FEED THE FUTURE RWANDA ORORA WIHAZE ACTIVITY

USAID CONTRACT # 72069619C00001
CONSUMPTION STUDY REPORT

UNDERSTANDING INFLUENCES ON DEMAND FOR CONSUMPTION OF ANIMAL-SOURCED FOODS: INSIGHTS FROM 8 RWANDAN DISTRICTS

Implemented by Land O'Lakes Venture37

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ACRONYMS

ASF	Animal-Sourced Foods
CFSVA	Comprehensive Food Security and Vulnerability Analysis
COVID-19	Novel Coronavirus
CRS	Catholic Relief Services
DNA	District Nutrition Advisor(s)
DPM	District Portfolio Manager(s)
MSA	MarketShare Associates, Inc.
MSD	Market Systems Development
MAD	Minimum Acceptable Diet
MDD	Minimum Diet Diversity
MDD-W	Minimum Diet Diversity - Women
PWD	People with Disabilities
TMG	The Manoff Group
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

THE COVID-19 PANDEMIC HAS IMPACTED FOOD CONSUMPTION

- Decreased meal frequency and food diversity
- Loss of income
- Decreased food availability, in part due to travel restrictions
- Increased food prices
- More meals are eaten at home, esp. with children out of school
- Decreased use of prepared food, in part due to closure of bars/restaurants

24 HOUR DIET RECALLS FOR BREASTFEEDING WOMEN AND CHILDREN 6-23 MONTHS

DIET DIVERSITY

MDD-W OW = 12%
NAT'L = 28%

MDD OW = 30%
NAT'L = 40%

21 of 51 caregiver – child pairs consumed an ASF: 18 small fish, some milk, 2 meat and 1 egg

MEAL FREQUENCY

33% of women = 3 meals

66% of children = 3 meals

OVERALL DIET PATTERN

OW **Women's** diets = Women in the poorest wealth quintiles and in Ubedehe 1 (CFSVA, 2018)

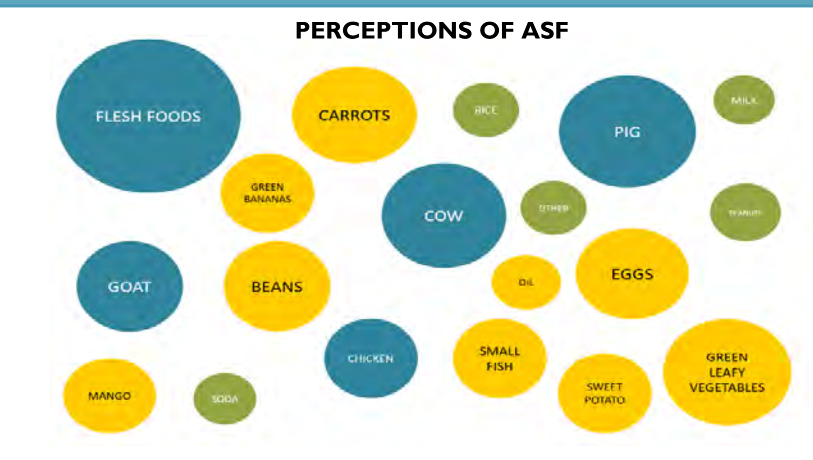
Minimum Acceptable Diet (MAD) = 18% OW **Children**

ASF PRODUCER (USE AND DECISION MAKING)

Most producer households sell their animals/ASF products or use them for manure production. Seldom do household members consume ASF products from the livestock that they rear.

If the animal is owned by someone outside of the household, the animal's owner makes the decision about how the animal is used. If the animal is owned by someone within the household, most decisions are made jointly by the husband and wife or solely by the husband. However, women are allowed to make decisions about specific animals. All women who make decisions alone make them about **chicken use only.**

PERCEPTIONS OF ASF



Size of Circle = # times mentioned Blue = Men Yellow = Women Green = No association

Nearly 70% of all respondents mention that flesh foods are associated with men compared to 8% of respondents who associate flesh foods with women. Foods highly skewed towards men include beef, pork, chicken, and goat meat.

Foods that are highly associated with women include green leafy vegetables, carrots, and beans. Small fish and eggs are the only ASF associated with women.

PERCEPTIONS OF ASF STRENGTH V. WEAKNESS

Beans, sweet potato, meat, and taro are perceived to offer strength. When eaten, one takes on the physical property of the food. Because animals are strong, you eat animals and become strong. Because raw beans, sweet potatoes, and taro are hard, the strength of the food is transferred to the consumer when eaten.

Foods on the right cause lethargy, according to study respondents.

EGG CONSUMPTION

Most respondents mention that eggs are very nutritious and overall, eggs are well liked.

Respondents perceive eggs as expensive. As a result they are typically sold, not used for the family.

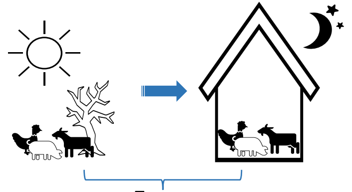
ASF producers who raise chickens also see value in selling over consuming them.

