were in Nyagambe (Kamegeri); 10 in Karongi (Ruganda) and 16 in Rutsiro (Mukura).

In addition to reviewing secondary data from previous studies and literature available, primary data was collected from the project areas in a period of 2-3 weeks.

Table 2: The Sample Distribution by District by Cell

District	Sector	Cell	Sample size
Nyamagabe	Kamegeri	Kamegeri	87
		Kirehe	98
		Kizi	84
		Nyarusiza	62
		Rususa	79
		Sub-total	**410**
Karongi	Ruganda	Kinyovu	75
		Kivumu	76
		Nyamugwagwa	77
		Rubona	71
		Rugobagoba	74
		Sub-total	**373**
Rutsiro	Mukura	Kagano	105
		Kageyo	48
		Kagusa	46
		Karambo	41
		Mwendo	140
		Sub-total	**380**
Total			**1163**

Three data collection techniques were employed that include: Focus Group Discussion; Key Informants Interview focusing on sector level government staff; and interview of individual households.

For the focus group discussion, two separate groups of men and women, such as elders, women headed households, youth and other vulnerable members of the community in each village were given a chance to participate.

In selecting the households, a two stage stratified random sampling was employed in sampling villages and households for the baseline. Households were the ultimate sampling units.

Data collection instruments were first prepared in English and subsequently translated in to Kinyarwanda. The data collection was done using Personal Digital Assistants (PDAs) or tablets to speed up data entry, analysis and report preparation.

3. Major Findings

3.1. Household Demographics

On average the household size is 4.6 persons, with a maximum household size of 12. On average there are more females in the household 2.5 compared to males (2.1). At least 32 percent of the households' are female headed. Kamegeri, has slightly more female headed households at 37 percent compared to the other sectors. The male headed households have on average 5 compared to 4 members for the female headed. The dependency ratio is 1.3 persons per adult, with 14 percent of the households with more than 2 persons per adult and 34 percent have a dependency ratio of 2 persons per adult. On literacy, a total of 48 percent of the heads of households can read and write, but however, more male head of households are literate (59 percent) compared to the females at 25 percent. The low literacy rates can be explained by the high rates of head of households with no schooling (47 percent). The percentage of head of households with no schooling is double for female headed at 71 percent compared to the males at 35 percent. In addition only 3 percent of the female heads of household have vocational to university level of education compared to 7 percent for the male heads.

DEMOGRAPHICS

More than two thirds of women head of households are illiterate, no schooling and widows; a third are disabled. These factors are likely to make them more vulnerable compared to the male household heads.

Table 3: Household Characteristics

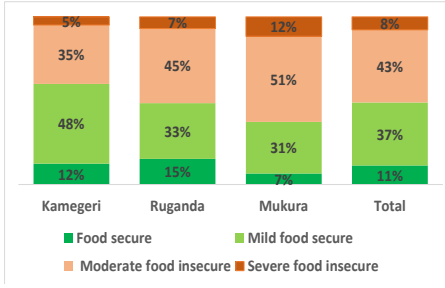
Sector		Kamegeri	Ruganda	Mukura	Overall
Average Household Size		4.4	4.7	4.8	4.6
Age of Household Head		50.8	50.9	47.9	49.9
Sex of Household Head	Male	63%	71%	69%	68%
	Female	37%	29%	31%	32%
% of Head of Households that can read and write		48%	52%	43%	48%
Education level of Head of Household	No School	48%	40%	52%	47%
	Some Primary	30%	32%	21%	28%
	Completed primary	15%	21%	23%	19%
	Vocational	2%	3%	3%	3%
	Secondary	3%	4%	1%	3%
	University	.2%	.3%	.5%	.3%
Marital Status of Head of Household	Married	51%	67%	60%	59%
	Partner	9%	3%	12%	8%
	Divorced/ Separated	8%	2%	7%	6%
	Widow/ Widower	29%	26%	21%	25%
	Single	3%	2%	1%	2%
Number of Spouses/partners for head of household	Monogamous	96%	98%	88%	94%
	Polygamous	4%	2%	12%	6%

3.2. Food Security

3.2.1. Overall Food Security[1]

On average, 8 percent of the households are severely food insecure in the three Sectors covered by this assessment. Mukura has the highest proportion of the food insecure households, whilst Kamegeri has the lowest (Figure 2). It should be noted that majority, 73 percent of the households depend on agricultural production followed by 20 percent on labour (agricultural and non-agricultural) as the main source of livelihoods. The drivers of food insecurity in these areas will be further explored in the following sections.On the status of food insecurity across different characteristics, the female headed households tend to be more food insecure compared to the male headed. More than half of the households cultivating less than 0.2 hectares are food insecure, with food security status improving with the size of land holding. In addition, households with kitchen garden tend to be more food secure compared to those without. Households that reported begging as main source of livelihoods are the most food insecure, with more than two-third of the households severely food insecure. However, the proportion of these households is small estimated at 0.5 percent. Food security status improves with the increase in the level of education of the household head, increasing from 25 percent for houses with heads of households who have some secondary education to 100 percent for the households who have a head who completed university. Probably because these HH with university degree has other source of income than agriculture. There is a higher proportion of moderately food insecure households (+/-50 percent) for the separated, widow/widower and single head of households. The households with high dependency ratio of more than 3 persons per adult tend to be more food insecure with 12 percent of these households severely food insecure compared to 8 percent of those households with low dependency and 7 percent for households with at 2 persons per adult.

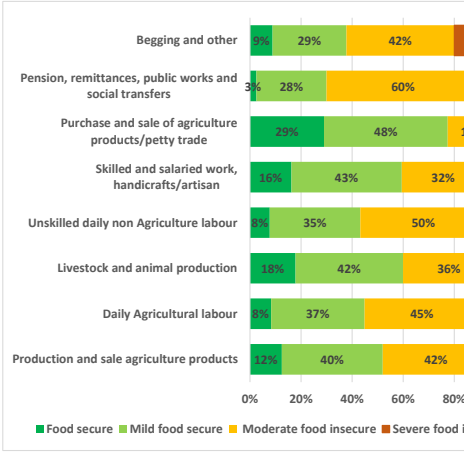
Figure 2: Food security status by sector



THE MOST FOOD INSECURE

- Female headed households

Figure 3: Food insecurity status by Livelihood Activity



Food insecurity is spread across all livelihood groups. The households (3 percent of the households) with the highest severe and moderate food insecurity are dependent on pension, public works and social transfers. This group is followed by those (4 percent of the population) dependent on other sources of income. The households dependent on both unskilled daily non-agricultural and agricultural labour have

[1] Food insecure households refer to those with severe and moderate food insecurity conditions. Food Security is met when all people at all times have physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life over a specified period of time. A households considered as food secure are those with adequate food consumption, not forced to adopt coping mechanisms affecting their livelihoods in the medium/long term, and whose proportion of expenditure on food from the overall budget is relatively low.

also high levels of severe and very severe food insecurity. Surprisingly the traders and petty traders are the least food insecure (Figure 3).

When asked about the existence of food insecure households, all communities unanimously agree on the existence of food insecurity independently on the sector. The main causes of food insecurity are ascribed to the lack of access to land or to the limited surface available for farming (52 percent) and to a lesser extent to the presence of elderly or disabled within the household. Food insecure households mainly depend on unstable and non-lucrative activities (19 percent), food or cash external assistance (16 percent) and agricultural casual labor (16 percent). As expected, only one percent of families mainly depending on salaries such as civil servants are food insecure (Table 4).

Table 4: Perception of food insecurity from Focus Group discussion

Causes of food insecurity	Kamegeri	Ruganda	Mukura	Total
don't have land/ landless	29%	33%	35%	33%
Labour poor women headed HHs	8%	23%	3%	12%
elderly with no support	17%	13%	17%	16%
disabled and unable to work	8%	3%	24%	12%
Most farmers having small land holding	21%	27%	10%	19%
Others	17%		10%	8%

FOOD CONSUMPTION

- 42 percent of the households had acceptable consumption, 39 percent borderline and only 20 percent poor.
- Half of the households in Kamegeri had acceptable consumption and close to a third in Mukura sector.
- Consumption pattern is a mirror of the overall food security described above.
- On average, households consume 6 to 7 days of cereals and tubers; about 4 days of pulses; 2 to 3 days of oil and fats and about 3 to 4 days of vegetables across all areas. The consumption of meat, fruits and milk is very minimal.
- Dietary diversity is poor for most households, as 92 percent had low dietary diversity.
- Majority of the households prefer roots and tubers.
- Most households get their food from the market followed by own production.

3.2.2. Food Consumption and Source

3.2.2.1. Number of meals

On average there is not much difference between children and adults on the number of meals consumed during the last 24 hours. More than 98 percent of the adults and 78 percent of the children had one or two meals in the previous day before the survey. The number of meals was slightly higher for children in the male headed households compared to the female headed. Furthermore the proportion of children with at least three meals was double (26 percent) in male headed households compared to 13 percent in the female headed. This explains why households with these characteristics are more vulnerable.

Meal frequency for children and the proportion of children increased with the improvement in the level of education of the head of household. However, there seem to be no much difference in the meal frequency across the three sectors and among the adult population across education, gender and disability status of the head of household (Table 5).

Table 5: Number of Meals consumed in the last 24 hours

Characteristic	Number of Meals consumed	% of Households and number of meals

		Adults	children	Adults			children		
				Less than 1 meal	At least 2 meals	3 meals or more	Less than 1 meal	At least 2 meals	3 meals or more
Average		1.6	1.7	41%	57%	2%	30%	48%	22%
Sex of head of household	Male	1.6	1.9	42%	56%	2%	24%	51%	26%
	Female	1.6	1.4	39%	58%	3%	43%	44%	13%
Education of head of household	No school	1.6	1.5	42%	55%	2%	39%	45%	17%
	Some/still primary	1.6	1.9	40%	58%	2%	23%	54%	23%
	Completed primary	1.6	2.0	39%	58%	2%	22%	47%	31%
	Vocational school	1.5	1.8	50%	50%		23%	53%	23%
	Some/still secondary	1.5	2.0	46%	54%		17%	67%	17%
	Completed secondary	1.8	2.4	38%	50%	13%		63%	38%
	Some/still university	2.0	2.7		100%			33%	67%
	Completed university	2.0	3.0		100%				100%
Sector	Kamegeri	1.5	1.6	50%	48%	2%	34%	52%	14%
	Karongi (Ruganda)	1.7	1.8	37%	61%	2%	27%	46%	27%
	Mukura	1.7	1.8	36%	61%	3%	28%	48%	24%

There was no significant change in the number of meals in the last 24 hours compared to usual as majority (83 percent) and 74 percent of the households meal frequency for adults and children respectively remained the same for the time of the year. A mere 10 and 6 percent of adults and children respectively had the meal frequency indicated as less than usual (Table 6).

Table 6: Changes in the number of meals compared to usual

	% of Households and meal changes						
	Adults			children			
	Usual	More than Usual	Less than Usual	Usual	More than Usual	Less than Usual	No children
Kamegeri	86%	4%	10%	77%	1%	7%	14%
Ruganda	80%	6%	14%	71%	3%	5%	21%
Mukura	83%	12%	5%	73%	6%	5%	16%
Male	83%	8%	9%	78%	4%	5%	13%
Female	84%	6%	10%	64%	3%	6%	27%
Total	83%	7%	10%	74%	3%	6%	17%

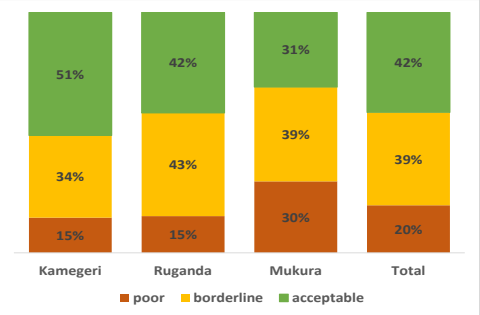
	Yesterday, how many times did the adults in this household eat?	Is this usual for adults at this time of year?				Yesterday, how many times did the children (<15 year old) in this household eat?	Is this usual for your children at this time of year?		
	Mean	It's usual	No, it's more than usual	No, it's less than usual	No children	Mean	It's usual	No, it's more than usual	No, it's less than usual
Kamegeri	1.52	85.9%	4.4%	9.8%	.0%	1.62	89.7%	1.7%	8.5%

Ruganda	1.66	79.6%	5.9%	14.5%	.0%	1.81	90.8%	3.4%	5.8%
Mukura	1.66	82.9%	12.1%	5.0%	.0%	1.79	87.1%	7.2%	5.7%
Total	1.61	82.9%	7.4%	9.7%	.0%	1.74	89.2%	4.1%	6.8%

3.2.2.2. Food Consumption & HDDS Score

Based on the food consumption score (FCS[2]), on average 42 percent of the households have acceptable consumption, 39 percent borderline and only 20 percent poor. However, the FCS varies across the sectors, with about half of the households in Kamegeri having acceptable consumption and close to a third in Mukura sector, the later also has the largest proportion of households that have poor food consumption (Figure 4).

Figure 4: Percent households Food Consumption Score



More female headed households have poor food consumption at 25 percent compared to the male headed at 17 percent. On the other hand, the male headed households have 7 percent more households with acceptable consumption compared to the female headed households at 37 percent. The proportion of households with acceptable consumption increases with the increase in the household size. The number with acceptable consumption increases from 38 percent for a 3 member household to 41 percent for a 4 to 6 member household to 46 percent for a household of more than 6 members. Inversely the proportion of the households with poor consumption decreases from 22 percent by 2 percentage points as the household size increases. This is because wage labour is the second most important source of livelihoods, hence larger households have better man power.

Dietary diversity

The number of days each commodity is consumed determines the dietary diversity in the household. The number of days commodities are consumed vary across the rural and camps' households. On average, households consume 6 to 7 days of cereals and tubers; about 4 days of pulses; 2 to 3 days of oil and fats and about 3 to 4 days of vegetables across all areas. The consumption of meat, fruits and milk is very minimal. The number of days foods are consumed improves with the FCS, the land holding from 0.2 hectares and the level of education of the head of household. The male headed households have more days of consumption compared to the female headed (Table 7).

Table 7: Days of Food consumption per week by area

Sector	cereals and tubers	pulses	vegetables including wild veg. and leaves	fruits	meat, poultry, fish and eggs	milk and dairy products	oils, fats and butter	sugar and products
Kamegeri	6.6	4.7	3.5	0.3	0.5	0.3	3.2	0.8
Ruganda	6.8	3.8	3.9	0.8	0.3	0.4	2.6	0.4

[2] Food Consumption Score (FCS) is an acceptable proxy indicator to measure caloric intake and diet quality at household level, giving an indication of food security status of the household if combined with other household access indicators. It is a composite score based on dietary. Consumption recall for the household and classified into three categories: poor consumption cut-off point of 21; borderline cut off of 35 and above 35 is considered as good consumption. The FCS is a weighted sum of food groups. The weight for each food group is calculated by multiplying the number of days commodity was consumed and its relative weight

Mukura	6.4	2.9	4.3	0.3	0.2	0.4	2.0	1.1
Total	6.6	3.8	3.9	0.5	0.3	0.4	2.6	0.8
poor	5.9	0.8	2.4	0.0	0.0	0.0	0.6	0.2
borderline	6.7	3.1	3.4	0.3	0.1	0.1	1.9	0.4
acceptable	6.9	6.0	5.0	0.9	0.7	0.8	4.2	1.4

As depicted by the days of consumption of different food groups, there is a general poor dietary diversity, with most households (92 percent) with low dietary diversity. As in food security and food consumption, the dietary diversity improves with the level of the education of the household head as well as the land holding of the household (Table 8). Whilst the proportion of the very severely food insecure is low, the poor dietary diversity is of great concern within most of the households.

Table 8: Dietary Diversity and proportion of households

		Mean Dietary Diversity	Low HDDS	Medium HDDS	High HDDS
Gender for head of household	Male	3.0	91%	9%	.1%
	Female	2.7	94%	5%	.3%
Sectors	Kamegeri	2.9	94%	6%	.2%
	Ruganda	3.2	87%	13%	.3%
	Mukura	2.6	95%	5%	.
	Total	2.9	92%	8%	.2%
Education of Head of Household	No school	2.7	94%	6%	0.0%
	Some/still primary	3.0	92%	8%	0.0%
	Completed primary	3.1	89%	10%	0.4%
	Vocational school	3.2	86%	14%	
	Some/still secondary	3.8	79%	21%	
	Completed secondary	4.5	63%	25%	12.5%
	Some/still university	4.0	67%	33%	
	Completed university	5.0		100%	

3.2.2.3. Preferred Foods

Tubers and roots are by far the most preferred staple by majority of the households across the sectors. Cereals are more preferred by close to 19 percent of the household in Mukura sector. The preferred foods are also the most cultivated. The decision on the use of food is generally either by the females or both male and females in the household (Table 9).

Table 9: Preferred Food and food use decisions

		Kamegeri	Ruganda	Mukura	Total
Preferred Staple food	Cereals	4%	.3%	19%	8%
	Tubers and roots	96%	99%	81%	92%
	Cooking banana		.5%		.2%
Decision making over the use of food	Male	29%	10%	31%	23%
	Female	38%	37%	36%	37%
	Both	33%	53%	33%	39%

3.2.2.4. Major Food Sources

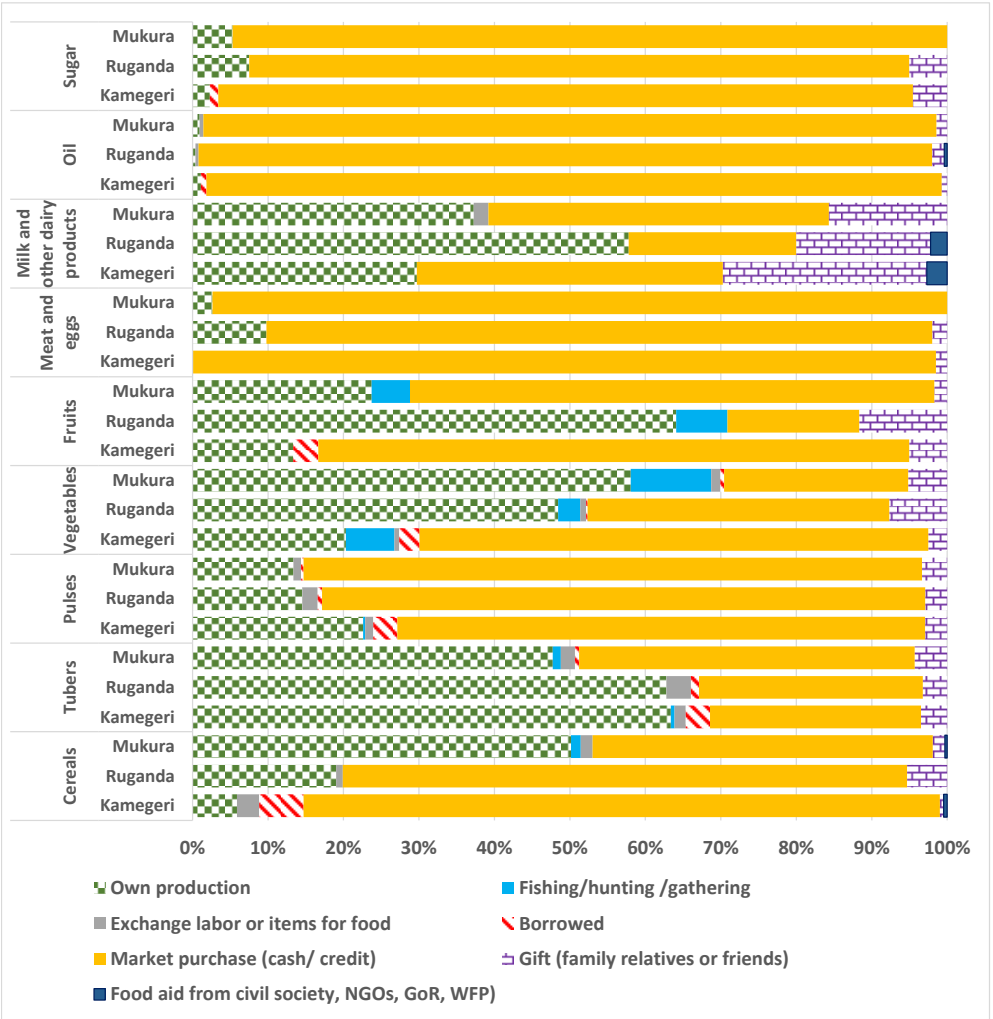
Most households obtain their food from the market. This is followed by own production, with other food sources playing an insignificant role. However, the food sources for the various commodities varies across the sectors as depicted in Table 10.

Table 10: Main Food sources

	Kamegeri	Ruganda	Mukura
Own production	21%	29%	32%
Fishing/hunting /gathering	2%	1%	3%
Exchange labor or items for food	1%	1%	1%
Borrowed	2%	0.3%	0.3%
Market purchase (cash/ on credit)	71%	63%	61%
Gifts (family relatives or friends)	3%	5%	3%
Food aid from civil society, NGOs, GoR, WFP)	0.1%	0.1%	0.0%

Although cereals are not the most preferred, Mukura obtains most of the cereals from own production, whilst the other sectors depend on the market. Majority of the households obtain their preferred roots and tubers from own production across all the sectors with the balance from the market. Meat and eggs, oil and sugar are largely obtained from the market. Similarly pulses are from the market, with a quarter of the households producing own pulses and legumes in Kamegeri sector. Vegetables that are a major part of the diet from the number of days of food consumption recall are largely grown by most households in Mukura and Ruganda sectors. In terms of proportion of households, the greatest percentage of households get milk and milk products as gifts from family and relatives across all the sectors (Figure 5).

Figure 5: Food sources by type of commodity and by district



3.2.2.5. Food sources by month

During the year, markets and own production provide the major sources of food for cereals and pulses. For the staples, most households rely on own production as the main source throughout the year. More households rely on purchases from July to September in Kamegeri and Mukura sectors; and October and November in Ruganda. A minimal number of households rely on other sources such as food aid, exchange/ (Table 11).

Table 11: Monthly sources of staple

	Kamengeri					Ruganda					Mukura				
Month	Not consumed	Own production	Market purchases	Food aid	Borrowing/ Begging/ Exchange/ Gathering	Not consumed	Own production	Market purchases	Food aid	Borrowing/ Begging/ Exchange/ Gathering	Not consumed	Own production	Market purchases	Food aid	Borrowing/ Begging/ Exchange/ Gathering
Mar-15	6%	64%	28%	1%	1%	0.5%	76%	18%	1%	5%	0.3%	64%	31%	2%	2%
Feb-15	3%	64%	30%	2%	1%	0.3%	77%	18%	1%	4%	1.3%	62%	32%	2%	3%
Jan-15	3%	63%	31%	1%	2%	0.3%	77%	18%	1%	4%	1.8%	61%	32%	2%	2%
Dec-14	2%	59%	36%	1%	2%	0.8%	71%	24%	1%	4%	1.3%	56%	39%	2%	2%
Nov-14	1%	57%	39%	2%	1%	1.1%	51%	42%	1%	5%	1.8%	48%	44%	4%	2%
Oct-14	1%	56%	40%	2%	2%	0.5%	51%	43%	1%	5%	1.6%	47%	46%	3%	2%
Sep-14	1%	47%	49%	2%	1%	1.1%	60%	35%	1%	3%	1.3%	46%	47%	3%	3%
Aug-14	1%	42%	54%	1%	2%	0.5%	65%	29%	2%	4%	0.8%	43%	51%	3%	3%
Jul-14	0%	42%	53%	3%	2%	0.5%	68%	27%	1%	3%	1.8%	44%	47%	4%	3%
Jun-14	1%	50%	46%	2%	2%	0.8%	66%	28%	2%	4%	1.1%	51%	41%	4%	3%
May-14	1%	57%	39%	2%	1%	0.0%	60%	35%	1%	4%	1.3%	53%	39%	3%	3%
Apr-14	0%	59%	38%	2%	2%	0.3%	58%	35%	2%	5%	2.1%	50%	40%	4%	4%

There are more households depending on market for beans compared to staples. In addition to markets own production is the source of beans. Food aid and borrowing are not significant across sectors. (Table 12).

Table 12: Monthly sources of beans

	Kamegeri					Ruganda					Mukura				
	NA, Not consumed	Own production	Market purchases	Food aid	Other (Borrowing/ Begging/Exchange/Gathering)	NA, Not consumed	Own production	Market purchases	Food aid	Other (Borrowing/ Begging/Exchange/Gathering)	NA, Not consumed	Own production	Market purchases	Food aid	Other (Borrowing/ Begging/Exchange/Gathering)
Mar-15	4.9%	42.0%	50.5%	1.5%	1.2%	1.1%	34.6%	59.0%	1.1%	4.3%	7.9%	21.8%	66.3%	2.1%	1.8%
Feb-15	2.9%	48.0%	45.1%	2.2%	1.7%	0.5%	52.5%	42.4%	0.5%	4.0%	6.8%	25.3%	63.7%	2.1%	2.1%
Jan-15	1.5%	50.5%	43.9%	2.0%	2.2%	0.5%	64.9%	30.8%	1.1%	2.7%	6.3%	23.4%	66.1%	2.6%	1.6%
Dec-15	1.7%	45.4%	49.5%	2.0%	1.5%	0.5%	56.8%	38.3%	0.8%	3.5%	6.6%	18.2%	69.5%	3.7%	2.1%
Nov-14	1.2%	34.4%	60.0%	2.7%	1.7%	1.3%	14.7%	79.1%	0.8%	4.0%	6.6%	13.7%	75.3%	2.9%	1.6%
Oct-15	0.7%	31.0%	64.9%	2.0%	1.5%	1.1%	13.4%	81.0%	1.3%	3.2%	7.4%	11.3%	76.6%	3.7%	1.1%
Sep-14	1.0%	20.0%	74.6%	2.4%	2.0%	0.8%	18.8%	75.9%	1.1%	3.5%	8.2%	12.4%	73.9%	3.7%	1.8%
Aug-14	0.7%	20.0%	75.1%	2.2%	2.0%	1.3%	32.2%	63.3%	1.1%	2.1%	6.8%	12.4%	75.0%	3.7%	2.1%
Jul-14	0.7%	22.4%	72.7%	2.2%	2.0%	1.3%	49.1%	45.0%	1.6%	2.9%	7.6%	13.7%	72.4%	3.9%	2.4%
Jun-14	0.5%	34.6%	60.5%	2.2%	2.2%	1.3%	51.7%	41.6%	1.6%	3.8%	6.3%	17.4%	69.5%	4.5%	2.4%
May-14	1.0%	32.4%	62.4%	2.2%	2.0%	1.1%	22.3%	72.9%	1.3%	2.4%	7.6%	15.3%	71.6%	3.7%	1.8%
Apr-14	0.2%	34.9%	61.7%	1.5%	1.7%	0.3%	17.4%	76.4%	2.1%	3.8%	8.9%	13.9%	70.8%	4.5%	1.8%

3.2.3. Coping Strategy

Access to adequate food for household consumption is a problem for about 50 percent of the households. The problem is more pronounced for female headed households and increases with the low education levels. Across the sectors, Mukura has the highest (60 percent) of the households that reported not having enough food or money to buy food in the last seven days prior to the survey (Figure 6).

The number of days that each of the consumption coping strategy was applied by the household in the last seven days is such that limiting portion size at meal times was the most frequently used on average. The limitation of food portion could have an impact on the overall adequate nutrient and caloric intake of households therefore affecting their food security. The least used strategy was relying on borrowed food or help from relatives and friends. Ruganda sector had the highest overall reduced coping strategy followed by Mukura (Figure 7).

COPING STRATEGIES

- Half of the households do not have access to adequate food
- The main coping used by most households was limiting portion size at meal times
- The main stress coping used by most households was purchase food on credit or borrowing food
- The main crisis coping was harvesting immature crops and consuming seed stocks and over a quarter of households use this strategy.

Figure 6: Proportion of households without enough food or money to fulfill their daily food need

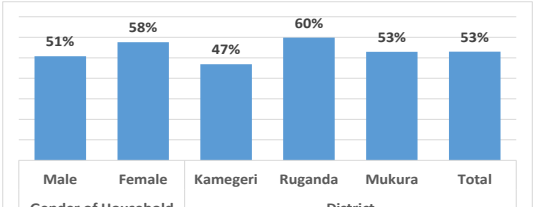
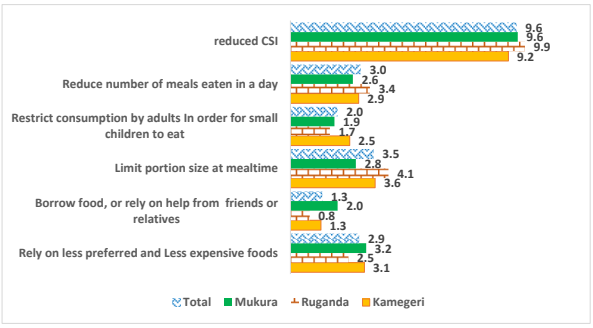


Figure 7: Frequency use of Consumption Coping mechanisms



The main livelihood coping strategies mainly used across the sectors by most households include purchase food on credit or borrowing food (stress coping), harvesting immature crops and consuming seed stocks (crisis). Other coping mechanisms are not used by most of the household (Table 13).

Table 13: Proportion of household using different livelihood strategies

		Kamegeri	Ruganda	Mukura	Total
Stress	Sold household assets	2%	2%	2%	2%
	Spent savings	6%	6%	6%	6%
	Sold more animals	1%	3%	7%	4%
	Purchased food on credit or borrowed food	18%	13%	28%	20%
Crisis	Harvest immature crops	18%	22%	28%	23%
	Consume seed stocks	25%	12%	16%	18%
	Reduce expenditure on inputs e.g. fertilizer	2%	5%	3%	3%
Emergency	Begged	2%	2%	3%	2%
	sold last female animals	1.2%	0.3%	0.5%	0.7%

	Entire family migrated	1.0%	.5%	.3%	.6%

Over 50 percent of the households do not use livelihood coping strategies, but do use consumption coping measured through the rCSI. For consumption coping, only 6 percent of the households are classified as having severe to very severe rCSI, with 47 percent classified as low to high coping. For livelihoods coping, most of the households an estimated 28 percent of the households use crisis coping strategies and majority 61 percent does not use any livelihood coping strategies. This however, is not coming as a surprise, as most of the households have limited livelihood sources and therefore are not in a position to use these. This means therefore that the households' risk of food insecurity is very high as there is no room to expand their food sources , given that even asset holding is very low (Table 14).

Table 14: Proportion of households applying coping

		Kamegeri	Ruganda	Mukura	Total
rCSI	no coping	54%	41%	48%	48%
	low coping	21%	32%	26%	26%
	high coping	18%	22%	22%	21%
	severe coping	6%	5%	3%	5%
	very severe coping	1%	0.3%	2%	1%
Livelihoods	Not adopting coping strategies	63%	67%	53%	61%
	Stress coping strategies	6%	5%	11%	7%
	crisis coping strategies	27%	25%	32%	28%
	emergencies coping strategies	3%	3%	4%	3%

3.2.4. Shocks and Food Security

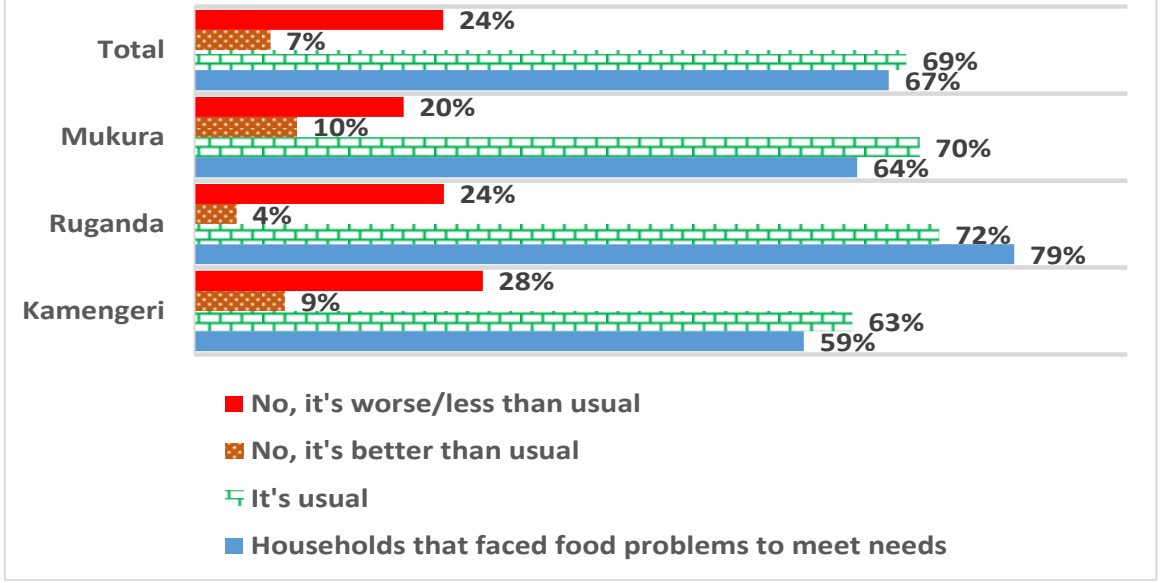
3.2.4.1. Period of food insecurity

At least two thirds of the households reported not having enough food to meet the family needs over the period of 12 months. The largest proportion of the households (79 percent) was in Ruganda Sector. Majority of the households also indicated that the problem was usual and 24 percent indicated that the problem was worse than usual. Given the low land holding, low livestock holding, very low crop diversity, limited livelihood sources and isolation of the sectors due to heavy rains during some periods of the year, it is not surprising that the food insecurity problem is a recurring problem for most of the households (Figure 8).

MAIN SHOCKS

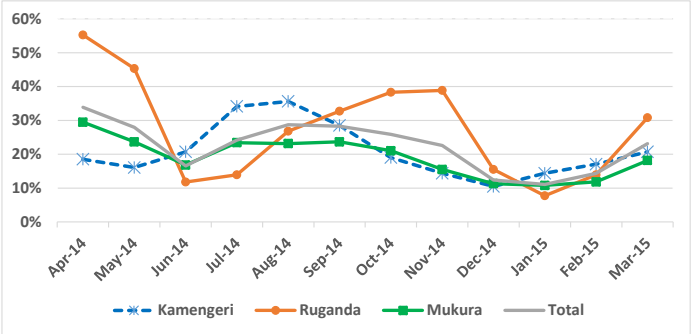
- Two thirds of the households did not have enough food over the 12 months
- Female headed households on average have 3 months of deficit compared to the male headed with 2.6 months per year
- The major shocks affecting most households across all sectors include late rains /long dry spell and serious illness or injury of a member of the household, each affecting about a third of the households.
- In all the sectors, on average 95 percent of the households indicated that the shock caused a reduction or loss of income and 85 percent indicated a decrease or loss of assets and belongings.

Figure 8: Status of access to food



The period households did not have enough food or money to buy food varied across the sectors over the year. Female headed households on average have 3 months of deficit compared to the male headed with 2.6 months per year. About a thirds of the households in Kamegeri reported facing the problem between July and September, and on average households face food deficit for 2.5 months per year. In Ruganda Sector, over two thirds of the households reported the problem between September and November, as well as in March to April, with an average deficit of 3.3 months per year. In Mukura sector, food insecurity peaks to about 20 percent of the households from July to October as well as March to May, and on average shortages are experienced 2.3 months per year (Figure 9). The period when households reported not having enough food or money to buy food coincide with the time when most households rely on the markets for their staples.

Figure 9: Proportion of households without enough food or money to buy food by month



3.2.4.2. Household shocks prevalence by district

An estimated 63 percent of the households experienced an unusual situation in the past year. Based on the main shock to the fourth main shock experienced by households over the year, the major shocks affecting most households across all sectors include late rains /long dry spell and serious illness or injury of a member of the household, each affecting about a third of the households. Shocks specific to some sectors are hailstorms and erosion /landslides affecting 28 and 21 percent of the households respectively in Kamegeri sector. In all the sectors, on average 95 percent of the households indicated that the shock caused a reduction or loss of income and 85 percent indicated a decrease or loss of assets and belongings.

Of those affected by the shock, half of the households indicated that they had partially recovered from the shock, whilst 42 percent indicated that they had not recovered from the shock (Table 15).

3.2.4.3. Shocks prevalence over the year

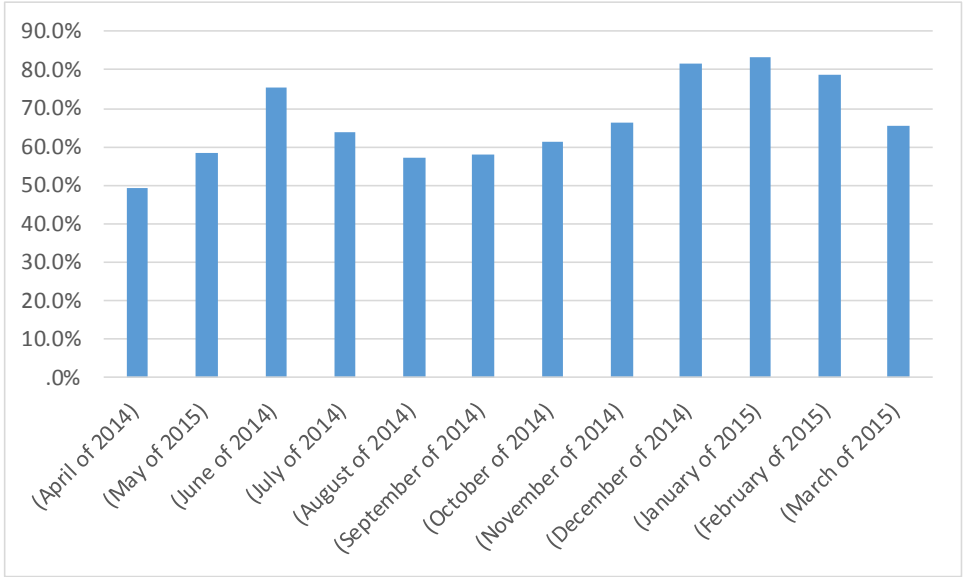
The prevalence of the shocks over the months across all sectors is the same with most of the households reporting the shocks between December and February . Majority of the households indicated weather related shocks as of major concern. Given that most households indicated that these weather related shocks affected the household between April to May, this period also coincide with the rainfall season pattern as the main rainfall season B is between mid-February to mid-May.