ASF PRODUCTION

The most commonly reared livestock are cows, chickens, pigs, goats, sheep, and rabbit.

Cows and chicken are the MOST common. Respondents tend to have 1-2 cows and up to 13 chickens. Families who raise other animals – like pigs and goats - usually raise 1-3 of them.

Animals are raised close to the household, typically within 5 meters from the home by day. They are kept in the home at night – especially the smaller animals. Observations and additional inquiries reveal that many of the animals tend to sleep in or very near cooking spaces.



ASF PROCUREMENT

Most respondents mention that they encounter obstacles when procuring ASF – the majority are financial: ASFs are perceived as expensive, luxury foods. The financial barriers are interrelated and include purchasing power and cost of ASF.

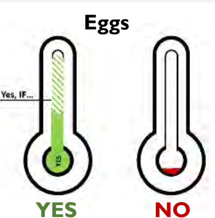
Many respondents mention obstacles related to the availability of ASF in their communities. Some ASF is only sold in distant markets, causing respondents to travel outside of their village, and incur added expenses. Except for milk, respondents tend to purchase ASF anywhere they buy food. Milk is typically purchased from a neighbor.

The key factor in deciding to purchase ASF is simply the availability of money. If money is available, respondents say they will procure ASF.

VENDORS

- Commonly sold forms of ASF include pork, beef, sheep, rabbit, goat, and chicken. Chicken is not preferred by consumers due to its high price and small size.
- Vendors sell their ASF products every time they operate. They typically sell out, even though most say that there are other nearby vendors who sell the same products.
- At bars and restaurants, men buy cooked meat and eggs. Women purchase raw meat and small fish.
- Only a few vendors actively promote their products. They do so by calling regular customers, using signs outside of the establishment and hiring a person to announce fresh foods around the village.

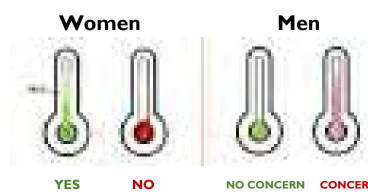
WILLINGNESS TO TRY



Caregivers are overwhelmingly willing to serve or serve more of a variety of ASFs including meat, organ meats, fish, goat milk, sour milk, and eggs. While willing, many caregivers cited conditions that would have to be met for them to be able to try. Key among them: affordability. Except for small, dried fish, women consider these other foods to be beyond their means. The second issue is availability of the product even in areas where these foods are produced. For foods such as goat milk and sour milk, some women said they would want to learn about it. Of note: no one questioned the health or nutritional value of ASFs, to the contrary, many women cited the nutritional value of the foods, especially for young children.

DECISION MAKING AND WOMEN'S EMPOWERMENT

- 100% of respondents say women *should have* equal rights.
- Respondents mention that men currently control the money and therefore have the right to eat more expensive foods (e.g. meats). However, all partners say that they are willing to share monetary responsibilities with women.
- 12 of the 31 male respondents explain that women in their household and community already independently make decisions or share decision-making responsibilities in the household. However, none of these responses were from men in the South.
- When asked about men taking more responsibility for procuring ASF for the family: Caregivers were agreeable although concerned about stressing the man if he did not have money. Men on the other hand did not like the idea, saying they would worry about disappointing their partner.



OBSTACLES TO ASF CONSUMPTION

Critical to Orora Wihaze success in improving the consumption of ASF is its ability to reduce two major hurdles that face consumers. This largest is access-- getting the foods into the household. The second hurdle includes factors within the household--confidence in the food, preparation options, individual preferences, and encouraging advice from trusted friends and family related to less familiar foods.

RECOMMENDATIONS

1. Promote daily consumption of an ASF as part of the family diet and for young children. Also promote eating at least 3 times per day.
2. Do not treat ASF as one food; as if they are the same. Rather, each food should be named, including eggs and fish; ASF tends to mean flesh foods. The factors associated with each food's consumption should also be addressed.
3. Desire for ASFs is high. Create demand by matching desire with improved access (availability and affordability).
4. To motivate women to prepare and serve ASFs they must feel enabled—to know HOW to combine different ASF in the current meal pattern. The nutritional value of ASFs is not an important motivation.
5. Key social change themes to develop immediately are a) joint decision-making between partners; b) male responsibility for ASF procurement; c) positioning key ASFs as healthy Rwandan foods for all families.
6. Develop activities for particular segments of the OW population. For example: a) producer HH who do not consume self-produced products; b) districts in regions with the highest need c) districts where cultural preferences could determine successful ventures.
7. Invest in ASF value chains that are best able to address OW families' access constraints: small fish, eggs and milk, and, perhaps, chicken. They are in the woman's domain and most likely to be consumed. For all value chain investments, the largest impact on the OW population will be through local enterprises that offer products near consumers.
8. Increase women's control in this sector, by engaging women in production and selling; changing the HH dynamic to inclusive decision-making; shift some responsibility to men; sensitize retailers to women's needs.