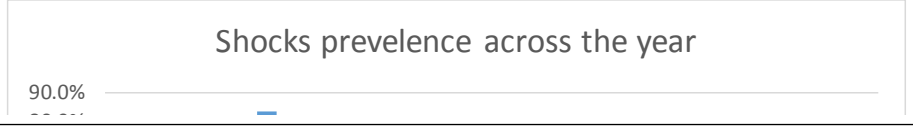
Economic related shocks, such as increase in purchase price of food products is more prevalent from October to March, whilst income reduction and loss of employment occur throughout the year. Health related shocks such as human diseases epidemics coincide with the weather related shocks when rains are at the peak. Insecurity is of great concern as it is reported by half of the households across the entire year (Table 16).

Table 15: Proportion of households affected by different shocks and impact

	Kamengeri	Ruganda	Mukura	Total
Households that faced unusual situation	64%	74%	49%	63%
late rain onset / long dry spells/ drought	25%	37%	34%	32%
excessive rains / floods	10%	2%	1%	4%
Erosion/landslide / mudslides	21%	5%	7%	10%
Unusualhigh level of crop pests & disease of crops	0%	7%	2%	3%
Unusual high level of human disease epidemic	2%			1%
home damaged, destroyed	1%	3%	2%	2%
human epidemics (meningitis, malaria etc.)	5%	5%	3%	4%
death of an active member of the household	1%	3%	2%	2%
death of another Member of the household	0%	1%	1%	1%
serious illness or injury of a member of the household	32%	39%	23%	33%
Unusual high level of livestock diseases	0%	0%	1%	.4%
loss/lack of employment of a household member	7%	1%	3%	3%
income reduced by a member of the household	4%	0%	3%	2%
increased purchase price of food products	1%	2%	2%	2%
increase in the purchase price of animal feed	1%	0%	1%	.4%
excessive death of cattle	1%	0%	0%	.2%
Theft of productive resources or assets	0%	0%	1%	.2%
Insecurity/ conflict/violence	1%	0%	1%	1%
hailstorms	28%	5%	13%	14%
others (Please specify)	8%	4%	18%	9%
Shock impact on income	97%	96%	90%	95%
Shock impact on assets	95%	84%	67%	84%
Not recovered from shock	51%	38%	35%	42%
Partially recovered from shock	45%	53%	53%	50%
Fully recovered from shock	4%	9%	12%	8%

Table 16:Shock prevalence across the year





3.2.4.4. Mitigation against shocks

Most households are using limited measures to mitigate against the shocks they face. The main measures applied by majority of the households include increasing casual labour and borrowing money. In Kamegeri sector, some households use additional measures such as reduce amount of food consumed per meal, go entire day without eating, purchase or borrow food on credit. The limited coping mechanisms available in the households' are in line with the limited livelihood options across the sectors (Table 17).

Table 17: Proportion of households taking mitigation measures against shocks

	Kamengeri	Ruganda	Mukura	Total
reduce the amount of food consumed per meal	30%			15%
Go entire day without eating	18%	6%	3%	9%
Borrow food or rely on help from friends, neighbours or relatives	2%	4%	3%	3%
Rely on less expensive or less preferred foods	6%	10%	2%	7%
Purchase/borrow food on credit	22%	1%	10%	10%
Consume seed stock saved for next season	6%	0%	1%	2%
Increased casual labour	14%	31%	23%	24%
Migration of one or more household members	2%	4%	3%	3%
Some household members worked for food only	1%	2%	2%	2%
seek temporary work outside the community	2%	0%	3%	1%
Spend savings	4%	2%	1%	2%
Borrow money	7%	11%	6%	9%
selling land	1%	0%	2%	1%
work in Exchange for food	1%	5%	2%	3%
Children taken out of school	1%	2%	1%	1%
buy food on credit	10%	1%	7%	5%
increase petty grading	1%	0%	1%	1%
nothing	10%	13%	17%	13%
other (to be specified)	6%	6%	17%	9%

3.3. Income generation and Livelihoods

3.3.1. Livelihoods and Income sources

INCOME AND LIVELIHOODS

- Most households (87 percent) depend on production and sale of agricultural products, this is followed by agricultural daily labour and livestock and animal production
- On average about 62 percent of the household income, is from crop production, followed by casual labour (22percent).
- Agricultural labour follow the cropping

Households depend on different livelihood activities for their survival. On average households are engaged in at least two activities and at most four. Kamegeri has on average one activity per household. From the sampled households, 87 percent depend on production and sale of agricultural products, this is followed by agricultural daily labour and livestock and animal production. For the latter two activities, Ruganda Sector has the highest proportion of households that depend on these activities. However, livestock and animal production is considered by most households as a second and third activity as less than one percent of the households indicated it as the main livelihood activity. Unskilled daily non-agricultural labour is the fourth most important source of livelihoods for the households. However, unskilled and non-agricultural daily labour are the second and third livelihood activity for 50 percent of the households respectively (Table 18).

Table 18: Proportion of households by main livelihood activity

	All activities combined				% Households and Activity		
	Kamegeri	Rugand a	Mukur a	Tota l	Main	Second	Third
Production and sale agriculture products	58%	46%	54%	87%	73%	25%	3%
Daily Agricultural labour	11%	19%	17%	27%	13%	26%	
Livestock and animal production	7%	22%	7%	22%	0.4%	22%	85%
Unskilled daily non Agriculture labour	15%	7%	11%	18%	7%	18%	5%
Skilled and salaried work, handicrafts/artisan	2%			3%	2%	2%	1%
Purchase and sale of agriculture products/petty trade	1%	1%	3%	3%	1%	3%	3%
Pension, remittances, public works/ social transfers	3%	1%	2%	3%	3%	1%	2%
other	3%	1%	4%	4%	2%	4%	1%

A focus group conducted also supports the household data as a third of the population depend on agricultural production, followed by animal production. With a high prevalence of agricultural production (32 percent), explains why cropping activities are undertaken in all sectors. According to the communities, almost one out of five households depends on livestock production and one out of four on casual labor, mainly related to agricultural production. Livestock production and farming are also considered the preferred income generating activities.

3.3.2. Contribution of livelihood activities

The relative contribution of the income activities is such that the main activity contributes the most to the household livelihoods (Figure 10). Across activities, agriculture production contribute the most to the household livelihoods, this is followed by pension, public works; daily agricultural labour; and non-agricultural daily labour. The least contribution comes from purchase and selling activities and livestock production (Table 19).

Figure 10: Percentage Contribution to livelihoods by activity priority

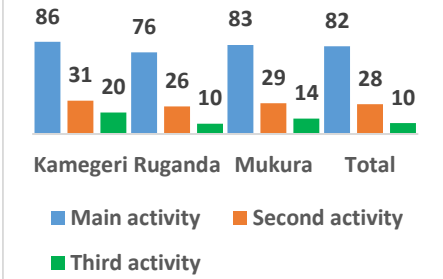


Table 19: Percent contribution of different activities to household livelihoods

	Kamegeri	Ruganda	Mukura	Total
food and cash crops sales	81	67	73	74
livestock and animal product sales	29	12	31	18
fishing ,hunting, and other	57	28	54	53
skilled and salaried work, handicrafts, artisan	67	52	60	58
Purchase and sale of fish, agriculture products, animal products and petty trade	46	27	47	42
Pension, public works, direct transfers/remittances	81	65	83	77
daily work non Agriculture	63	37	43	50
Daily Agricultural labour	49	44	66	52

3.3.2. Participation in the livelihood activities

The head of household and the spouse contribute the most to the household activities. This is followed by adults within the household. Individually the spouse of the head of household also contribute significantly to the household livelihoods. Surprisingly, the children contribute a lot to public works and

direct transfers, this could be due to the fact that the VUP is targeted to children. More heads of households contribute to the livelihoods in Kamegeri and Ruganda compared to Mukura (Table 20).

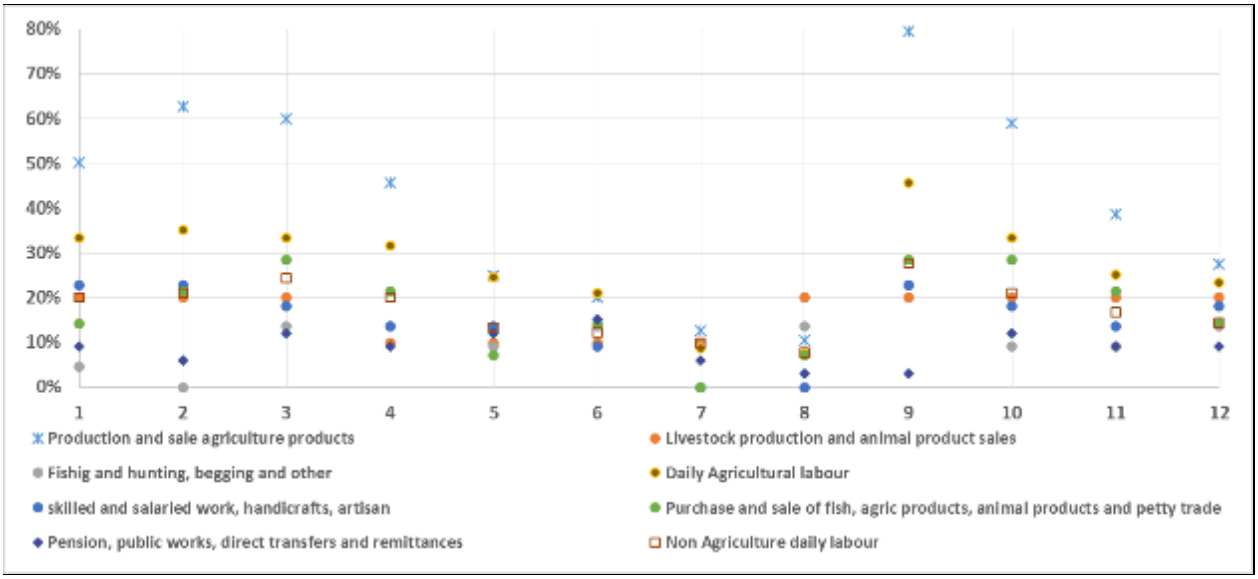
Table 20 Participants by district by activity

		Head of household only	Spouse of the head of household only	Men only	Women only	Adults only	Children only	Women and children	Men and children	Everybody	Head of household and spouse	One of household member	Count
District	Nyamagabe	43%	21%	1%	3%	25%	4%	2%	0.2%	5%	34%	2%	410
	Karongi	47%	16%	0%	1%	25%	8%	4%	1%	8%	95%	5%	373
	Rutsiro	28%	21%	4%	9%	9%	7%	8%	1%	9%	51%	3%	380
	Total	39%	19%	2%	5%	20%	6%	5%	1%	7%	59%	4%	1163
Activity	Production and sale agriculture products	33%	18%	2%	4%	23%	5%	4%	1%	8%	59%	4%	790
	Livestock production and animal product sales	20%	20%			10%		10%		40%	90%	10%	10
	Fishig and hunting, begging and other	50%	14%		9%	9%	23%	14%		9%	9%	5%	22
	Daily Agricultural labour	54%	20%		6%	11%	2%	6%	1%	6%	79%	2%	171
	skilled and salaried work, handicrafts, artisan	91%	55%			27%	14%				14%		22
	Purchase and sale of fish, agric products, animal products and petty trade	64%	36%	7%	7%		7%				71%		14
	Pension, public works, direct transfers and remittances	45%	9%		6%	12%	48%	6%		6%	3%	6%	33
	Non Agriculture daily labour	46%	18%	3%	8%	21%	3%	4%		2%	59%		90

3.3.3. Activities by month

Production and sale of agricultural produce is undertaken by most households and it is mainly from January to April - Season B and from September to December – Season A. Similarly agricultural labour follow the cropping seasons and is at its lowest peak July and August. Any labour related interventions, should take advantage of the slack period which is between July and August. Other livelihood activities also tend to follow the two seasonal patterns (Figure 11).

Figure 11: Proportion of households by main livelihood activities by month



On average only half of the households knew the level of the income available to the households, with the least proportion of 38 percent in Kamegeri Sector. The pattern is not surprising as the worst accurate data collected in any household surveys is income, if the levels are solicited directly. Hence, the income estimate provided in this report cannot be entirely relied upon. Most households have crop production as the main income source followed by casual labour as the second main source and livestock as the third source for majority of the households. The main income sources, however, tally with the reported main livelihoods sources. On average about 62 percent of the household income is from crop production, followed by casual labour (22percent). The second income source contributed about a third of the income on average and the third about 10 percent of the income on average. Casual labour was reported as the main second income source by most households followed by crop production then livestock. For the third source, livestock was considered the main income source by most households (Table 21).

Table 21: Contribution of income sources to total household cash income

		Kamegeri	Ruganda	Mukura	Male	Female	Total
Household's knowledge of the total cash income		38%	68%	55%	57%	45%	53%
Average Household Income in March (Francs)		12,037	12,501	15,985	15,668	7,966.	13,565
Main household income source	Main income contribution	75%	72%	74%	74%	72%	73%
	Crop production	62%	69%	52%	62%	60%	62%
	Livestock production	1%		2%	1%	1%	1%
	Remittance	1%		1%		2%	1%
	Casual labor	18%	23%	24%	22%	22%	22%
	Cash/food for work	9%	5%	8%	8%	5%	7%
	Petty trade	2%	1%	3%	2%	2%	2%
	Others specify	6%	2%	10%	5%	7%	5%
Second household income source	2nd income source contribution	37%	28%	32%	30%	34%	31%
	Crop production	21%	27%	31%	27%	28%	27%
	Livestock production	12%	17%	13%	15%	14%	15%
	Remittance		0.5%			1.0%	0.3%
	Casual labor	49%	41%	44%	42%	47%	44%
	Cash/food for work	17%	11%	4%	11%	7%	10%
	Fishing			1.0%	0.4%		0.3%
	Petty trade	1%	2%	6%	4%		3%
	Others specify		1%	1%	0.4%	2%	1%
Third household income source	3rd income source contribution	22%	10%	18%	12%	11%	12%
	Crop production		3%	11%	3%	6%	3%
	Livestock production		90%	22%	76%	77%	76%
	Casual labor	13%	4%	44%	10%		8%
	Cash/food for work	63%	3%		6%	12%	7%
	Petty trade	25%		11%	4%		3%
	Others specify		1%	11%	1%	6%	2%

3.4. Expenditure

3.4.1. Average Cash Expenditure

On average, a household spends RWF 30,520 per month or USD42.10 (at an exchange rate of 1 USD to 725 Francs by the time of the survey March 2015) on food and nonfood items, of which more than half is on food. This works out to USD1.40 per month per household (USD0,31 per capita) which is much lower than the poverty line of USD2.50 per person per day. On average almost two thirds of the amount spent on food is in cash. Of the amount spent on food approximately a third is on cereals and tubers. Mukura

Sector has the largest total household expenditure, whilst Kamengeri has the least. Female headed households spent 40 percent less in both food and non-food items compared to the male headed households an indication that female headed households have less access to income. On per capita basis, on average a household spent RWF 6,800 and of this, on average RWF 4,200 or 62 percent per capita is spent on food. The female headed households spent a thousand less per capita compared to the male headed households (Table 22).

Table 22: Average expenditure per household

	Total Expenditure per month (RWF)						Per Capita Expenditure per month (RWF)	
	Cereal and tubers	Non cereals foods	Cash amount on food	Total Food (cash and non-cash)	Total Non-Food	Total for household (food and non-food)	Food and Nonfood	Food
Kamegeri	6,741	8,377	10,083	**14,347**	11,231	**25,578**	6,293	3,698
Ruganda	7,823	8,742	9,203	**15,869**	12,990	**28,859**	6,204	3,703
Mukura	12,381	11,564	14,631	**23,175**	14,306	**37,481**	7,983	5,163
Total	8,959	9,552	11,295	**17,720**	12,800	**30,520**	6,817	4,178
Male	10,052	10,803	12,808	**20,147**	14,993	**35,140**	7,063	4,260
Female	6,610	6,862	8,000	**12,659**	8,228	**20,887**	6,302	4,007

On average, cash expenditure of RWF 5, 000 is spent on meals outside the home followed by legumes and pulses, then roots, tubers and cereals. The least cash expenditure is on condiments fruits and fish. On the other hand non-cash expenditure is highest on roots and tubers followed by cereals and grain and then legumes and fish. The non-cash expenditure includes own production, gathering/hunting, gifts, work for food and credit. Lesser amount is spent on vegetables, both green and orange as well as on fruits, sugar and oil (Figure 12).

For the non-food expenses, cash is used mainly on debts, mortgages; rent, transport, ceremonies and clothing. The largest expenditure on credit is on non-agricultural labour and education. Ceremonies/gifts and mortgages also takes up a large part of the credit expenditures (Figure 13).

Figure 12: Expenditure breakdown by food item (Francs)

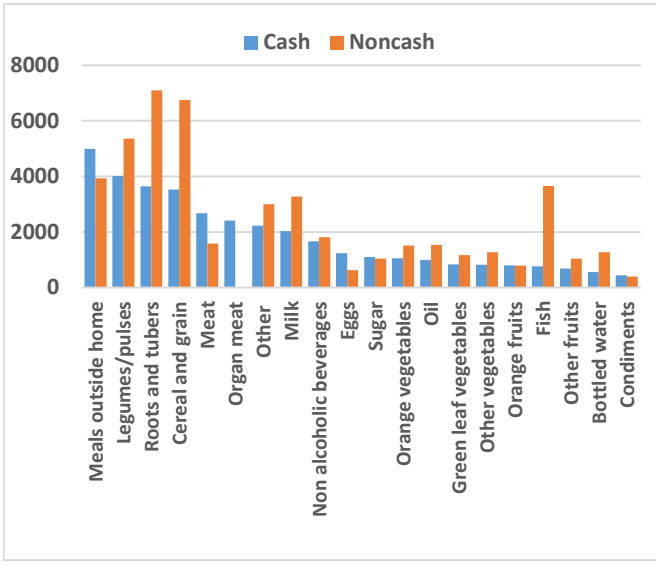
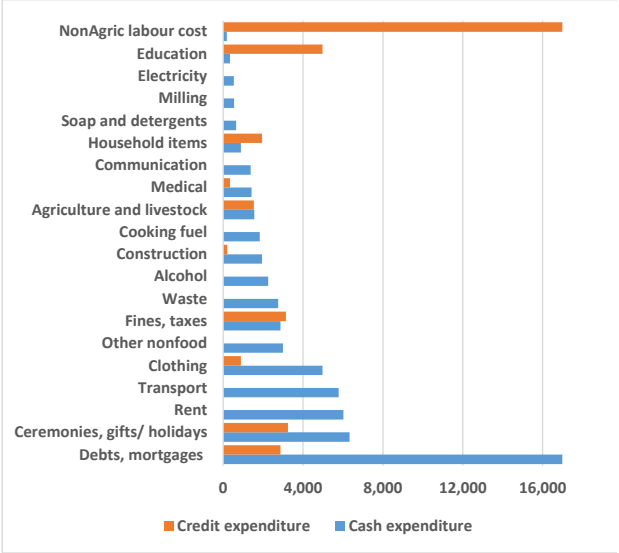


Figure 13: Average Expenditure on non-food items per month (Francs)



3.4.2. Proportion of expenditure

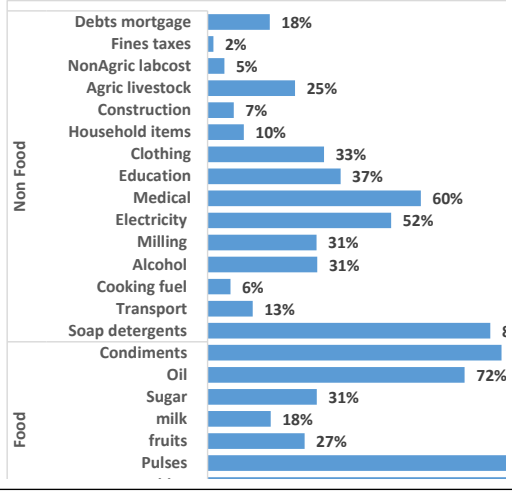
Majority of the households incur expenditure on cereals and tubers, vegetables and pulses, condiments and oil. On the non-food items, 60 percent of the households incurred medical expenses. This is followed by electricity with about half of the households incurring the expense. A third of the households each spend on clothing, education, milling and alcohol (Figure 14).

On average 35 percent of the household budget is spent on cereals and tubers and it makes up 48 percent of the food expenditure. On average 69 percent of the household budget is on food and the remainder 31 percent on non-food. The highest expenditure of 71 percent on food is in Mukura Sector. Female headed households have a slightly higher expenditure on food compared to the males (Table 23).

Table 23: Percent expenditure on different groups

		% on Total household Expenditure				% Cereals and tubers on Total food expenditure
		cereals and tubers	Non Cereal Food	Total Food	Non Food	
Food Consumption Groups	poor	45%	31%	71%	29%	58%
	borderline	36%	37%	73%	27%	48%
	acceptable	29%	37%	65%	35%	43%
Districts	Nyamagabe	32%	37%	68%	32%	46%
	Karongi	33%	37%	69%	31%	47%
	Mukura	38%	34%	71%	29%	51%
Sex of Head of household	Male	34%	35%	68%	32%	48%
	Female	36%	38%	72%	28%	48%
Total		35%	36%	69%	31%	48%

Figure 14: Proportion of households spending by item

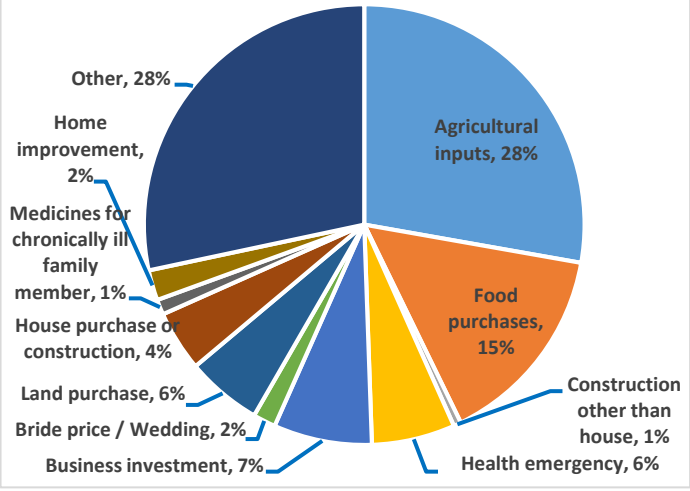


3.4.3. Savings and Credit

3.4.3.1. Credit

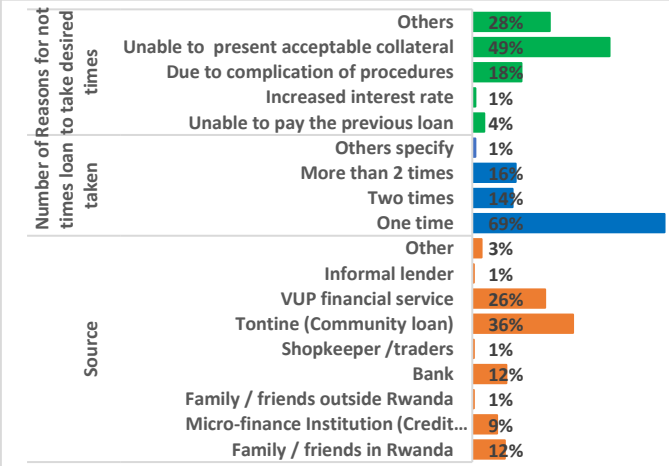
Taking of credit is not widespread across the sectors, with only 15 percent of the households reporting having taken credit. Of those who took credit, the main use is agricultural inputs and other uses that were not specified. An estimated 15 percent of the households indicated they took credit to purchase food, most of the households (a quarter) are in Ruganda Sector. However, Ruganda households have the least amount of both savings and credit per household. An estimated 26 percent of the female headed households took loans to purchase food, double the male headed. Loan for investment is much more pronounced in Kamegeri Sector.

Figure 15: Main use of largest loan taken



On average households took a loan amount of RWF145,000. The average loans taken varied across the sectors, with households in Mukura Sector taking the largest amount. The amount of credit taken also varied with the level of education and sex of the head of household. Households more educated took the largest sums compared to those with low levels of education. The male headed households took two and half times more credit compared to the female headed households.

Figure 16: Loan source and times taken



Of the households that tool credit, 36 percent got it from the community whilst the second main source was VUP finance (26 percent). Only 12 percent of the households reported getting the loan from the bank or family and friends, followed by micro finance institution (Credit d'Epargne/NGO/Sacco), 9 percent. The other sources were not significant.

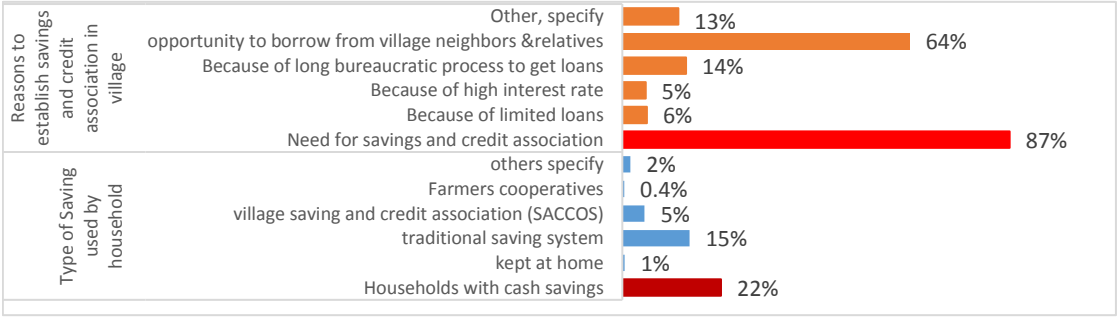
Most of those who took credit only did it once, with a few households taking credit two or more times. Asked on the reasons why households did not take credit as much as they wanted, the main reason given by about half of them was inability to provide acceptable collateral. Another 18 percent indicated the reason being the complicated procedures, whilst 28 percent cited other reasons (Figure 16).

3.4.3.2. Savings

On average, 22 percent of the households reported having savings that are about 50,000 Rwanda francs. The level of savings varied across the sectors, sex and the education level of the head of household. Male headed households save three times more than the female headed households. The savings increases with the education level of the head of household and is four times higher for those who completed university compared to the heads with no education. Across the sectors, Mukura Sector has the largest average amount saved per household and at the same time has the largest amount of credit per household.

Given the low access to credit and savings, most households (87 percent) indicated the need to establish a savings and credit association in the village, managed by the community to increase access. The main reason for establishing such an association was that this will give the households opportunity to borrow from neighbours and relatives in the village (Figure 17).

Figure 17: Type of savings and reasons for establishing



3.5. Asset and housing ownership

3.5.1. Asset ownership

Almost all households own hoes, whilst only half of the households reported having a bed, sofas and chairs. Approximately one third of the households have a rake, radio or mobile phone. Ownership of other high value assets is very minimal. The asset ownership is a clear demonstration of the poor level of households across all the sectors, as not many households own a range of assets (Table 24).

Table 24: Proportion of Households that own type of asset

	Sectors			Sex of head of household		
	Kamegeri	Ruganda	Mukura	Male	Female	Total
Hoe	95%	97%	98%	98%	95%	97%
Bed	50%	55%	43%	56%	36%	50%
Living room suite (chairs/sofa)	42%	58%	36%	49%	37%	45%
Rake	34%	40%	28%	35%	32%	34%
Radio (only)	36%	30%	34%	41%	18%	34%
Mobile phone	34%	31%	36%	40%	21%	34%
Shovel	6%	8%	14%	12%	4%	9%
Pick	4%	3%	5%	5%	1%	4%
Ironing machine	3%	4%	3%	4%	1%	3%
Bicycle	5%	1%	1%	3%	1%	2%
Tape/CD player	1%	3%	2%	3%	1%	2%
sewing machine	1%	1%	0.5%	1.1%	0.3%	0.9%
Spade	0.2%	1%	1%	1%		1%
Motorized Vehicle of any kind	1.0%	0.3%	0.3%	0.8%		0.5%

Wheel barrow	0.2%	1%	1%	0.6%		0.4%
Plough/Ox Plough		1%	0.3%	0.5%		0.3%
Grinding Mill		1%	0.3%	0.4%		0.3%
Oil press		1%	0.3%	0.4%		0.3%
Fishing boat / canoe	0.5%	0.3%		0.4%		0.3%

3.5.2. Housing and Facilities

3.5.2.1. Housing conditions

Generally studies have assessed the kind of building materials used as a proxy of the household's wealth. Overall, 82 percent of the households used clay tiles for roofing. There was variation between sectors with majority of households in Ruganda and Mukura using clay tiles while those in Kamegeri used both clay tiles and corrugated iron sheets (Table 25). The floor of the house was mainly made of earth/mud according to over 90 percent of the respondents in each district. Walls were mainly constructed using mud bricks (44 percent) and tree trunks with mud (31 percent) but with variation across sectors. For instance, in Ruganda and Mukura they were constructed using mud bricks followed by mud bricks covered with cement while in Kamegeri households mainly used tree trunks with mud. It can be inferred from these findings that although the surveyed households have dwellings to reside in, most are less durable due to nature of materials used.

Table 25: Kind of housing materials used

		Kamegeri	Ruganda	Mukura	Overall
Roof	Straw/Thatch Leaves Grass	0.2%	-	0.3%	0.2%
	Metal sheet corrugated iron	42%	4%	3%	17%
	Clay Tiles	57%	96%	96%	82%
	Cement/Concrete	-	-	-	-
	Wood/bamboo	-	-	-	-
	Other materials	1.2%		0.5%	0.6%
Floor	Earth/Mud	90%	94%	97%	94%
	Cement concrete	7%	2%	3%	4%
	Hardened Dung	2%	-	-	1%
	Clay tiles	-	-	-	-
	Wood	0.2%	-	-	0.1%
	Bricks	0.2%	5%	-	2%
	Other materials	0.2%	-	-	0.1%
Wall	Mud bricks	10%	56%	68%	44%
	Mud bricks covered with cement	5%	38%	26%	22%
	Tree trunks with mud	78%	5%	5%	31%
	Tree trunks with mud and cement	7%	1%	1%	3%
	Oven fired bricks	-	-	0.3%	0.1%
	Other materials	0.2%	-	1.1%	0.4%

The gender of household head did not influence the kind of construction materials used for the roof, floor and walls. However, the materials used for the walls varied with the livelihood activity of the household. Majority of the households on pension, rearing and fattening livestock for sales, and those on salary used mud bricks covered with cement probably due to the ability to raise money for purchasing cement unlike the rest of the households.

3.5.2.2. Household location, length of stay and status of possession

At the time of survey, on average 66 percent of household heads were living in Umudugudu (the new recommended settlement) and the rest elsewhere. Very few household heads were in urban areas/towns. More household from Kamegeri (89 percent) were living in Umudugudu compared to Mukura (71 percent) and in Ruganda (36 percent). For those who reported to be living in Umudugudu, majority (63 percent) had lived there for more than a year. House ownership was generally high (95 percent of the households), with only a small proportion of the households renting or living in houses provided free of charge (Table 26).

Table 26: Household location, length of stay in Umudugudu and status of possession

		Kamegeri	Ruganda	Mukura	Overall
Location	In Umudugudu*	89%	36%	71%	66%
	In Town		0.5%		0.2%
	Not in Umudugudu	11%	64%	29%	34%
Length of stay in Umudugudu	since <3months	0.5%			0.2%
	Yes, between 3 and less than 6 months	0.7%		0.3%	0.3%
	Yes, Between 6 months and 1 year	4%	2%	1%	2%
	Yes, More than 1 year	84%	34%	70%	63%
Status of house possession	Owner	92%	97%	97%	95%
	Rented	2%	0.3%	1%	1%
	Free of charge (not owner)	6%	2%	2%	4%

Umudugudu means leaving in a well-organized grouped settlement*

A comparison of ages of households' heads and status of house possession showed that the mean age of those living in owned houses was slightly higher (50 years) compared to those living in rented (34 years) and free of charge houses (45 years). However, marital status of household head did not influence house ownership significantly since majority of the households in each category owned the house they were living in.

The average number of living rooms ranged from 2.4 in Mukura to 2.7 in Ruganda, and male headed households had on average 2.6 compared to 2.4 among female headed households. Most respondents (78 percent) indicated their households had two or three living rooms while a few had four or more rooms (11 percent). The crowding index, which is the number of people per room, ranged from 2.0 in Kamegeri and Ruganda to 2.2 in Mukura. Female headed households were less crowded (1.7) compared to those headed by males (2.3). Crowding was highest where household heads were married (2.3) or in partnership (2.4) compared to other marital status groups.

Table 27: Number of rooms and crowding

		Sector				Gender		
		Kamegeri	Ruganda	Mukura	Overall	Male	Female	Overall
Average number of living rooms		2.5	2.7	2.4	2.5	2.6	2.4	2.5
% of households owning	1 room	14%	8%	13%	11%	10%	14%	11%
	2 rooms	33%	35%	45%	38%	37%	40%	38%
	3 rooms	44%	43%	31%	40%	40%	38%	40%
	4 rooms	6%	11%	10%	9%	10%	7%	9%
	>4 rooms	3%	3%	1%	2%	3%	1%	2%
Crowding	Persons per room	2	2	2.2	2.1	2.3	1.7	2.1

3.5.2.3. Household energy sources

Overall, battery flashlights were the most reported source of lighting energy in the three sectors (47 percent) followed by firewood (17 percent) and lantern (14 percent) (Figure 18). Usage of these sources by sector however varied, but battery flash lights were dominant in each. In Kamegeri, 30 percent relied on lantern as the second source while in both Ruganda and Mukura, firewood was the second main source (Table 28). Use of electricity and LPG related products was generally low. A slightly higher proportion of male headed households were using improved lighting sources compared to those led by females.

Energy for cooking on the other hand was mainly from firewood according to 99 percent of the respondents. Hence, while some households are using relatively improved source of lighting energy, efforts (interventions and policies) are needed to support households' access and adopt improved and affordable energy sources. This will not only minimize the impacts of firewood harvesting on environment but also reduce negative health impacts associated with smoke.

Figure 18: Main sources of lighting energy among surveyed households

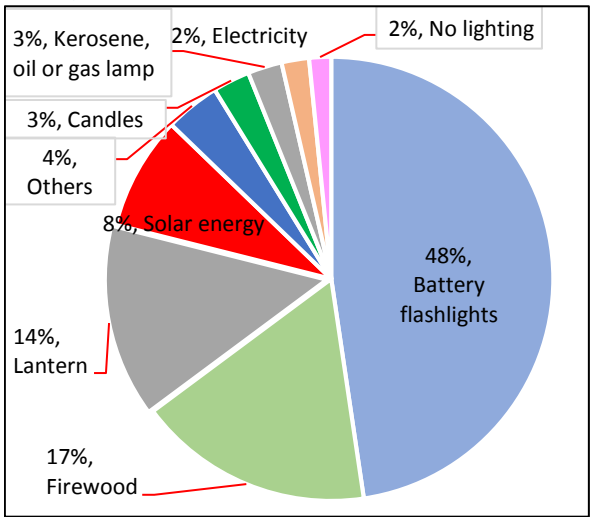


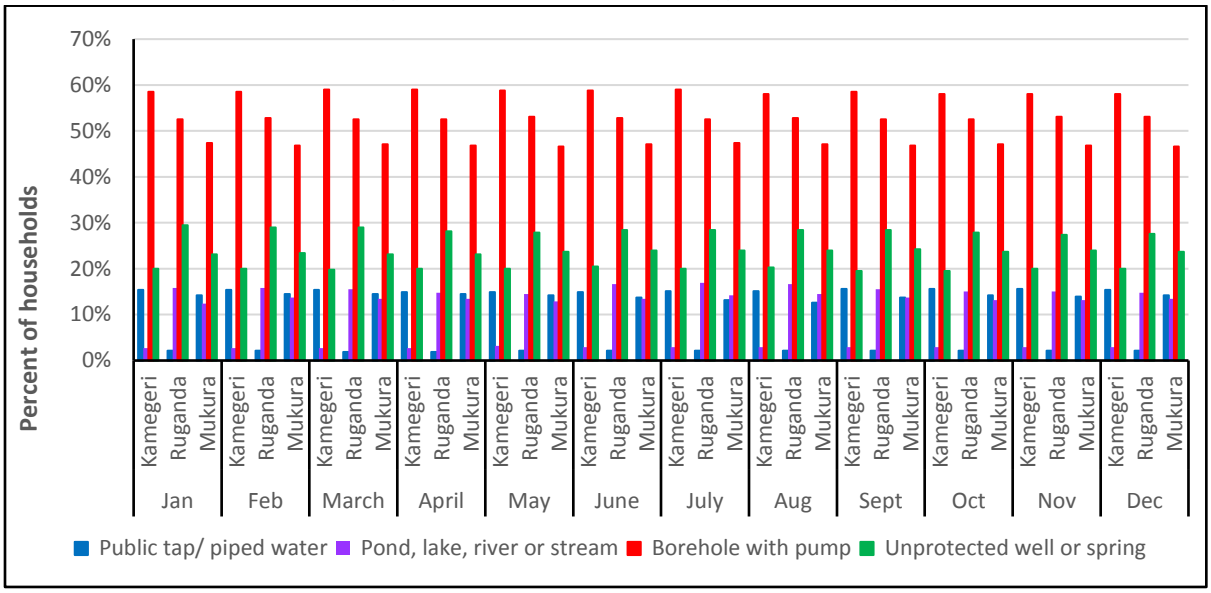
Table 28: Sources of lighting energy by district and by gender of household head

	Kamegeri	Ruganda	Mukura	Male	Female
Battery flashlights	33%	48%	63%	50%	43%
Firewood	6%	30%	17%	14%	25%
Lantern	30%	7%	4%	14%	14%
Solar energy	16%	2%	6%	9%	6%
Others	1%	7%	4%	4%	4%
Kerosene, oil or gas lamp	3%	3%	1%	3%	2%
Electricity	5%	0%	1%	2%	2%
Candles	5%	2%	1%	3%	2%
No lighting	1%	1%	4%	1%	3%

3.5.2.4. Water sources and consumption patterns

Respondents indicated that boreholes fitted with a pump were the main source of water for between 40 and 60 percent of the households in each of the three sectors in any given month of the year. Unprotected well/springs as source of water were reported by between 19 and 30 percent of the households, while ponds/lakes/rivers/streams and piped water sources were mentioned by less than 20 percent. A negligible proportion of households reported rain water, protected well/springs and water from vendors as main source of water across all the three sectors. These results show on average a fair proportion of households in each sector have access to water from a reliable source (boreholes) but use of water from unprotected sources could have impact on water quality. Hence, there is need to protect wells and springs since they contribute a significant proportion of household water requirements across the year.