INTRODUCTION

This study was developed to gain insights into the demand for and consumption of animal-sourced foods (ASF) in 8 districts of Rwanda with the purpose of strengthening the market system response to meet consumer need, especially of those vulnerable populations. Study findings provide a view into the perceptions and practices of typical families in the Orora Wihaze program area and complement what is known from other quantitative studies about the current poor consumption of ASF. What this study offers beyond others is explanations for why people choose, or do not choose, the foods that they consume with a focus on ASF. These insights that describe the reasons behind consumption patterns should allow the market system to tailor activities and accelerate progress in enabling Rwandan families to better access and use ASF so all family members can enjoy the benefits of a healthy diet that includes animal-sourced foods.

This study was in process for the entire 2020 year. Early in 2020, the study team presented the protocol and all research instruments to the Rwandan National Ethics Committee and received permission to conduct the study in March 2020. However, the field work was delayed in March due to governmental restrictions on travel and congregating in response to COVID-19, a global pandemic that appeared in early 2020. When restrictions were lifted in August 2020, the study field teams began the interview process in the districts. As such, analysis and reporting were completed through the final months of 2020. Under normal circumstances, studies that involve human subject interviews face many contingencies. In this case, these were compounded by the uncertainties of COVID-19. It required tremendous persistence on the part of the entire Orora Wihaze management and study teams to complete this work. We are particularly indebted to the field team, including the Orora Wihaze District Program Managers (DPMs) and District Nutrition Advisors (DNAs) who did the interviewing and local teachers who served as note-takers, translators, and transcribers. This group had to work under difficult and changing circumstances. We would like to offer a special thank you to the coding team who worked tirelessly and meticulously to support the data analysis process. And our appreciation extends to the Orora Wihaze consortium partners who reviewed and gave valuable comments on the report drafts.

The study, of course, would not have value without the openness and thoughtfulness of the families and vendors who generously gave their time and kindly shared their ideas about their current practices and what might be possible under different circumstances. We are grateful and hope that this report accurately reflects their opinion.

BACKGROUND

The Government of Rwanda's development goal to bring Rwanda to middle-income status by 2035 will require an ambitious program of human capital development. Key among the factors to bring about that transformation is a well-nourished population, importantly, optimally nourished young children with improved chances of developing to their full potential. Optimal nutrition comes from the consumption of a healthy diet and the control of disease. While Rwanda is making significant strides in economic development reflected in per capita income growth, the growth in income is not translating at a similar rate to healthier diets and improved nutrition among the poorest sectors of society. Although wasting has been controlled and stunting has improved it remains high, particularly among young children in vulnerable families (32).

Current Situation

Rwanda has a poorer food consumption and nutrition situation than many countries in the region

In 2017 Rwanda remained above the average for the region in the percent of the population whose food intake is not sufficient to meet dietary energy requirements (undernourishment) (22.8% regionally compared to 36.8% in Rwanda). The 2018 Comprehensive Food Security and Vulnerability Analysis (CFSVA) in Rwanda shows that the share of the population with acceptable Food Consumption Scores declined from 79% in 2010 to 76% in 2018. This overall picture of food security is reflected in particularly vulnerable populations: In 2019-20, 22% of young children met the standard for a Minimum Acceptable Diet (MAD) (RDHS, 2019-20) and 28% of women had a diet that met the Minimum Diet Diversity (MDD-W) standard (CFSVA, 2018).

The nutritional status of a country's youngest children tends to be a good reflection of how the country is doing overall related to providing an environment where families can enjoy healthy diets and prevent disease. Rwanda has made significant progress in the fighting malnutrition, particularly in controlling malnutrition caused by extreme or sudden food insufficiency (wasting). When chronic undernutrition or stunting that represents a continual lack of optimal nutrient intakes is used as the measure, Rwanda has made progress. Between 2010 and 2015, rates of chronic malnutrition among children under 5 years decreased from 44% to 38% and based on the most recent study (DHS, 2019-20) chronic malnutrition has declined again to 33%. Although the rate is higher than the average for the Africa region (29.1%) the decline indicates significant improvement.

Why the focus on ASF

Boosting the consumption of ASF is a critical element to support Rwanda's development goals

The consumption of animal-sourced foods plays an important role in a healthy diet, particularly among the segments of population experiencing rapid physical and mental development such as young children and women during pregnancy. ASF are nutrient-dense foods that when consumed in small amounts provide quality protein (amino acids), vitamins and minerals; all nutrients critical for growth and development. Evidence supports that ASF contributes to improved linear growth of children, a marker not only of physical growth but of general cognitive and social development. A review of data from Demographic and Health Surveys in 49 countries showed that eating more than one type of ASF was associated with a 2.3% reduction in stunting (Headey et al 2018). Thus, improving the daily consumption of ASF in families' diets is important to human capital development and Rwanda's vision.