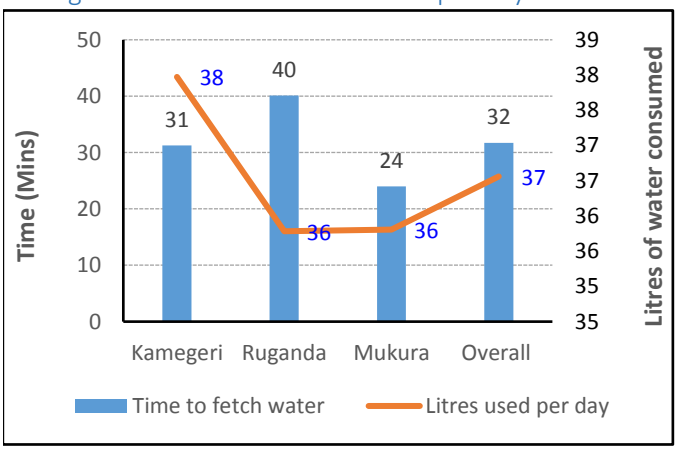
Figure 19: Percent households relying on various water sources by Sector and by month



More than 98 percent of respondents in each sector indicated they mostly walk to the water points to fetch water. This signifies the manual tasks that households face in obtaining water for consumption. While on average households take about half an hour (31 minutes) to travel to and from the water source, there was significant difference between sectors with a range of 24 in Mukura to 40 minutes in Ruganda. The average amount of water consumed by households ranged from 35 to 37 litres per day (Figure 20). The average per capita water consumption was 8.8 litres with Kamegeri having the highest (9.8 litres) compared to Ruganda and Mukura each at 8.3 litres.

The SPHERE standards provides for at least 20 litres per capita per day in order to cater for basic hygiene needs and basic food preperation. However, given the amount of water used by households, it is evident this recommendation may not be met in most households. In fact there was weak but positive correlation between amount of water used and household size (r = .239**).

Figure 20: Time taken to-and-from water points and average amount of water consumed per day



Children are mainly responsible for fetching water. The low amount of water used can be attributed to the fact that children are the main actors in fetching water in each of the sectors while other household members are relatively less involved (Table 29). Given the manual nature of borehole pumps, children may not be energetic enough to operate them adequately to fetch adequate amount of water for household use. This calls for appropriate interventions in installing systems that are easy to operate.

Table 29: Household member responsible for fetching water among surveyed households

	Mainly women	Mainly men	Men and women	Children only	Women & children and men	Hired labour	Others
Kamegeri	17%	3%	7%	52%	16%	1%	3%
Ruganda	13%	3%	13%	57%	8%	1%	5%
Mukura	26%	6%	5%	40%	18%	0%	6%
Overall	19%	4%	8%	50%	14%	1%	5%

3.6. Agriculture Production

3.6.1. Area of land available for cultivation and livestock

Households were asked information regarding agricultural activities for the last agricultural year and for Season A. Responses showed that 90 percent of the households practice agriculture and 89 percent cultivated some crops in the last agricultural season. Slightly more male headed households practiced agriculture and cultivated crops in last season compared to the female headed ones (Table 30). The proportion of households that practice agriculture and did cultivate in previous 12 months was high in Ruganda than elsewhere

On the quality of land owned, 14 percent of the households owned irrigated land and 36 percent owned a kitchen garden. The greatest proportion of households (29 percent) with access to irrigated land was in Ruganda Sector, whilst the least was in Mukura at 3 percent. However, the proportion of irrigated land is quite negligible as 99 percent of the land cultivated by households is rain fed. There is a 12 percent more ownership of kitchen garden by male headed households.

Of the land accessed most was owned by the households, with 28 percent indicating they rented land, with 45 percent of the households in Ruganda renting land, much higher compared to other Sectors. Hence, the proportion of households that reported had no land in this Sector is much less compared to others, with the largest proportion with no land reported in Kamegeri (18 percent). Male headed households (33 percent) had better access to rented land compared to female headed households (17 percent). There were very few households cultivating on free/loaned land in the three sectors.

Table 30: Access to land for agriculture during season A

		Sector				Gender of HH head		
		Kamegeri	Ruganda	Mukura	overall	Male	Female	Overall
% HH	Practice agriculture	84%	98%	88%	90%	91%	86%	90%
	Cultivated crops last season	84%	98%	85%	89%	89%	85%	88%
	Own irrigated land	8%	29%	3%	13%	15%	12%	14%
	Own kitchen garden	16%	57%	39%	36%	44%	32%	40%
	Rented land for farming	25%	45%	12%	28%	33%	17%	28%
	Farming land for free, loaned	2%	5%	6%	4%	5%	3%	4%
% HH by land holding in Season A by land size	No land	18%	2%	9%	10%	9%	12%	10%
	<0.1 ha	21%	14%	24%	20%	19%	21%	20%
	0.1 - 0.2 ha	19%	20%	21%	20%	21%	19%	20%
	0.2 - 0.5 ha	23%	24%	19%	22%	23%	20%	22%
	0.5 -1 ha	13%	23%	15%	17%	16%	19%	17%
	>1 ha	6%	17%	11%	11%	12%	9%	11%
% HH renting land by size	<0.1 ha	9%	29%	5%	15%	16%	12%	15%
	0.1 - 0.2 ha	10%	10%	4%	8%	10%	4%	8%
	0.2 - 0.5 ha	5%	5%	2%	4%	5%	2%	4%
	>0.5 ha	0.6%	1%	1%	1%	2%	0%	1%
% HH Farming free/ loaned land by	<0.1 ha	.9%	3%	2%	2%	2%	2%	2%
	0.1 - 0.2 ha	.3%	.5%	2%	.9%	1%	.3%	.9%
	0.2 - 0.5 ha	0%	.5%	1%	.7%	.8%	.3%	.7%
	>0.5 ha	0.6%	.3%	0%	.3%	.3%	.3%	.3%
% of land cultivated in Season A	Owned (%)	90	85	85	87	87	87	87
	Rented/leased (%)	7	9	7	7	8	5	7
	Share cropped (%)	3	3	4	4	3	6	4
	Other holding types (%)	0	4	0.2	2	2	1	2
	Irrigated (%)	2	0.3	0.5	0.8	1.0	0.5	0.8
	Rainfed (%)	98	99	99	99	99	99	99

The size of land holding is more or less equally distributed across all the sectors and there is not much difference between gender/sex of the household head. However, about 62 percent of the households owned less than 0.5hectares and only 11 percent had more than one hectare. About 87 percent of the households owned the land they cultivated while 7 percent farmed on rented/leased land.

3.6.2. Agricultural practice

3.6.2.1. Crops grown

The number of crops grown is mostly two to three as reported by 71 percent of the households. During the past 12 months the main crops grown were beans and sweet potatoes, cultivated by over 66 percent of the households. Other crops include maize, Irish potatoes, bananas (wine), cassava and sorghum and the number of households' involved vary across sectors. Some of the main crops reported and percent of households involved are shown in Table 31.

Table 31: Crops grown by surveyed households

		Kamegeri	Ruganda	Mukura	Overall
Average cops grown		2.3	3.4	2.4	2.7
% HH by number of crops grown	One	8%	3%	9%	7%
	Two	57%	20%	48%	41%
	Three	31%	29%	31%	30%
	Four or more	3%	48%	11%	21%
% HH by main crops grown	Beans	75%	77%	30%	61%
	SweetPotato	69%	85%	25%	60%
	Maize	5%	20%	63%	29%
	Cassava	19%	33%	3%	19%
	IrishPotato	1%	2%	52%	18%
	Banana (wine)	.2%	52%	2%	18%
	Sorghum	10%	21%	5%	12%
	Taro	.2%	12%	2%	4%
	Peas	.2%	0%	12%	4%
	Wheat	0%	1%	5%	2%
	Other Vegetables	.5%	1%	2%	1%
	Cabbages	.5%	1%	2%	1%
	Bananas (cooking)	.7%	2%	.5%	1%

3.6.2.2. Crop Calendars

An analysis on responses on when households grow each crop show that beans, sweet potatoes and to an extent Irish potatoes are the main crops cultivated during season A and B (Table 32). Despite that they were also the leading crops for season C they were cultivated by a relatively lower percent of households. Both beans and sweet potatoes were the main crops in Kamegeri and Ruganda sectors across the three seasons. Maize and Irish potatoes and to some extent beans were on the other hand the major crops in Mukura across the three seasons. This indicates that season A and B are the main growing seasons for a variety of crops in the surveyed sectors. Bananas (both wine and cooking types) though grown by some households are perennial in nature and hence were not included in the seasonal analysis.

Table 32: Percent of households that cultivated the crops by season

Season	Crop	Kamegeri	Ruganda	Mukura	Overall
Season A 2015	Beans	77%	77%	33%	63%
	Sweet Potato	53%	81%	6%	46%
	Irish Potato	1%	2%	38%	13%
	Sorghum	6%	7%	5%	6%
	Maize	5%	19%	68%	29%
	Cassava	6%	7%	0.6%	5%
	Taro	0%	8%	0.3%	3%
	Peas	0%	0%	8%	2%
	Other vegetables	0.6%	0.3%	2%	1%
	Cabbages	0.3%	1%	1%	0.9%
Season B 2014	Beans	87%	73%	17%	60%
	Sweet Potato	57%	78%	5%	47%
	Irish Potato	0.2%	0.5%	32%	11%
	Sorghum	8%	16%	2%	9%
	Maize	5%	2%	19%	8%
	Cassava	4%	8%	0.30%	4%
	Peas	0.3%	0%	8%	3%
	Taro	0%	4%	0.6%	2%
	Wheat	0%	0.8%	4%	2%
	Other vegetables	0.3%	0.3%	1%	0.6%
Season C 2014	Sweet Potato	23%	7%	2%	11%
	Beans	19%	4%	3%	9%
	Irish Potato	0.2%	0%	10%	3%
	Maize	0.6%	0.5%	6%	2%
	Sorghum	2%	0.80%	0.30%	1%
	Cassava	1%	1%	0%	0.9%
	Peas	0%	0%	2%	0.6%
	Cabbages	0.3%	0.5%	0.6%	0.5%
	Taro	0%	0.5%	0.3%	0.3%
	Wheat	0%	0%	0.3%	0.1%
	Other vegetables	0%	0%	0.3%	0.1%

The share of land allocated to each crop across the sectors vary but were generally low. Majority of the households reported having allocated up to 50 percent of cultivated land to any of the cultivated crop (Table 33). This could be due to the fact that most households own small land holdings and the need to diversify the cropping system limits the allocation of large portions of land to any single crop. This suggests the need for agricultural intensification in order to enable households produce adequate amounts of each crop item on the small portions of land allocated.

Table 33: Percent households and share of land allocated to each cultivated crop

Crop	Share of land used	Kamegeri	Ruganda	Mukura	Overall
Wheat	<25%	0%	60%	68%	67%
	26-50%	0%	20%	16%	17%
	51-75%	0%	20%	11%	13%
	>75%	0%	0%	5%	4%
Maize	<25%	21%	59%	7%	20%
	26-50%	63%	32%	49%	46%
	51-75%	11%	8%	31%	24%
	>75%	5%	1%	13%	10%
Sorghum	<25%	32%	51%	20%	41%
	26-50%	56%	39%	65%	48%
	51-75%	12%	10%	15%	11%
	>75%	0%	0%	0%	0%
Beans	<25%	20%	51%	30%	34%
	26-50%	59%	43%	51%	51%
	51-75%	15%	5%	9%	10%
	>75%	6%	1%	10%	5%
Sweet potato	<25%	8%	20%	27%	16%
	26-50%	51%	60%	57%	56%
	51-75%	31%	17%	13%	22%
	>75%	10%	3%	3%	6%
Irish potato	<25%	75%	43%	18%	20%
	26-50%	25%	43%	54%	53%
	51-75%	0%	14%	22%	21%
	>75%	0%	0%	7%	6%
Cassava	<25%	42%	38%	50%	40%
	26-50%	50%	50%	30%	49%
	51-75%	8%	11%	20%	10%
	>75%	0%	2%	0%	1%
Bananas (wine)	<25%	0%	27%	11%	26%
	26-50%	0%	60%	44%	59%
	51-75%	100%	12%	22%	13%
	>75%	0%	1%	22%	1%
Peas	<25%	0%	0%	66%	64%
	26-50%	100%	0%	32%	33%
	51-75%	0%	0%	0%	0%
	>75%	0%	0%	2%	2%
Taro	<25%	0%	74%	83%	74%
	26-50%	0%	19%	17%	18%
	51-75%	0%	5%	0%	4%
	>75%	10%	2%	0%	4%
Other vegetables	<25%	100%	40%	57%	57%
	26-50%	0%	60%	29%	36%
	51-75%	0%	0%	0%	0%
	>75%	0%	0%	14%	7%
Cabbages	<25%	50%	75%	83%	75%
	26-50%	0%	25%	17%	17%
	51-75%	0%	0%	0%	0%
	>75%	50%	0%	0%	8%
Bananas (cooking)	<25%	0%	29%	100%	33%
	26-50%	67%	57%	0%	50%
	51-75%	33%	14%	0%	17%
	>75%	0%	0%	0%	0%

3.6.3. Agronomic Practices

Agronomic practices comprise the activities farmers incorporate into their farm management systems to improve soil quality, enhance water use, manage crop residue and improve the environment through better fertilizer management. In this survey households were asked about the extent of fertilizer use, use of insecticides and pesticides for pests' control, use of improved crop varieties and soil fertility improvement practices undertaken over the past 12 months. Results showed that 65 percent of the households had implemented some soil fertility measures. The common ones being use of farm yard manure (42 percent) and composting (35 percent) as shown in Table 34.

Herbicides were not widely used except in Mukura with 34 percent of the households. The few who used applied insecticide. Overall 65 percent of the households used fertilizer in past 12 months. More households (80 percent) in Mukura applied it compared to those in other sectors. This is higher than the national average of 21 percent recorded for the application of inorganic fertilizers during season A. The main sources of fertilizer used was cash purchase (35 percent) or through free provision (36 percent). Acquisition through credit/voucher system or from NGOs and government was very low. Use of pesticides and improved crop varieties was reported by 18 and 21 percent of the households, respectively. The above results suggest there is need for support household secure inputs through alternative ways in order to strengthen their application in farming systems. More so is the need for advocacy and training to enable farmers adopt improved crop varieties and farming techniques that will facilitate improved production.

Table 34: Agronomic practices adopted by households in last agricultural year

Measure		Kamegeri	Ruganda	Mukura	overall
Household use soil fertility measures (%)		51%	66%	77%	65%
% HH by soil fertility measures used	Composting	23%	40%	40%	35%
	Farm yard manure	33%	44%	49%	42%
	Chemical fertilizer	11%	13%	35%	19%
	Crop rotation	0%	2%	0%	0.6%
	Intercropping	0%	1%	0%	0.5%
	Other measures	0.6%	0.5%	0.0%	0.4%
House used pesticide last 12 months (%)		6%	14%	34%	18%
% HH by type of pesticide used	Herbicide only			1%	0.4%
	Insecticide only	6%	14%	30%	17%
	Herbicide & insecticide	0.3%		3%	1%
Use of improved crop varieties		10%	17%	37%	21%
Share of land cropped with improved varieties (%)		51%	24%	51%	44%
Use of fertilizer in production		54%	62%	80%	65%
% HH by source of fertiliser	Cash	31%	24%	53%	35%
	Voucher system	4%	2%	6%	4%
	From NGO/Government	4%	2%	1%	2%
	Free/Own production	24%	45%	37%	36%

Asked about soil fertility practices they would prefer to implement or adopt in future in order to improve productivity a moderate number of respondents expressed the desire for the use of chemical fertilizers, compost making, improved agronomic practices, application of manure, and use of high yielding varieties

among others as shown in Table 35. This signals some level of awareness among households of practices/technologies that can help them improve productivity on their land.

Table 35: Preferred practices by surveyed households in order to improve productivity

Preferred practice/ technology	Kamegeri	Ruganda	Mukura	Overall
Application of chemical fertilizers	45%	53%	46%	48%
Compost making	49%	59%	33%	47%
Improved agronomic practices	52%	48%	41%	47%
Application of manure	46%	41%	34%	40%
Using improved high yielding varieties	42%	41%	30%	38%
Planting improved fruit crops	25%	35%	17%	26%
Use pesticides for crop pest control	6%	50%	13%	24%
Crop rotation	21%	22%	7%	17%
Terraces	16%	16%	7%	13%
Producing high value crops using irrigation	17%	14%	4%	12%
Conservation farming	16%	8%	6%	10%
Intercropping	14%	10%	3%	9%
No or minimum tillage	9%	6%	0.30%	5%

3.6.4. Soil erosion control

3.4.6.1. Consolidation and rehabilitation

Management of land resources including the rehabilitation of degraded land is critical for optimal agricultural production. Results from the survey however reveal that land consolidation and rehabilitation is low and only took place in 5 percent of the households. The distribution of the households engaged in the consolidation and rehabilitation was about one percent of the households (the lowest) in Kamegeri, three percent in Ruganda and 12 percent in Mukura. Even among these households the average proportion of land under consolidation and rehabilitation was low and estimated at 2 and 3 percent of owned land, respectively. An estimation of the total area under rehabilitation showed that only about 220 and 248 hectares had been rehabilitated using terraces and tree seedlings, respectively. The larger share of this being by households in Mukura sector. For the households that had carried out land rehabilitation, they were using terraces and tree seedlings under the cash/food for work programme. No rehabilitation activities using marshland drainage and irrigation was used across the sectors.

Land registration for Umudugudu (resettlement/villagisation program) is also low and was only reported by 4 percent of the respondents in Mukura and one percent in Ruganda. No household in Kamegeri had its land under registration for Umudugudu. Equally, only one percent of the surveyed households have part of their land registered or set aside by government for public or community services.

3.4.6.2.2. Control of Erosion

Agricultural productivity can be enhanced through a number of ways including effective protection of soils from erosion as well as enhancing its fertility. In order to support households adopt the right measures for controlling erosion and natural resources degradation an understanding of perceptions and awareness is necessary. Responses revealed that 43 percent attribute natural resources degradation on their farms and localities to water erosion, while 39 percent attributed it to intensive and erratic rains, 24 percent to

rugged terrain and 21 percent to other causes. There were slight variations in percent of households indicating each cause across the sectors (Table 36).

Considering the current situation with 10 – 20 years ago 38 percent of the respondents indicated that natural resources degradation in their village/locality was slowly increasing while 26 percent were of the opinion that it was slowly decreasing. However, with regard to degradation on own land, 51 percent felt it was less degraded and 35 percent rated it moderate. This can be attributed to the fact that 63 percent of households were implementing measures to protect soil erosion on their own farms. The portion of land protected from erosion however varied across households and sectors.

As part of land protection from erosion and fertility enhancement there is need to encourage households to adopt other measures such as agroforestry and establishment of woodlots on-farm. Currently only about 40 percent of the households own a private woodlot. The percent of ownership varies from 52 percent of households in Mukura to 37 percent in Ruganda and lowest (31 percent) in Kamegeri.

Table 36: Households perception on causes and extent of degradation and soil protection

	Aspect	Kamegeri	Ruganda	Mukura	Overall
% HH on causes of natural resources degradation	Water erosion	45%	48%	37%	43%
	Intensive & erratic rain	52%	43%	21%	39%
	Rugged terrain	19%	38%	14%	24%
	Other causes	10%	27%	26%	21%
	Cultivation of steep slopes	28%	21%	7%	19%
	Land slide	22%	13%	6%	14%
	Poor land management practices	12%	7%	12%	10%
	Deforestation	7%	4%	1%	4%
	Lack of understanding and assistance	4%	2%	1%	2%
% HH ranking of natural resources Degradation in the village compared to 10-20 years before	Rapidly increasing	20%	17%	7%	15%
	Moderately increasing	12%	20%	6%	13%
	Slowly increasing	50%	25%	39%	38%
	No change	3%	6%	11%	7%
	Slowly decreasing	15%	31%	31%	26%
	Others	0.30%	0.30%	5%	2%
% HH ranking of natural resources Degradation on own land	Fully degraded	9%	4%	2%	5%
	Highly degraded	3%	6%	6%	5%
	moderately degraded	36%	26%	44%	35%
	less degraded	51%	62%	41%	51%
	No degradation	1%	1%	5%	2%
	Other	1%	2%	3%	2%
% HH implementing soil erosion protection		35%	81%	74%	63%

3.6.5. Drainage and irrigation

Although 90 percent of surveyed households practice agriculture only a small number of them households (14 percent) undertook irrigation on their land in 12 months prior to the survey. The average share of land irrigated varies from about 2 percent in Mukura to about 26 percent in Ruganda. The number of households with irrigated land during Season A was however less (3 percent) and the average share of irrigated land was 0.8 percent of total cultivated land. This is quite less compared to 99 percent of total cultivated land under rain fed condition.

For the households with irrigated land during season A water was derived from varied sources such as river diversions and spring water but the percent households relying on each source was relatively low. This demonstrates that very few households used irrigation during season A and the portions of land opened up for irrigation were equally small. Hence, many households depended on natural climatic conditions for agricultural production during that season. The results further reveal that households practicing irrigation have not invested in modern irrigation systems but instead they rely on traditional methods.

Table 37: Characteristics of land cultivated during irrigation

		Kamegeri	Ruganda	Mukura	overall
Households with land that was irrigated over 12 months period (%)		9%	29%	3%	14%
Share of owned land that is irrigated over 12 months period (%)		5%	26%	2%	11%
Households with irrigated land during Season A (%)		5%	2%	2%	3%
Households with rain fed land during Season A (%)		99%	100%	100%	100%
Average share of cultivated land under rain fed (%)		98.2	99.5	98.7	98.8
Average share of cultivated land under Irrigation (%)		1.8	0.3	0.5	0.8
% HH by sources of irrigation water during season A	Own shallow well	0%	0%	.3%	.1%
	River diversion	2%	.8%	.3%	1%
	Spring water	2%	.3%	.3%	.8%
	shared well	.6%	0%	0%	.2%
	Shared small dam	.6%	0%	.3%	.3%
	Water harvesting	0%	.3%	0%	.1%
	Other sources	0%	0%	.9%	.3%

3.6.6. Crop Production and constraints

3.6.6.1. Level of production

An estimate of crop production achieved by the households during season A showed that majority of the households had low production. This is because over 96 percent of households harvested less than 250Kgs for any of the food categories (cereals, pulses, fruits and vegetables) (Table 38). Only for roots and tubers where 25 percent of households achieved between 251 and 500Kgs. Results further show that the greater share of the total produce was consumed by the households. In each sector over 50 percent of the households consumed more than 75 percent of the total produce except for cabbages and Irish potatoes (Table 39). A high proportion of produce was consumed and very few households reported having sold some of the produce. Overall 49 percent of the households sold at least one of the food crops. The highest was in Ruganda (61 percent) then Mukura (47 percent) and Kamegeri (38 percent). At least 18 percent of the households sold bananas, 15 percent sold sweet potatoes, Irish potatoes (9 percent), maize (9 percent), beans (5 percent) and cassava (5 percent) while other crops were sold by very few households.

Table 38: Percent households and estimated production of the various crop categories

Crop category	Quantity (Kgs)	Kamegeri	Ruganda	Mukura	Total
Cereal (Kgs)	<250	98%	99%	91%	96%
	251-500	1%	1%	7%	3%
	501-1000	0.3%	0.0%	0.9%	0.4%
	>1000	0.3%	0.0%	0.6%	0.3%
Pulses (Kgs)	<250	99%	100%	99%	99%
	251-500	1%	0%	1%	1%
	501-1000	0.3%	0%	0%	0.1%
	>1000	0.3%	0.3%	0.3%	0.3%
Vegetables (Kgs)	<250	99%	99%	99%	99%
	251-500	0.6%	0.8%	0.6%	0.7%
	501-1000	0.6%	0.3%	0.3%	0.4%
	>1000	0%	0%	0%	0%
Fruits (Kgs)	<250	99%	95%	99%	98%
	251-500	0.9%	2%	0.9%	1%
	501-1000	0.3%	1%	0.0%	0.6%
	>1000	0%	2%	0%	0.6%
Roots/Tubers (Kgs)	<250	64%	52%	76%	64%
	251-500	26%	28%	20%	25%
	501-1000	7%	15%	4%	9%
	>1000	3%	5%	1%	3%

Table 39: Percent households and portion of total produce consumed

Crop	Share consumed	Kamegeri	Ruganda	Mukura	Overall
Wheat	<25%	0%	0%	21%	17%
	26-50%	0%	0%	26%	21%
	51-75%	0%	0%	16%	13%
	>75%	0%	100%	37%	50%
Maize	<25%	42%	4%	16%	14%
	26-50%	26%	3%	6%	7%
	51-75%	0%	4%	19%	14%
	>75%	32%	89%	59%	65%
Sorghum	<25%	5%	13%	25%	12%
	26-50%	20%	4%	10%	9%
	51-75%	5%	1%	5%	3%
	>75%	71%	82%	60%	76%
Beans	<25%	8%	2%	16%	7%
	26-50%	2%	0%	3%	2%
	51-75%	4%	1%	3%	3%
	>75%	87%	96%	79%	89%
Sweet potato	<25%	5%	3%	5%	4%
	26-50%	5%	3%	2%	4%
	51-75%	12%	6%	7%	9%
	>75%	78%	89%	85%	84%
Irish potato	<25%	25%	0%	14%	14%
	26-50%	25%	0%	19%	18%
	51-75%	25%	0%	26%	25%
	>75%	25%	100%	42%	43%
Cassava	<25%	11%	11%	0%	10%
	26-50%	23%	1%	10%	8%
	51-75%	8%	8%	20%	9%
	>75%	58%	80%	70%	72%
Peas	<25%	0%	0%	9%	9%
	26-50%	0%	0%	9%	9%
	51-75%	0%	0%	14%	13%
	>75%	100%	0%	68%	69%
Taro	<25%	100%	5%	0%	6%
	26-50%	0%	9%	33%	12%
	51-75%	0%	7%	33%	10%
	>75%	0%	79%	33%	72%
Cabbages	<25%	0%	25%	17%	17%
	26-50%	100%	25%	33%	42%
	51-75%	0%	25%	50%	33%
	>75%	0%	25%	0%	8%

Given the low levels of achieved production analysis of the average number of month's households will rely on it showed variation from one crop to the other and from one sector to the other. Sweet potatoes and banana (cooking) stocks will on average be consumed for a relatively longer period compared to other crops. Beans will be consumed within the shortest period of between two to three months in the three sectors. This signals short time periods of food availability through own production for these rural households.

Table 40: Number of months the 12 months harvest would last

		Sorghum	Beans	Sweet Potato	Irish Potato	Cassava	Banana (wine)	Taro	Other vegetables	Bananas (cooking)
Kamegeri	Mean	4	2	4		3	4	7		7
	Maximum	12	2	12		8	4	7		10
	Median	2	2	5		3	4	7		6
Ruganda	Mean	2	2	6		3	5	2	4	3
	Maximum	2	3	12		12	12	2	12	8
	Median	2	3	3		3	4	2	1	2
Mukura	Mean			6	3	3	3	3		3
	Maximum			12	5	12	12	5		6
	Median			4	3	1	2	3		3
Overall	Mean	3	2	5	3	3	5	3	4	4
	Maximum	12	3	12	5	12	12	7	12	10
	Median	2	2	4	3	2	4	2	1	4

3.6.6.2. Constraints to crop production

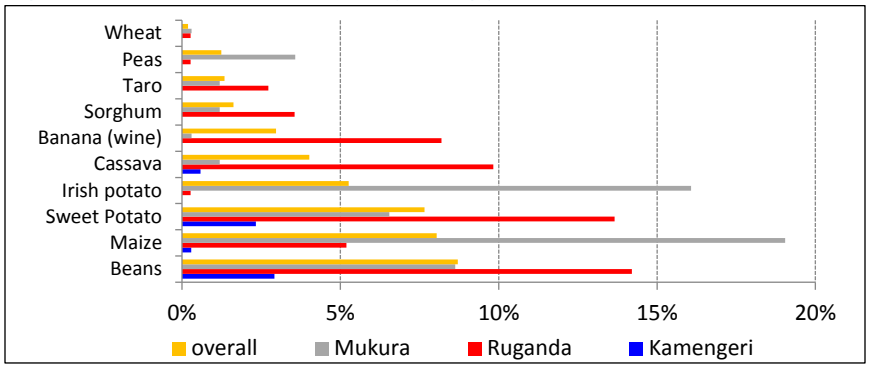
Households reported facing several challenges in production during the past 12 months, which may have led to the low level of production. Among them limited land for cultivation, excess rain and flooding, pests and diseases, low soil fertility and lack of inputs, lack of finance to procure adequate resources for production and poor extension support among others (Table 41). Although the percent households reporting each constraint was relatively low the responses concur with some earlier findings that showed low land holding for cultivation, low access to inputs, and low use of improved crop varieties. The findings pin point some potential areas of intervention in order to help households improve production.

Most households (97 percent) lack proper storage facilities for food/fodder and only two percent of households in Mukura own it. This may limit the amount of produce households are able to safely store at any time. Moreover, 16 percent of the households incurred significant post-harvest losses of their produce. Post-harvest losses affected slightly higher number of households in Mukura (25 percent) than in Ruganda (19 percent) and Kamegeri (three percent). While some respondents (one percent) attributed post-harvest losses to lack of proper storage facilities, some felt it was due to rodents (two percent), weevils (two percent) as well as other causes (13 percent). The most affected crops as reported by the respondents were beans, maize, sweet potatoes and Irish potatoes as shown in Figure 21.

Table 41: Challenges/constraints faced by farming households

Challenge	Kamegeri	Ruganda	Mukura	Overall
Limited land for cultivation	33%	52%	24%	37%
Excess rain and flooding	48%	22%	18%	29%
Crop pest and disease	11%	43%	13%	23%
Low soil fertility and lack of inputs	13%	35%	20%	23%
Lack of finance	15%	35%	18%	23%
Poor extension support	26%	21%	13%	20%
Lack of improved seeds	26%	15%	18%	20%
Expensive inputs	20%	13%	20%	17%
Sever soil erosion& deforestation	30%	5%	4%	13%
Lack of access to land	11%	12%	9%	11%
Drought conditions	10%	20%	1%	11%
High price of inputs	11%	7%	14%	11%
Other challenges	6%	7%	12%	8%
Serious illness of one/more household members	4%	8%	8%	7%
Lack of extension and material support	8%	8%	2%	6%
Lack of enough family labour	8%	7%	1%	5%
Rain fed farming	7%	0.5%	0.3%	2%
Lack of knowledge & training	3%	1%	0.3%	2%
Low market price of produce	2%	0.3%	0.6%	1%
No road access to markets	2%	0.5%	0.6%	0.9%
Low access to credit	0.6%	2%	0.3%	0.9%
Insecurity	0%	0.3%	0.0%	0.1%
% HH affected by post-harvest losses	3%	19%	25%	16%

Figure 21: Percent households reporting post-harvest losses on various crops



3.7. Livestock Production

3.7.1 Livestock ownership or management

According to the International Livestock Research Institute (ILRI) livestock are a renewable natural resource, which forms a means by which many households escape absolute poverty. This is through their contribution to household food, income, traction, fertilizer as well as acting as catalysts for transforming subsistence farming into income-generating enterprises, enabling poor households to join the market economy. Overall 71 percent of all households own or manage at least one type of farm animals. A slightly higher percent of households in Ruganda (77 percent) own/manage livestock compared to 75 percent in Mukura and 63 percent in Kamegeri. However, ownership/management by each livestock type is low and varies across sectors and types (Table 42). Pigs and goats were owned or managed by more than 20 percent of the households but ducks and modern beehives are lowly owned/managed or not at all.

Table 42: Percent households owning/managing livestock and mean numbers

		Ownership/Management				Mean number of livestock			
	Type	Kamegeri	Ruganda	Mukura	Overall	Kamegeri	Ruganda	Mukura	Overall
Own	Chicken	11%	28%	19%	20%	3	3	2	2
	Goats	17%	31%	19%	23%	2	2	2	2
	Sheep	5%	6%	10%	7%	2	2	2	2
	Pigs	35%	25%	27%	29%	1	1	1	1
	Rabbits	7%	11%	5%	8%	3	3	3	3
	Traditional beehives	0.4%	4%	1%	2%	8	3	1	3
	Local milking cows	8%	17%	15%	13%	1	1	2	1
	Modern milking cows	2%	2%	2%	2%	1	1	1	1
	Oxen	0%	3%	2%	2%		2	1	2
	Heifers	2%	13%	10%	9%	1	1	1	1
	Calves	11%	27%	21%	20%	1	1	1	1
Manage	Chicken	2%	5%	4%	4%	3	1	2	2
	Goats	25%	26%	13%	22%	1	1	1	1
	Sheep	5%	2%	7%	5%	2	1	3	2
	Pigs	36%	11%	16%	21%	1	1	1	1
	Rabbits	2%	0.3%	0%	0.7%	3	1		2
	Traditional beehives	0%	1%	0%	0.4%		5		5
	Local milking cows	7%	13%	14%	12%	1	1	1	1
	Modern milking cows	0.4%	1%	0.7%	0.8%	1	1	2	1
	Oxen	0%	1%	1%	1%		1	2	1
	Heifers	3%	8%	4%	5%	1	1	1	1
	Calves	17%	20%	17%	18%	1	1	1	1

With regard to households that own/manage livestock, additional information on changes in livestock numbers, sales of livestock and derived products, constraints to production and incidences of diseases were analyzed. Results revealed that for 53 percent of the households the livestock numbers had not changed compared to the previous year while 29 percent and 11 percent had an increase and decline, respectively (Figure 22). A slightly higher percent (13 percent) of households in Ruganda reported a decline than households in other sectors. While there were no significant causes attributed to decline in livestock numbers, 17 percent of the households attributed the increase natural births (Table 43).

Figure 22: Percent households reporting trend of livestock numbers compared to previous year

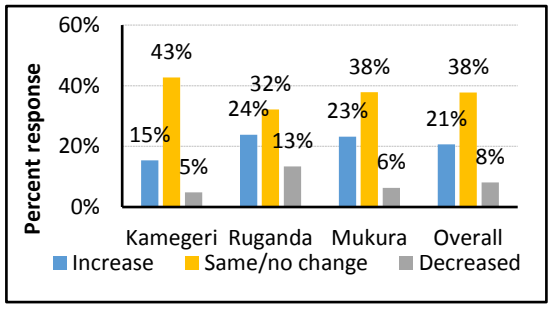


Table 43: Percent households reporting on causes of change in livestock numbers

		Kamegeri	Ruganda	Mukura	Overall
Increase	Birth	14%	16%	20%	17%
	Purchase	.5%	2%	2%	2%
	Given	0.0%	2%	1%	1%
	Other reasons	1%	4%	.5%	2%
Decline	Sales	2%	8%	3%	4%
	Deaths	2%	6%	2%	3%
	Slaughter	0%	0.30%	0%	0.1%
	Stolen	0.2%	0%	0%	0.1%
	Gave away	0%	0%	0.3%	0.1%
	Other reasons	0.7%	0.8%	0.5%	0.7%

3.7.2 Sale of livestock and livestock products

In the 12 months preceding the survey an average 19 percent of the households had sold some livestock. The number was slightly higher in Ruganda sector (23 percent) compared to Kamegeri (16 percent) and Mukura sector (19 percent). More male headed households (21 percent) compared to female headed ones (16 percent) indicated having sold livestock. The reasons for disposing off livestock varied across sectors and included the need to pay for nominal/daily expenses (5 percent), purchase food for the household (5 percent), meet medical expenses (4 percent), and school/education (4 percent) among others (table 44).

Table 44: Percent households that sold livestock over 12 months before the survey and reasons

		Sector				Gender of HH head		
		Kamegeri	Ruganda	Mukura	Overall	Male	Female	Overall
Percent households that sold livestock		16%	23%	19%	19%	21%	16%	19%
Reasons for selling	Pay nominal/minimal daily expenses	5%	5%	6%	5%	6%	4%	5%
	Buy food for household	4%	3%	6%	5%	5%	4%	5%
	Pay medical expenses	3%	6%	4%	4%	5%	2%	4%
	Pay school/education expenses	2%	8%	2%	4%	5%	3%	4%
	Buy non-food items including clothes	2%	2%	2%	2%	2%	3%	2%
	Culling (no longer needed)	2%	2%	1%	2%	2%	1%	2%
	Pay debt	0.4%	1%	1%	1%	.9%	1%	1%
	Construct a house	2%	0%	0.7%	1%	.9%	1%	1%
	Social/cultural/religious events	0.4%	1%	0.7%	0.7%	.7%	.8%	.7%

A consideration of sales of small stock (goats and sheep, rabbits and pigs) and livestock products (eggs, hides and skins, meat, milk) in the period six months prior to the survey revealed that few households had sold. Pigs were sold by slightly higher number of households overall with those in Kamegeri (12 percent) leading. The mean number of small stock and products sold was equally low (Table 45). The result may suggest that households own/manage livestock for subsistence and other purposes rather than for commercial.

Table 45: Percent households that sold Small stock and livestock products

	Type	Kamegeri	Ruganda	Mukura	Overall
% Households that sold	Chicken	2%	4%	5%	3%
	Eggs (dozens)	0%	5%	4%	3%
	Sheep & goats	2%	5%	5%	4%
	Pigs	12%	4%	6%	7%
	Rabbits	2%	2%	2%	2%
	Meat (kg)	2%	2%	0%	1%
	Milk (L)	.4%	2%	2%	2%
	Hides & skins	0%	1%	.4%	.6%
	Other products	.8%	6%	5%	4%
Mean number of items sold	Chicken	3	2	3	3
	Eggs (dozens)		7	2	5
	Sheep/goat	2	1	2	2
	Pigs	3	1	3	3
	Rabbits	2	4	4	3
	Hides/skins		1	8	2
	Others products	2	1	1	1

3.7.3 Livestock management and constraints to production

Over 87 percent of households in each sector keep their livestock in barns most of the time. Other livestock keeping strategies such as use of communal lands, paddocking or combination of these are used by very few households. This could be due to small land holdings that may not allow for grazing systems that require extensive land units. There is limited management of improved breeds for milk production. Kamegeri and Karongi had each two percent of households owning/managing improved cows for milk production. Because of the low ownership of improved milking breeds, analysis on milk production, sales, revenues and losses was not carried out.