FAO Global Consumption Data places Rwandans as some of the lowest per capita consumers of protein, primarily due to low consumption of ASF; this is especially true when compared to countries with similar economic profiles. Consumption of ASF varies widely depending on household income, although overall only 21% of Rwandan households consume heme-rich iron foods (flesh foods) even once a week. In households with poor or borderline consumption scores (24% of the population), 3% of families consumed food that is a source of heme iron once a week. In 2018, an analysis of women's diets in the previous 24 hours showed that 17% had consumed a heme-iron food, 13% milk or a dairy product, and 2% eggs (CFSVA, 2018). Children's diets mirror women's diets. There is an important dietary gap that even small amounts of ASF can fill.

Feed the Future Rwanda Orora Wihaze Activity

The Orora Wihaze Activity provides an opportunity for the market system to meet consumers' needs to improve ASF consumption

The Feed the Future Rwanda Orora Wihaze Activity (Orora Wihaze) was conceived by USAID with the goal to sustainably increase the availability of, access to, and consumption of animal-sourced foods. Under the leadership of Land O'Lakes Venture37, Orora Wihaze will focus on its two objectives: 1) strengthen inclusive private sector led ASF value chains, specifically goats and sheep, fish, pigs, and chicken, and 2) increase the demand (desirability) for and consumption of ASF by women and children. Project activities will be concentrated in eight districts – Burera, Gakenke, Nyamagabe, Nyamasheke, Rutsiro, Ngororero, Kayonza and Ngoma – with a focus on households that produce ASF and in consumer households. Orora Wihaze will purposefully engage households led by women, youth, and persons with disabilities (PWD).

Orora Wihaze takes a market system development (MSD) approach to achieving its two objectives and its goal. The MSD approach aims to enable micro, small and medium enterprises, and other organizations in the market system to strengthen ASF value chains. Integrated within the MSD approach is a focus on achieving specific behavioral outcomes for market actors and consumers. This emphasis on behavior change will support the alignment of the project's two objectives to ensure they are mutually reinforcing and to build market sustainability. Activities will be designed under six broad intervention areas: production, product markets, end-market access, financial services, nutrition extension, and women's empowerment.

METHODS

The Consumption Study was designed following a thorough review of existing literature that is primarily quantitative in nature, describing food consumption and the animal-sourced food market in Rwanda (see Annex 1 for a complete bibliography). Therefore, the consumption study used qualitative methods to gain insights into the immediate environment surrounding the consumption of ASF: perceptions of ASF; decision-making related to obtaining, preparing, and consuming foods (during or outside of mealtime); and the determinants/factors that influence behaviors described in the statistics. To gain insight, the following qualitative methods were used with their associated respondent group:

- In-depth interviews/observations with child caregivers in "1,000 Day" households—those who produce at least one ASF for sale and those who are not producing ASF
- In-depth interviews with partners (fathers) in the same "1,000 Day" households—those who produce at least one ASF for sale and those who are not producing ASF
- In-depth interviews with older women (grandmothers) in the same "1,000 Day" households—those who produce at least one ASF for sale and those who are not producing ASF
- In-depth interviews/observations with sellers of ASF in local informal and formal markets and specialized shops or food stalls.

To adequately address the study objectives, Areas of Inquiry (Annex 2) were outlined and explored. Each question used in the data collection tools was intentional and directly aligned with these areas of inquiry.

Sample

As the purpose of this study was to conduct a formative assessment that can be used to generate widespread insights and address gaps in understanding, careful selection of the study sites was critical. The research team conducted a data search and informal key informant interviews to thoroughly understand the socio-economic characteristics of the target population. The review of data from the Rwandan census and Rwanda Demographic Health Survey suggests that the populations within the area of study are relatively homogenous. However, the research team identified subtle areas of distinction through the informal key informant interviews. Preliminary discussion of the site selection revealed the following important characteristics (value chain, socio-cultural attributes, occupation, religion and type of village) to consider to ensure that we would be including key features of Orora Wihaze's population — representative of our eight districts, not necessarily Rwanda's population more generally.

In order to produce data that were comprehensive and representative of the districts in which Orora Wihaze operates, the sample was drawn from all four provinces (North, South, East and West) to get a picture of the critical animal value chains and where they predominate. Within each district, villages were selected based on their ability to align with the key characteristics that are outlined in the table below. A full display of the village characteristics is found in Annex 3.

Given the characteristics of the target populations, duration of the study, and overall objectives of the assessment, the research team used two sampling approaches:

- **Purposive Sample:** The respondents for the in-depth interviews and focus group discussions reflected the key characteristics and distinctions outlined in the table in Annex 3. Within each district, one to two villages or sample areas were selected depending on the homogeneity of the district and the overall assessment sample. Basic guidance was that every cluster needs at least two sample points; therefore, if we wanted to look at perceptions and patterns in Adventist communities, we should have at least two sample points: for example, a community in Burera and one in Rutsiro. If we wanted to explore patterns in semi-urban areas, for example, we would sample part of a small town in Nyamagabe and in Kayonza. The same was true for villages where many adults work in mines or tea cooperatives. We sampled non-ASF producing households at varying distances from the local markets that sell ASF.