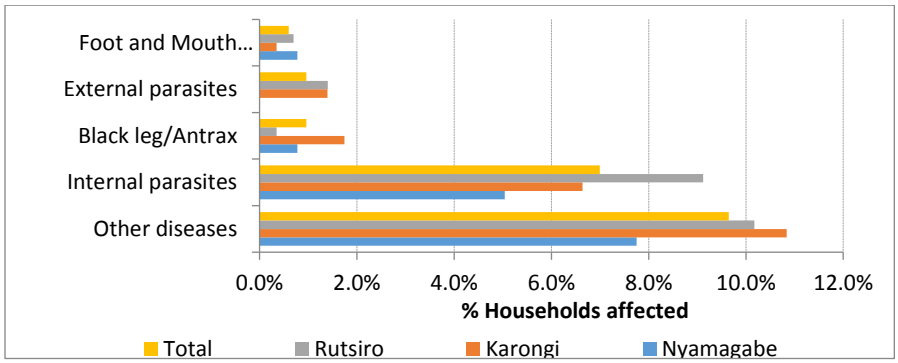
Most households in Kamegeri (89 percent) and Mukura (81 percent) did not report any major challenge in rearing livestock compared to those in Ruganda (58 percent). However, about 22 percent reported having faced one major challenge. Among the challenges/constraints reported include shortage of livestock feed or being of low quality (7 percent), low productivity of local breeds (5 percent) and lack of improved breeds (5 percent) as shown in Table 46.

Table 46: Percent households facing challenges in improving livestock production

		Kamegeri	Ruganda	Mukura	Overall
% HH and number of challenges reported	None	89%	58%	81%	76%
	One	10%	36%	18%	22%
	Two	1%	6%	.7%	3%
	Three	0%	.7%	0%	.2%
% HH and specific challenges reported	Shortage of feed and of low quality	2%	10%	8%	7%
	Low productivity of local breeds	3%	8%	5%	5%
	Lack of improved breeds	2%	12%	1%	5%
	Poor extension support	1%	7%	.4%	3%
	Others specify	1%	3%	3%	2%
	Disease out break	.8%	.3%	1%	.7%
	Expensive improved breeds	.4%	1%	0%	.5%
	Lack of credit access to buy improved breeds	0%	1%	0%	.4%
	Problem of water	.4%	.3%	0%	.2%

About 19 percent of households had their livestock affected by diseases and parasites i.e. 14 percent, 20 percent and 21 percent of households in Kamegeri, Ruganda and Mukura respectively. Further enquiry showed that incidences of internal parasites and other diseases were slighly higher than those of diseases in the three sectors (Figure 22).

Figure22: Percent households reporting diseases and parasites that affected livestock



3.7.4. On-farm Income generating activities

Households rarely engage in other income generating activities. This was reflected by the low number of households that reported having implemented them as shown in Table 47. Majority of the households (89 percent) had only one income generating activity. However, a moderate number of households expressed they would prefer to initiate rearing of improved dairy cows (52 percent), rabbit and pigs (37 percent), vegetable and fruit production (30 percent), improved poultry (20 percent), shoat fattening and reproduction (19 percent) among others not in the list. This suggests there is willingness among households to diversify their livelihoods and efforts should therefore be made to support them in such ventures.

Table 47: IGAs being implemented by households and preferred ones for future investment

	IGAs being implemented					Preferred IGAs			
	IGA	Kamegeri	Ruganda	Mukura	Overall	Kamegeri	Ruganda	Mukura	Overall
% HHs and IGAs	Rabbit and pigs rearing	17%	12%	2%	10%	42%	36%	32%	37%
	Vegetable and fruit production	10%	18%	3%	10%	29%	45%	18%	31%
	Improved dairy cows	5%	8%	3%	5%	42%	65%	50%	52%
	Cattle fattening	2%	12%	0%	5%	14%	26%	3%	14%
	Petty trading	6%	3%	3%	4%	25%	11%	16%	17%
	Shoats fattening and reproduction	3%	7%	0%	3%	20%	23%	16%	19%
	Improved poultry	3%	4%	1%	3%	22%	30%	9%	20%
	Handicrafts	3%	2%	1%	2%	12%	5%	2%	6%
	Bee keeping	.7%	2%	0%	.9%	1%	8%	1%	4%
	Sewing machine	1%	0%	.3%	.5%	8%	1%	4%	5%
	Modern beehives	.2%	.5%	.3%	.3%	2%	4%	3%	3%
	Flour mill	.5%	.3%	0%	.3%	1%	1%	3%	2%
	Queen rearing	.5%	0%	0%	.2%	.5%	0%	0%	.2%
	Carpentry	0%	0%	.3%	.1%	.7%	.5%	.5%	.6%
	Other IGAs	70%	61%	89%	73%	17%	21%	24%	20%
% HH and number of IGAs	One	88%	80%	97%	89%	35%	20%	55%	37%
	Two	6%	13%	2%	7%	22%	21%	21%	22%
	Three	2%	5%	0%	2%	15%	28%	13%	19%
	More than three	4%	2%	%	2%	27%	31%	11%	23%

3.8. Market and Labor Situation

3.8.1. Frequency of market participation

Markets were easily accessible to about 93 percent of the households across the sectors. Only about a quarter of the households indicated they did not purchase any cereals. Whilst 90 percent do not buy meat and about half do not buy vegetables. For those buying cereals and pulses, most households buy either once a month or 2 to 3 times per week. The proportion of households that buy meat and vegetables is quite low, which is reflective of the diet consumed in the household. The frequency of market purchases is not reflective of commodity availability except for meat. Most households (over two thirds) indicated that cereals, pulses and vegetables were readily available in the market. However, meat was indicated as sometimes available by about two thirds of the households in Ruganda Sector (Table 48).

Table 48: Market participation

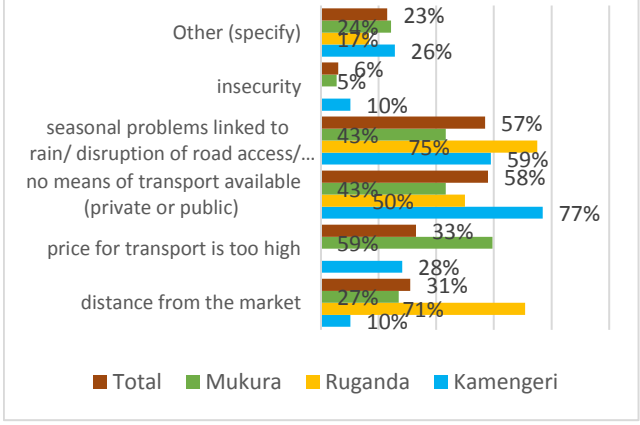
Table x: Market participation

		Frequency of purchase (% of households)					Degree of Availability % of households			
		Don't buy	Daily	2 to 3 times / week	Once a month	More than 2 times/ month	Always available	Sometimes available	Often available	Not available
Nyamagabe	Cereals	31%	3%	27%	26%	12%	73%	18%	8%	1%
	Pulses	17%	4%	46%	19%	14%	81%	10%	8%	1%
	Meat	86%	0.2%	3%	10%	1%	52%	40%	2%	6%
	Vegetables	33%	4%	45%	11%	7%	82%	10%	7%	0.5%
Karongi	Cereals	24%	0.3%	18%	39%	19%	48%	29%	23%	0.3%
	Pulses	15%	1%	30%	27%	27%	49%	28%	23%	
	Meat	86%		1%	12%	2%	15%	67%	16%	1%
	Vegetables	52%	0.3%	7%	24%	17%	37%	40%	23%	
Rutsiro	Cereals	22%	3%	20%	39%	16%	73%	10%	16%	1%
	Pulses	11%	3%	25%	36%	25%	74%	11%	14%	1%
	Meat	96%			2%	1%	70%	13%	16%	1%
	Vegetables	70%	2%	12%	10%	5%	76%	6%	18%	
Total	Cereals	26%	2%	22%	34%	15%	65%	19%	15%	1%
	Pulses	15%	3%	34%	27%	22%	68%	16%	15%	1%
	Meat	89%	0.1%	1%	8%	1%	45%	40%	11%	3%
	Vegetables	51%	2%	22%	15%	10%	66%	18%	16%	0.2%

3.8.2. Transport and road accessibility

Distance to the market varies form one Sector to the other, with a maximum of 120 km reported in Ruganda and Mukura sectors. Households in these sectors travel on average 5 to 7 km. The maximum time taken to the markets is up to 500 minutes and on average between 64 to 79 minutes in these sectors. The least distance to market is in Kamegeri Sector estimated at 2 km and a maximum of 20 km. Accessibility can explain, the reason as to why Kamegeri has the highest number of households with bank account estimated at 53 percent compared to 23 percent in Ruganda and 32 percent in Mukura sectors.

Figure 23 Access to markets



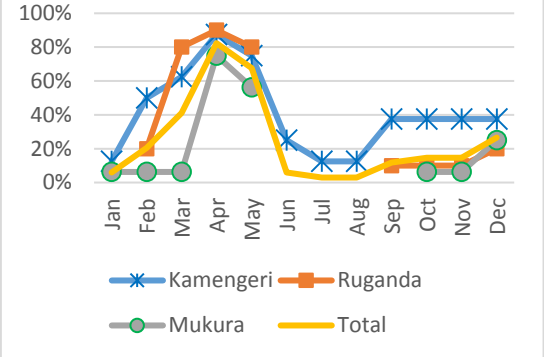
However, despite distance to the market not that long on average, most households indicated the greatest constraint to get to the market was seasonal problems linked disruption of road access and unavailability of transport. Majority of households in Ruganda Sector indicated distance to the market as a major constraint as well (Figure 23). Hence, almost all households indicated that they walked to the market.

Results from the focus group discussions show that over 95 percent of the interviewed communities are connected to the major nearby town by a road. However, only 9 percent of them are connected through a tarmac road and almost half of them are seasonally isolated as the murram road they use is not accessible during the rainy season. In Kamegeri sector, almost 9 out of 10 communities are seasonally isolated due to inaccessibility of the main road connecting them to the nearby main town. Here, isolation averages for 4.8 months/year, the highest among the three sectors.

Furthermore, Kamegeri is the sector with the highest distance from the closest tarmac or all weather road. For approximately 50 percent of communities it takes more than one hour to reach them against 44 percent in Mukura. In Ruganda, 70 percent of the communities interviewed declared to be able to reach main roads within 30 minutes and the rest within the hour.

Ruganda is also the only district with no communities interviewed declaring to be isolated throughout the year, against 13 percent in Kamegeri and 44 percent in Mukura. Overall, temporary or permanent isolation of villages in the three sectors is a significant problem: almost two thirds of the communities declare to be isolated for part of the year and around 24 percent of them throughout the year. The isolation for Kamegeri is on average is for 4.9 months of the year mainly from February to May as well as from September to December; Ruganda is isolated on average for 3.2 months of the year mainly from March

Figure 24: Months of isolation

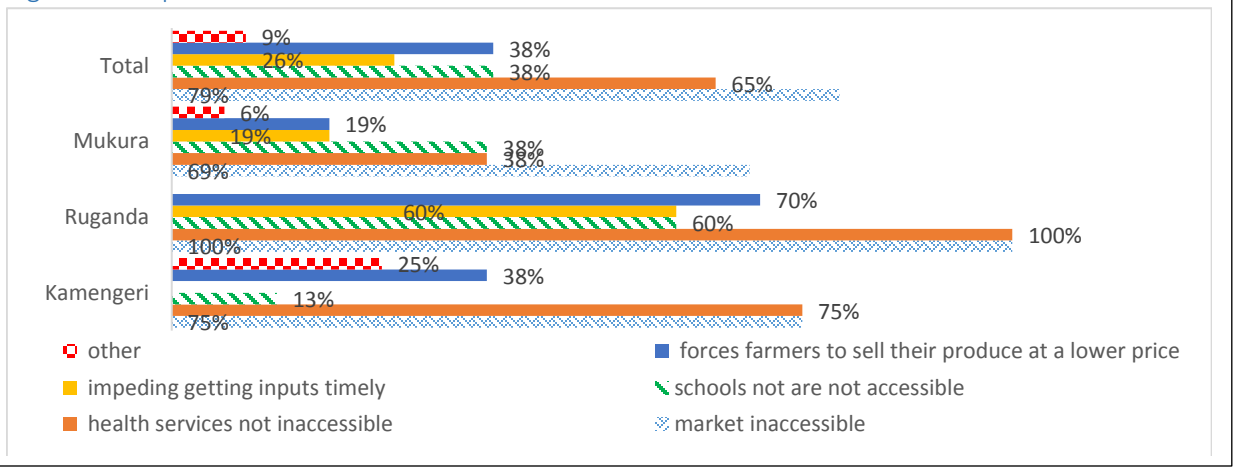


to May; Mukura is isolated on average for 1.9 months of the year mainly in April and May and December (Figure 24).

The combined effect of heavy rains and poor maintenance of roads determines isolation of communities and villages. In fact, floods and heavy rains are the major causes of isolation for over two thirds of communities, followed by bad road conditions (23 percent). These patterns are common to the three sectors. Hence, most of the communities reported that they have no access to public transport and only 13 percent of interviewed communities declared benefiting of transport services.

Isolation has a wide range of consequences for the rural populations interviewed. Almost 79 percent of the communities declare that isolation creates problems in accessing markets, 65 percent indicated problems related to access to health services, whereas 38 percent state that isolation inhibits access to basic social services such as schooling. Finally, 38 percent of the interviewed population declares that isolation has a huge impact on farmers by forcing them to sell their produce at a low price in secondary markets and right after harvest, with peaks in Ruganda (60 percent). The distribution of the impact varied across the sectors (Figure 25). These aspects could have an impact on food security and nutrition outcomes.

Figure 25: Impact of inaccessible roads on communities

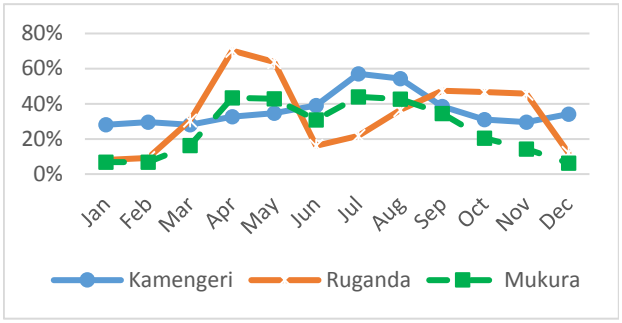


As a result of the isolation most of the communities in Mukura and Kamegeri (33 percent) indicated that their priority will be to have a road connecting to the nearest tarmac road, 29 and 21 percent of the communities in Kamegeri and Mukura respectively wanted a road connecting to the district capital. In Ruganda however, 27 percent of the communities wanted road connecting to the nearest urban centre and the other priorities were equally the same.

3.8.3 Seasonality of commodity variety

Fifty percent of the households indicated that variety of foods available in the market was normal and another 36 percent indicated the variety was good. However, 31 percent of the households indicated that the quantity available for the main food items (cereals, tubers, oil and vegetables) was poor in the market. There is seasonality in the availability of commodity variety in the market, with most households in Mukura and Kamegeri reporting poor variety in July and August as well as in April and May. The periods however differ for Ruganda, with most households reporting poor variety in April and May as well as September to November. The periods when there is poor variety are also the same times when most households reported not finding the main food items in the market (Figure 26).

Figure 26: Seasonality of poor variety of commodities



3.9. Community Participation and Ownership

3.9.1. Membership to cooperatives/farming organizations and trainings

Membership to cooperatives or farming organizations is low since only 14 percent of the households were registered. Provision of services by cooperatives or farming organizations is also low given that the main services training (6 percent, credit (5 percent) and access to inputs at a favourable price (3 percent) were reported by less than half of those registered. This demonstrates that cooperatives/farming organizations' in the surveyed sectors are inactive. To strengthen these institutions members expressed the need to improve their capacity (10 percent) and ensure they provide training (six percent). Table 49 summarizes the responses on membership to cooperatives/farming organizations.

Table 49: Membership to cooperatives/farming organizations

		Kamegeri	Ruganda	Mukura	Overall
Membership to cooperative/farming organizations		15%	15%	11%	14%
% HH and services received from cooperative/farming organization by members	Training	7%	5%	5%	6%
	Credit	4%	6%	3%	5%
	Access to inputs at favorable price	5%	2%	2%	3%
	Facilitation in marketing of produce	4%	1%	1%	2%
	Other service	3%	2%	1%	2%
% HH on what should be done to strengthen cooperative/farming organization	Strengthening the capacity	11%	11%	8%	10%
	Providing training	9%	7%	2%	6%
	Others	2%	1%	3%	2%
	Re-organizing cooperative	2%	1%	1%	1%
	Not important at all	0%	1%	0%	0.2%

3.9.2. Community Capacity building

3.9.2.1. Households participation in training

Further enquiry about trainings received elsewhere revealed that only 11 percent of the households were trained over the past 12 months. About six percent of the households were trained on new production technologies and three percent on how to reduce soil erosion. The other trainings were reported by a relatively few percent of households as indicated in Table 50. Taking into consideration the low number of households that received training through cooperatives/farming organizations' as well as elsewhere it is conclusive that most farming households are not adequately exposed to information that will enable them undertake agricultural activities or adopt new technologies effectively. There is therefore need to strengthen farmers' training either through farmer field schools or other methods of extension.

Table 50: Alternative trainings offered in past 12 months

Training offered		Kamegeri	Ruganda	Mukura	Overall
% Households that recived training in past 12 months		10%	7%	16%	11%
% HH and kind of training received	New production techniques	8%	5%	6%	6%
	Reducing soil erosion	5%	0.8%	4%	3%
	Crop, fruit and vegetable production	2%	0.8%	3%	2%
	Use of new technologies	0.7%	1%	3%	2%
	Increasing soil fertility	2%	0.5%	1%	1%
	Reducing post-harvest losses	1%	1%	0.8%	0.9%
	Postharvest handling and storage technologies	0.5%	2%	0.5%	0.9%
	Livestock production	0.7%	1.1%	0.3%	0.7%
	Irrigation techniques	0.5%	0.3%	1%	0.6%
	Marketing & quality grading	0.5%	0.5%	0.8%	0.6%
	Terracing and land management	0.5%	0.3%	0.5%	0.4%
	Others	2%	1%	3%	2%

3.9.2.2. Community participation in trainings

Capacity building is perceived as one of the main needs by the communities interviewed. Being farming key in the assessed areas, over 73 percent of the communities interviewed indicated that capacity building and access to trainings is necessary to improve productivity and life conditions.

Table 51: Proportion of communities' access to training centers and extension services

	Kamegeri	Ruganda	Mukura	Overall
Farmers training center	43%		44%	29%
veterinary service			13%	6%
extension service			25%	12%
credit and saving service	57%	100%	19%	27%

On average, less than one in five communities and households accessed services aimed at increasing performances of their productive activities, notable agriculture and livestock production. In particular, less than one third of them accessed farmers' training center and almost one in ten extension services to improve the adoption of best practices in the first sector.

The situation is particularly bad in Ruganda, where no communities had access to training centres or extension services in the reference period. On the contrary, over 40 percent of households in Kamegeri and Mukura affirmed having had access to training centres or, to a lesser extent, extension services.

When it comes to specific training essential for farming, only 26.5 percent of communities declared having received from NGOs, Government, UN agencies and CBOs at least one of the trainings on farming. For an example in Kagemeri sector of Nyamagabe20percent received agricultural extension support compared to 38 percent in Ruganda (Karongi) and none reported in Mukra (Rutsiro) (Table 52).

Table 52: Access to agriculture trainings from NGOs, CBOs, UN agencies or Government

Training	District		
	Nyamagabe	Karongi	Rutsiro
agricultural extension support	20.0%	38.5%	0.0%
inputs support	40.0%	15.4%	33.3%
technical training	20.0%	46.2%	0.0%
others specify	20.0%	0.0%	66.7%

3.9.3. Existing Community assets

The number of community assets in the three sectors are mainly related to agriculture such as (i) land well protected against erosion (land terraced by radical or progressive terraces) ; ii) community seedling bed , this is initiatives of seedling planting of various type of plants, including species that are often used to limit gully erosion. , iii) road

When it comes to functionality, only a limited portion of terraced land is actually used and functional at the maximum of its potential. Two thirds of progressive terraces are fully functional, as well as half of the gully re-vegetation areas. However, only 35 percent of access roads, 25 percent of radical terraces and less than 15 percent of seedling beds are fully functional and exploited.

Table 54: Functionality of community assets by district

Community Asset		Kamegeri	Ruganda	Mukura	Total	Total
		Number	Number	Number	Number	%
Radical terraces	No	2	1	0	3	75%
	Yes	0	0	1	1	25%
	TOTAL				**4**	
Forest re-vegetation	No	1	1	0	2	50%
	Yes	2	0	0	2	50%
	TOTAL				**4**	
Access road	No	4	7	0	11	65%
	Yes	1	0	5	6	35%
	TOTAL				**17**	
Seedling planting	No	1	5	0	6	86%
	Yes	1	0	0	1	14%
	TOTAL				**7**	
Progressive terraces	No	0	2	1	3	33.3%
	Yes	3	0	3	6	66.7%
	TOTAL				**9**	

4. Recommendations

Given these study findings the following are recommended:

Food Security: To improve households' food security and consumption the SZHC project should initiate activities that increase households' incomes through availing labour opportunities during low labour months of the year. Such should include cash for work and other cash based transfer modalities. Support should be provided to the vulnerable households such as those without able bodied adults in households headed by disabled and female headed especially those that are widowed through unconditional cash or

food transfers. Targeting should also consider the time of the year (Seasonal programming) when households rely on the markets for their food. Given the small land holding and poor dietary diversity, kitchen gardens and production of fruits and vegetables should be particularly encouraged.

Improve market access: Markets are operational in the study area but with seasonal functioning and accessibility. To improve market functioning there is need to encourage traders to avail necessary commodities such as meat/animal products and vegetables lowly consumed by households. Cash based interventions could stimulate traders supply of such commodities. The Government should make a concerted effort to provide access roads so that the clusters are not isolated during part of the year especially during the rainy season. The SZHC project could also support government efforts through creation of community assets such as access roads to the villages to better link communities to markets.

Improve access to credit: Most households lack access to credit and there is need to initiate money lending schemes managed at community level or by supporting existing ones to improve their service capacity.

Encourage savings: The SZHC project should mobilise communities to initiate saving schemes for purposes of increase the local economy and linking this to projects.

Increase agriculture production: Agricultural production is generally low in most households due to limited use of inputs, lack of extension service, small land holdings, minimal use of improved crop varieties and practices among others. To improve production and yield on the small land holdings owned households should be supported by addressing the identified constraints. This should be through supporting access to inputs, implementing right agronomic practices, diversifying cropping systems and adopt improved technologies (crop varieties, irrigation systems, use of fertilisers and pesticides). This should go hand in hand with provision of extension services by the Government that will ensure training farmers on various agricultural practices.

Diversify type of animal holding: There is low ownership of the various livestock types. Household should be supported to increase their productive assets base through provision of small stocks such as goats, sheep and chickens especially among households' that do not own any. This will enable them access vital animal products and raise incomes for other needs while using the waste and by-products to enrich soil fertility. Hence, the need for an integrated approach to agricultural production.

Expand livelihoods: Since most households have limited sources of livelihoods, there is need to expand both crops and livestock diversity. In addition given the low household asset holding, home industry that produces some of the assets such as small farm equipment and furniture should were possible be encouraged. Utilization of crop residues should also be encouraged in activities such as rearing of improved dairy cows, rabbit and poultry. Vegetable and fruit production should be encouraged. These should be done depending on their suitability across the three sectors.

Improve water sources: To ensure household have adequate access to water for food and hygiene purposes, communities should be mobilized to protect the springs and wells they rely on. Moreover, since most households' rely on children to fetch water from boreholes, effort should be made to equip boreholes with systems that are easy to operate.

Support access to energy sources: Since most households rely on firewood for cooking and to some extent lighting alternative sources of energy should be promoted such as local gas production from animal waste

and solar power. Households should be mobilized and supported to initiate agro-forestry practices on-farms as well as establishment of woodlots on available community lands. This will not only provide fuel wood among households but can also act as sources of animal feeds, a mechanism for improving soil fertility and protecting soil from erosion.

Increase land reclamation and soil erosion protection: Results from the survey however reveal that land consolidation and rehabilitation is low. The results also show that close to a third of the households are not implementing soil erosion controls. There is need to provide small tools and encourage terracing as well as other practices that reduce soil erosion.

Provide training to households and communities: A range of training activities should be provided the households and communities on agricultural practices, animal husbandry, soil conservation, credit and savings.

Annexes

Annex 1: Log frame with Indicators

Performance Indicators	***Baseline***	***Target***
Proportion of women beneficiaries in leadership positions of project management committees	TBC	> 50%
Proportion of assisted people informed about the programme (who is included, what people will receive, where people can complain), disaggregated by gender	TBC	> 90%
Proportion of project activities implemented with engagement of complementary partners	TBC	TBC
Number of partner organizations that provided complementary inputs and services	TBC	TBC
Amount of complementary funds provided to the project by partners (including NGOs, civil society, private sector organizations, international financial institutions and regional development banks)	TBC	TBC
1.1. % of households with increased land cultivated	Kamegeri: <0.1 ha (21%), 0.1-0.2ha (19%), 0.2-0.5ha (23%), >0.5ha (19%); Ruganda: <0.1 ha (14%), 0.1-0.2ha (20%), 0.2-0.5ha (24%), >0.5ha (40%); Mukura: <0.1 ha (24%), 0.1-0.2ha (21%), 0.2-0.5ha (19%), >0.5ha (26%); Overall: <0.1 ha (20%), 0.1-0.2ha (20%), 0.2-0.5ha (22%), >0.5ha (28%);	Detailed plan to be prepared
1.2. Increased yield of households' main crops, disaggregated by crop	Was not calculated due to data quality - discussed with CO	% increase from baseline
1.1.1. Number of hectares of agricultural land rehabilitated	Estimated 20 hectares in Kamegeri & 427 in Mukura = 468 using terraces & tree seedlings	Detailed plan to be prepared
2.1. % farmers adopting improved farming practices	**Soil fertility measures**: Kamegeri (51%); Ruganda (66%); Mukura (77%); Overall (65%); **Pesticides:** Kamegeri (6%); Ruganda (14%); Mukura (34%); Overall (18%); **Improved crop varieties:** Kamegeri (10%); Ruganda (17%); Mukura (37%); Overall (21%); **Fertilisers:** Kamegeri (54%); Ruganda (62%); Mukura (80%); Overall (65%);	Detailed plan to be prepared
2.2. Income per household	TBC	
2.3. Community asset score	TBC	
2.4. Food consumption score	Kamegeri - Poor (15%), borderline (34%), Acceptable (51%); Ruganda - Poor (15%), borderline (43%), Acceptable (42%); Mukura - Poor (20%), borderline (39%), Acceptable (42%);	
2.5. Diet diversity score	Kamegeri - Mean DDS 2.9; Ruganda - Mean DDS 3.2; Mukura - mean DDS 2.6;	

Performance Indicators	*Baseline*	*Target*
2.6. Coping strategy index	Kamegeri - rCSI (9.2); Ruganda - rCSI (9.9); Mukura - rCSI (9.6); Overall rCSI (9.6)	
2.7. % of household that have taken a loan for livelihood activities	**Agricultural inputs:** Kamegeri (24%), Ruganda (23%), Mukura (43%), Overall (28%); **Business investment:** Kamegeri (11%), Ruganda (7%), Mukura (2%), Overall (7%); **Land purchase:** Kamegeri (5%), Ruganda (5%), Mukura (7%), Overall (6%);	
2.1.1. Number of women and men who completed training and extension activities	0	Detailed plan to be prepared
2.2.1. Quantities of small ruminants distributed, disaggregated by type	0	
2.3.1. Number of assets built, restored, or maintained by targeted households and communities	0	
2.4.1. Total amount of cash transferred to targeted beneficiaries, disaggregated by sex and beneficiary category, as % of planned	0	
2.4.2. Number of women and men receiving cash assistance, for work as % of planned	0	
2.5.1. Number of households utilizing credit and saving associations	Overall: Farmers cooperatives (0.4 percent), Village Savings & Credit Organisations (5percent), Traditional saving systems (15 percent)	Detailed plan to be prepared
3.1. Increased access to markets	On average 64 to 79 minutes to access a market	Detailed plan to be prepared
3.2. Increase in income through sale of surplus produce	Overall 49 percent of households sold at least one food crop i.e. Kamegeri (39 percent), Ruganda (61 percent), Mukura (47 percent) For each individual crop the percentages were low - bananas (18 percent), sweet potatoes (15 percent), maize (9 percent), beans (5 percent) and cassava (5 percent)	% increase from baseline
3.1.1. Roads rehabilitated (km)	0	Detailed plan to be prepared
3.2.2. Number of farmers organisation trained in market access and post harvest handling skills	0	
4.1. Number of income-generating initiatives implemented by target villages and sectors	Average one IGA per household in each Sector. Overall 89 percent had one IGA, 7 percent two IGAs, 2 percent three IGAs & 2 percent have more than three IGAs	Detailed plan to be prepared
4.1.1. Number of local government officials having received leadership training throughout project lifespan	0	Detailed plan to be prepared
4.1.2. Number of participatory community consultations conducted throughout project lifespan	0	

Annex 2: Sampling and methodology

A stratified sampling method was used at 95% level of confidence with 5% error margin taken for high level of accuracy.

$n = \frac{N}{1+N \times e2}$	n = Sample Size e = Error level N = Population

The sample size of households in the three sectors is calculated using the above formula as follows:

1. Mukura Sector of Rutsiro district:

$$n = \frac{6511}{1+6511*0.0025} = \frac{6511}{17.278} = 376.84 \sim 377 \text{ households}$$

2. Ruganda Sector of Karongi district:

$$n = \frac{4072}{1+4072*0.0025} = \frac{4072}{11.18} = 364.22 \sim 364 \text{ households}$$

3. Kamegeli Sector of Nyamagabe district:

$$n = \frac{3235}{1+3235*0.0025} = \frac{3235}{9.09} = 399.876 \sim 400 \text{ households}$$

According to the above calculation, **1141 household**s were randomly sampled and interviewed during the socio-economic survey. So as to compensate those households who refuse to participate and absence, a 5 percent (68 additional households) were randomly selected as reserves. Therefore, the total households who were planned to be randomly sampled was 1141+68 =1,209 households.

Households' data was planned to be collected from 17 randomly sampled villages in each of the three sectors. The number of villages planned to be randomly selected varied from 4-8 depending on the number of total villages in the sector (Table 1 below shows planned number of households and villages to be randomly sampled in each sector).

Table 1: Location of interview and number of interviewees per district

District	Total sectors in the district	Selected sector	# of Villages	# of villages to be sampled	Villages	Reserve HHs	Total HHs sampled	HH to be interviewed	% share
Nyamagabe	**17**	**Kamegeli**	**21**	**4**	V1	**4**	**104**	**100**	
					V2	4	**104**	100	
					43	4	**104**	100	
					V4	4	**104**	100	
Sub total	**17**		**21**	**4**		**16**	**416**	**400**	**35**
Karongi	13	**Ruganda**	**33**	**5**	**V1**	**4**	**77**	**73**	
					V2	**4**	**77**	**73**	
					V3	**4**	**77**	**73**	
					V4	**4**	**77**	**73**	
					V5	**4**	**76**	**72**	
Sub total						**20**	**384**	**364**	**32**
Rutsiro	13	Mukura	**53**	**8**	**V1**	**4**	**51**	**47**	
					V2	**4**	**51**	**47**	
					V3	**4**	**51**	**47**	
					V4	**4**	**51**	**47**	
					V5	**4**	**51**	**47**	
					V6	**4**	**51**	**47**	
					V7	**4**	**51**	**47**	
					V8	**4**	**52**	**48**	
Sub total	**13**		**53**	**8**		**32**	**409**	**377**	**33**
Total	**43**	**3**	**107**	**17**	**17**	**68**	**1209**	**1141**	**100**

2.2. Data collection and sampling techniques

Out of the 107 villages in the three selected sectors of the three project districts, 17 villages (15 percent of the total villages) were randomly selected for the actual baseline survey. Each survey supervisors assigned to the sectors was responsible for the random selection of villages from which the base line data was collected. The teams used the village form to list all accessible villages in the sector and randomly select the recommended number of villages from the list.

Structured and semi-structured questionnaires were used for the household, FGD and KI interviews.

2.2.1. Sampling households

For random selection of households these two methods were planned to be applied depending on the availability of households list in a given administrative setting.

Household Sampling Method (Availability of list of Households)

This method was used in villages where full list of households currently residing is available. The sector provided all list of HH and sample was drown from the list. Once the total number of households was listed, the sampling interval was determined by dividing the total households by the number of households required for the survey. After deciding the random number from where to start, the required households were identified by adding the sampling interval to the number of the previous selected household in the list.

2.2.2. Focus group Discussion arrangement

Focus Group Discussion was also one of the data collection techniques applied to collect qualitative data from the randomly selected villages of the three sectors. Two FGDs were conducted with two separate community groups of men and women in each village. Each group had 12 people selected from the village community by sector and cell level government staff in consultation with village leaders. The village level leaders particularly the chairman was part of the male FGD and included woman in the village leadership if available joined the women group.
In the women group, seven of them will represent the male headed households at different wealth categories and five women headed households from various parts of the villages.

Similarly, the men group comprised of male headed households represented from the different wealth categories and also elderly people from various parts of the village. For details on community representatives for the Focus Group Discussion, please refer **Table 2 & 3.**

Table2: Recommended Male Focus Group Discussion participants

Part of the village	Representatives from parts and wealth groups of the village						Total Number
	Very Poor MHH	Poor MHH	Medium Male HH	Better off Male HH	Elderly	Recently married youth	
Upper part	1	1		1	1		4
Central part	1	1	1		1	1	5
Lower part	**1**		**1**	**1**			**3**
Total	**3**	**2**	**2**	**2**	**2**	**1**	**12**

Note: Village leaders were part of the village level FGD.

Table 3: Recommended Male Focus Group Discussion participants

Part of the village	Representatives from parts and wealth groups of the village					Total Number
	Women (Very Poor MHH)	Women (Poor MHH)	Women (Medium Male HH)	Women (Better off Male HH)	Female HH of all category	
Upper part	1	1		1	2	5
Central part		1	1		2	4
Lower part	**1**		**1**		**1**	**3**
Total	**2**	**2**	**2**	**1**	**5**	**12**

Note: Married women included were not from the same household as the males selected for the male group.

2.2.3. Key informants Interview

Key informants interview was also one of the techniques applied for collecting qualitative and quantitative basic information required for the base line study. It was planned to have a key informant's interview with two government staff, the executive secretary and agronomist.

2.3. Team composition and Schedule

The CO recruited nationals having practical experiences and technical knowledge in similar surveys. More importantly, all team members were provided with a rigorous and robust training in household, focus group and key informants' interviews.

A combination of class room and field based training was provided to enumerators on the survey methods and procedures.

Pre-test interviews were held, a household interview was designed on average to take two hours, and hence a maximum of 15 days was budget for the survey.

A team of 7-8 enumerators and one supervisor for each district was deployed for the survey.

Enumerators were responsible for the household interviews. While supervisors were responsible for the focus group discussions, key informants interviews in collaboration with enumerators under their supervision. WFP CO did the overall control, coordination and technical assistance required during the period of the survey.

Number of enumerators required for each district is calculated as below estimating four questionnaires to be filled by an enumerator in a day. Refer table-4 below for the details.

Table 4: Number of enumerators, supervisors & days required for the data collection

Sector	# of HHs	# of supervisors	# of Enumerators	# of interviews a day	Total days for HH interviews	Days for KI &FGD	Travel days	Total days
Mukura	377	01	07	04	14	01	02	17
Ruganda	364	01	07	04	14	01	02	17
Kamageli	400	01	08	04	13	01	02	16
Sub total	**1141**	**03**	**22**					**50**

III. Data analysis and use

Analysis of the volume of data collected using household interviews and other approaches was done using SPSS statistical software.

The survey findings will provide a baseline data for socio-economic factors which will enable to produce a clear target, monitor and evaluate the outputs and outcomes expected from the KOICA supported project activities.

IV. Survey budget requirement

Budget required for all activities related to the baseline survey is as summarized in **Table-5** below.

Table 5: Budget requirement of the socio-economic survey

Activities	Unit /Time		Item Quantity	Total Quantity	Unit Cost (RWF)	Total Cost (RWF)	Total Cost (USD: 703)
Questionnaire pretest						**RWF 50,000**	**USD 71**
WFP Staff(driver)	1	days	3	3	0	0	0
Two enumerators	1	days	2	2	25,000	50,000	71
Training of Enumerators						**RWF 658,000**	**USD 936**
Training Enumerators and Team Leaders (allowance)	2	days	30	60	5,000	300,000	427
Coffee break and lunch	2	days	30	60	4,000	240,000	341
Bottle of water (training)	2	days	30	60	300	18,000	26
Stationary (training)	1	various	1	1	100,000	100,000	142
Primary data collection						**RWF 19,407,958**	**USD 28,457**
Vehicle Rental	17	days	6	30	100,000	3,000,000	4,267
Enumerators	17	days	25	425	25,000	10,625,000	15,114
WFP staff(driver and staff DSA)	17	days	6	102	51,779	5,281,458	7,513
Enumerator cell phone credit	17	days	22	374	1,000	374,000	532
Supervisors cell phone credit	17	days	3	51	2,500	127,500	181
Data entry						**RWF 0**	
Data Cleaning &analysis						**RWF 0**	
Debriefing Workshop						**RWF 279,000**	**USD 409**
Debriefing (enumerators and Team leaders)	1	days	30	30	5,000	150,000	$213
Coffee break and lunch	1	days	30	30	4,000	120,000	$171
Bottle of water	1	days	30	30	300	9,000	$13
7% unforeseen cost						1,424,147.06	2,088
Grand Total						**21,769,105.06**	**USD 30,966**