- **Convenience Sample:** While the initial sample of vendors was identified through the information shared at the household and community level, any other ASF vendors that were interviewed and observed were sampled based on their convenience to the main research sites.

Recruitment

For each selected community, Orora Wihaze district staff arranged with the community agent or the health facility to obtain a list of families who have children under the age of two. Working with the community leader, the list was divided by the families who are known to produce ASF and those who do not produce any ASF food.

Using the list(s) and with the help of someone who knows the community district well, Orora Wihaze staff visited the homes of every second or third potential participant. A recruitment form was completed for each person contacted during this process and informed consent was administered for those who agreed.

Data Collection

Data were collected over two to three weeks by District Program Managers (DPMs) and District Nutrition Advisors (DNAs), supported by locally recruited teachers who took notes. DPMs and DNAs underwent two intensive training sessions, one in-person and one virtual with the notetakers. The interviews were conducted in Kinyarwanda and translated to English for data coding and analysis. Finally, all interviews were recorded and validated (by supervisors) against the translated interview transcripts. Table 1, below, shows sample size of caregivers, partners (fathers), older women and vendors who were interviewed in each target province and district.

ASF Producer Status				North			South				East				West				
				Burera		Gakenke	Nyamagabe		Nyamasheke[1]		Ngoma	Kayonza			Rutsiro			Ngororero	
		ASF Prod.	Non ASF Prod.	Gashore	Rwinkuba	Musave	Murangara	Biraro	Buvungira	Mikingo	Rwamutabazi	Muganza	Rubirizi	Gahengeri	Kinunu	Kivugiza	Gihari	Nsyabire	Nyanza
Caregiver	64	37	27	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Partner	32	18	14	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Older Women	16	14	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Vendor	22	--		3		3	2		3		3	2			3			3	

Table 1: Sample size of caregivers, partners, older women, and vendors interviewed in each target province and district

Analysis

Data were coded and analyzed using Dedoose Software.

Limitations

I. COVID-19: The COVID-19 pandemic was initially identified in Rwanda in March 2020, approximately one week prior to the original launch date of the Consumption Study. As a result of

[1] Nyamasheke district administratively pertains to the Western Province, but for management purposes Orora Wihaze has placed it in its southern zone. To align the findings of the study with program's management units the results of Nyamasheke are reported with those of Nyamagabe for the south.

the national lockdown, the study was postponed until June 2020. While the researchers were mindful of the shocks and distress that were inevitable during this time and they were considered during study re-design and data collection, analysis, and interpretation. A few of the circumstances require mention:

a. Travel restrictions around the country prohibited the use of many of the interviewers trained prior to the delay, who lived in or around Kigali. Because interviewers could not travel between districts, additional Orora Wihaze DNAs and DPMs were brought on and trained as interviewers. Local teachers, temporarily unemployed because of the pandemic, were trained as notetakers. The training and supervision of this team was done virtually, which was not standard practice, though it was thorough and consistent,

b. Masks, group gathering limitations, and social distancing measures created challenges in the data collection.

c. Additional pandemic-influenced delays caused some interviews to be rescheduled, canceled, shortened, etc. As a result, some gaps exist in the data. Triangulation measures were employed to attempt to generalize and synthesize in absence of missing data.

II. Social desirability bias was suspected in some responses from partners, particularly about decision-making and women's empowerment. As such the themes were triangulated through various questions, targeting all study respondents.

III. The pool of older women respondents was limited, and many of the women did not reside within households with children under 2 years of age as originally planned. As a result, selection bias may have contributed to responses that are not generalizable for certain areas of inquiry. Data from these respondents were triangulated and, in some cases, omitted from analysis (e.g. household decision-making).

FINDINGS

The findings presented throughout this report represent key distinctions observed between respondent segments defined by geography, ASF producer status, gender, etc. Unless otherwise stated, there are no differences in the results by respondent segmentation. The report is laid out per the schematic below.

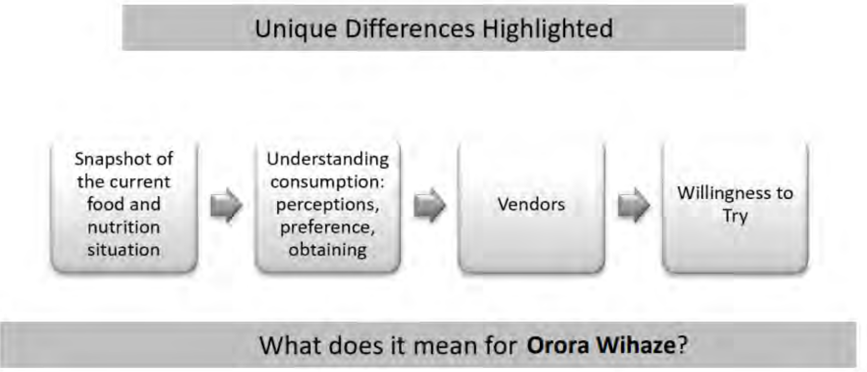


Figure 1: Schematic of report layout

CURRENT FOOD AND NUTRITION SITUATION

The COVID-19 pandemic has impacted food consumption

NOTE: This study was not designed to rigorously investigate the impact of shocks on food consumption and food systems, especially in response to COVID-19. However, since data collection took place during a period of lingering restrictions and because the international community forecasted a resulting deterioration in global food security and nutrition, a series of questions were added to understand how the COVID-19 pandemic may have impacted household-level and individual diets and the food environment and whether such impact must be considered when framing the findings, conclusions, and recommendations from this study.

Almost all respondents said that COVID-19 has impacted their diet, resulting in reduced food consumption. This includes reduced meal frequency (sometimes from two meals to one per day) and reduced food variety. Respondents described the following ways COVID-19 has impacted their diets:

- Loss of income, which impacted the ability to purchase food (both quantity and variety)
- Increased food prices and decreased availability of common foods (because of movement/travel restrictions and border closings). For example, Irish potatoes, sweet potatoes, beans, and fish were all noted frequently as foods that are no longer available, though foods from all food groups were cited.
- Increased need to provide additional meals for children and youth during school closures, as school lunch was no longer provided.

> *"[Our] family's diet has changed. Before the lockdown, we used to go to sell small fish in Ruhengeri or Byangabo markets, but we no longer go there. We only sell in nearby small markets and larger markets. The income has decreased. There are some foods we no longer buy because of not having enough money by consequence the diet has changed." – Caregiver*

Among respondents who did not change their diet because of the pandemic, there are no notable identifiers to explain why they may not have been impacted.

Though vendors were not questioned specifically about the impact of COVID-19, they mentioned that the availability of foods and the purchase of foods by their clientele declined and that their method of food preparation (e.g., raw vs. cooked) changed. Many vendors operate as bars or restaurants, which remained closed during the start of the pandemic. This closure limited the availability of cooked meat (specifically brochettes) and other popular prepared foods.

Daily meal patterns: 24-Hour diet recalls for breastfeeding women and children 6-23 months show poor diet diversity and low meal frequency

Breastfeeding women

Most women who completed their 24-hour recall[2] did not meet the standard considered the Minimum Diet Diversity for a healthy diet (88%).

To compare with national statistics: 12% of women, all breastfeeding, who reported on their diet met the Minimum Dietary Diversity recommendation (MDD-W). [The national MDD-W is 28%, CFSVA, 2018; disaggregated by wealth categorization the study population fell at the level of the poor wealth quintile and within the categorization for people within Ubudehe 1 [per CFSVA findings].

There are distinctions of note:

[2] 24-hour dietary food recalls were conducted close to, but not exactly, according to WHO recommendations (questioning using the list of foods/food groups was truncated). Also, although in some cases amounts of foods consumed were noted they were approximate and there were no weights taken. Therefore, diet diversity may be over-estimated because "credit" was given if a food such as a legume or ASF was found in a sauce.

- Northern and Southern Province have the poorest diet diversity. More than three quarters of women there consume three or fewer food groups in a day.
- No woman consumes more than five food groups (out of 10 total) during a day. Of the six women consuming five food groups, half were in Eastern Province in Ngoma and Gakenke.

Critical to meeting the MDD-W threshold is the presence of ASF in the diet. However, ASF is rare in women's diets. Of the 51 women who responded, 21 had an ASF as part of her diet: 18 respondents consumed small fish; 5 milk (in porridge); 2 meat (pork & beef); 1 egg, the day prior to the interview. Producing ASF in the homestead did not influence consumption.

Compounding the poor diet diversity is the low frequency of daily meals. The two-thirds of women eat one or two meals each day. Alarmingly, about 10% of women report eating only once in the previous day. Of note: Half of these women only consumed food from one food group, tubers.

There are differences between provinces:

- Only in Western Province do half of women have a meal frequency of three to four times in a day.
- Southern Province has the highest level of women eating only once per day. It is particularly acute in Buvingiri.

Looking at women's diets overall, there is no one community or district that stands out as being "above average." Examples of the best meals across the sample include:

- Green banana, sweet potato, beans, small, dried fish, and carrot with other vegetables
- Irish potato, beans, dried fish sauce, green vegetable
- Green banana, silver fish, green vegetable (amaranth), groundnut sauce

Poor diets, however, have clustered in a few spots in each province:

- North: Gashore
- East: Kayonza, especially Muganza and Rubirizi
- West: Rutsiro, especially Gihari
- South: Namasheke, especially Buvingiri

Children 6-23 months

As reported by their caregivers, the majority of children less than 2 years of age did not meet the minimum standard for diet diversity (MDD) for a healthy diet (70%) or for a minimum acceptable diet (MAD) (82%). Of note is that all children are breastfeed, even those who are almost 24 months old.

To compare to the national averages: 30% of children in the sample met their Minimum Dietary Diversity. Most participant children reaching their MDD were in their second year of life. The national MDD for children 6-23 months old is 40%, although it increases as children get older and is about 44.5% for children in their second year of life (CFSVA, 2018).

21 of 50 children had ASF in their diet. Small dried or fresh fish were the most common ASF. Small fresh and dried fish were consumed in areas near the Lakes and small dried fish were used in communities some distance from the Lakes. Only in communities very distant from the Lakes, did women report lack of availability of small, dried fish. A few children in Eastern and Western Province had milk in their porridge, two children had meat (pork and beef), and three had egg. Children's ASF consumption mirrored their mother's.

There are distinctions to note in children's diet diversity:

- In Northern and Southern Province, diversity was the poorest; across these two provinces only one child consumed a diet with four food groups.

- Western Province had the best food diversity; it was the only province where children consumed foods from more than four food groups in their daily diet. Ten children consumed four or more food groups. These children were from Kinunu in Rutsiro District. Among these children were the three children who received eggs.

Two-thirds of the participant children met their minimum meal frequency (three meals/day). Children fared better than their caregivers because, generally, they eat porridge in the morning. While most children ate three times a day, only a few had four meals, and no one ate more than four times.

Combining breastfeeding with meeting the minimum meal frequency and diet diversity offers an indication of children who are receiving a Minimum Acceptable Diet (MAD). Most of the sample children are not meeting the MAD standard (82%); 18% do meet it. [Nationally 22% of children 6-23 months meet the MAD standard (RDHS 2019-20).]

There are provincial differences:

- No child in Northern or Southern Province met the MAD standard.
- Just under a third of children in Eastern and Western Province met the MAD standard. The inclusion of ASF was the element that made the biggest difference, allowing children to reach this threshold.

Examples of the best meals received by these children across the sample include:

- Green banana, small, dried fish, groundnut sauce/oil, fruit, and sorghum drink
- Sweet potato, dried fish, peanut sauce
- Irish potato, beans, small, dried fish, green vegetable, oil

Other foods in the diet: The food frequency recall shows that the majority of ASF are rarely consumed during a year

Caregivers completed a food frequency recall to complement the 24-hour dietary recall. (Respondents were prompted about specific foods.) This recall allows for an assessment of other foods that might be eaten by an individual on a regular basis but may not have been consumed during the previous day. It also offers a glimpse into seasonal foods and foods eaten only occasionally.

There are only a few foods that people mention as *"daily or near daily"* foods: Green banana, sweet potato, green leafy vegetables, and beans.

Foods that can be expected to be in the family diet on a *weekly* basis include: Cassava, corn flour, vitamin A rich fruit, dried fish, and, for some families, milk.

Foods that are consumed *several times a month* are: Taro/cocoyam, rice, Irish potato, and sweets (although about a third of people say they eat these last three foods rarely).

Foods identified by the majority as eaten rarely, but where at least 25% said they eat them *occasionally* are: Eggs, fresh fish, sour milk and beef.

Foods *rarely* consumed by almost all families are: Cheese, goat milk, yogurt, goat meat, chicken, pork, and sheep.

UNDERSTANDING CONSUMPTION: PERCEPTIONS, PREFERENCE, OBTAINING

Perceptions: Perceptions of ASF tend to be gendered and tied to a person's identified economic status

A robust collection of questions was designed to understand underlying, but potentially widespread, perceptions, social norms, and cultural beliefs about foods. Caregivers, partners, and older women were given eighteen cards - each displayed one food item per card. Those food items included pork, beef, rice, soda, goat, chicken, milk, cooking oil, sweet potato, small fish, green vegetables, carrot, beans, eggs, taro, mango, green banana, and groundnuts. After confirming their knowledge of each food picture, respondents were asked to place the food cards beside either the person (a man or woman or in a "neutral" area) or characteristic (sickness, strength, weakness, etc.) that comes to mind when thinking about each food. This collection of findings highlights general food association by gender and other states of being. They provide an explanation as well as any additional stratification of those findings (by location, respondent type, age, religion, etc.) if they were apparent and useful for general understanding and Orora Wihaze utilization.

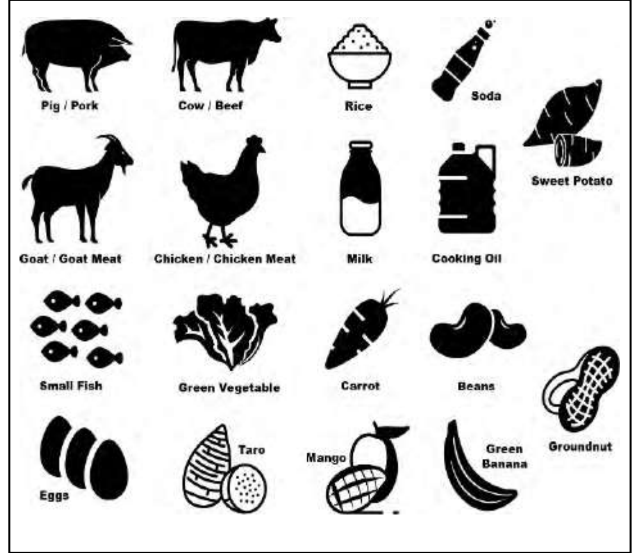


Figure 2: Food items represented on food activity cards

Foods associated with men

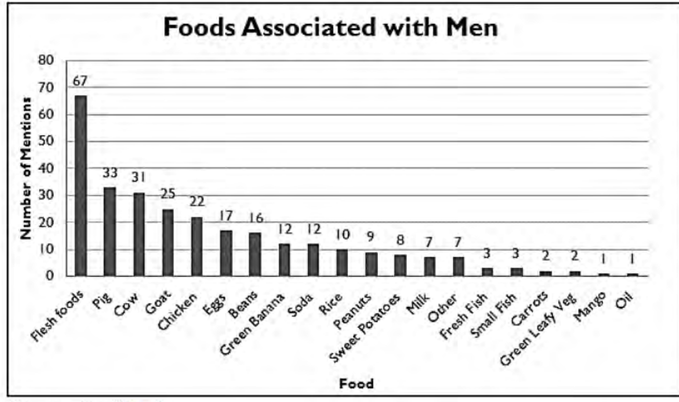


Figure 3: Foods associated with men

Animal-sourced foods, except for milk and fish, are overwhelmingly associated with men. Flesh foods, as mentioned throughout this section, capture any mention of a specific meat or a general mention of the word "meat," but do not include milk, eggs, or fish. Of 101 unique responses, 67 mention that flesh foods are associated with men. The bar graph in Figure 2 shows both the collective mentioning of flesh foods and the specific food - ASF and others - that were associated with men.

There is no significant variation in this response when looking at the finding by respondent type (caregiver, partners, older women).

In most villages, most respondents associate ASF/flesh foods with men, except for Gahengeri, Gashore, Kivugiza and Muganza. In these villages most respondents do not mention flesh foods as being associated with men. In two villages, Gihari and Mikingo, all respondents say that meat is associated with men. When controlling for respondents in these two villages, the narrative shows a clear linkage with bars, restaurants, and pubs. Four of the six respondents from Gihari mentioned that flesh foods are associated with men because they consume them in these bars, restaurants, and pubs. This perception was shared by all three respondent types.

"By considering general understanding I gave pork and fish to men because normally they are the ones who eat it in larger numbers in bars than women. Large numbers of women do not like [to] behave like that in our community. Women are usually busy with home tasks and some of them dislike pork because of its bad acts when it is alive." – Caregiver from Gihari

"[I] surrendered the pork meat to the men because it is prepared in the restaurant and the men are supposed to frequently go into the bars and the restaurant. They take pork meat with sweet banana." – Partner from Gihari

"We normally share what I cooked here. But I put meat on the men's side because they usually eat out of the home in bars." – Older Woman from Gihari

All other respondents from Gihari and Mikingo mention that flesh foods are associated with men for reasons related to money, mobility, and gender roles. This is briefly highlighted below but will be further explored throughout this report:

"It is their responsibility to buy meat, he is the head of the family." – Caregiver

"[For] eggs it is because they like moving or voyaging. [For] pork meat, the men get considerate payable jobs which incite them to buy it. So, women cannot afford to buy it. We always get less money than the men. [For] goat meat it is expensive; no woman can afford it. [For] chicken it is also very expensive, the reason why no woman can afford to buy it." – Caregiver

Bars, Men and ASF

Bars in Rwanda are typically located in trading centers, alongside other vendors and in local markets along main streets to ease accessibility. Most of them are mixed with restaurants (commonly known as "Resto-Bars"). Those who patronize these places include men who live nearby or those who or are in that area for a short stay. In bars, people usually drink beer and eat roasted meat accompanied by green bananas or potatoes, though some bars serve boiled meat as an additional dish.

16% of respondents mentioned that men eat ASF at bars. Of the respondents that mention that men eat ASF at bars – they mainly mention pork, goat, and eggs as the top sources of ASF. It should be noted that, according to this study's data, it is culturally taboo for women to visit bars and therefore they say they are not privy to the meats that are traditionally served there unless their partners bring them home.

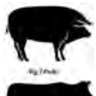
"[That's] how we have found it in our society, you can't find a woman in restaurant or bar eating goat or pork. Unless a husband brings it home for cooking." – Caregiver

Brochettes (Rwandan kebab) are mentioned frequently throughout the study as food that men eat when they are away from the house, especially at bars and restaurants.

Foods associated with men: Pork, beef, goat, chicken

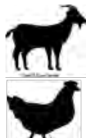
From the aforementioned quotes and bar graph data in Figure 3, it is clear that pork and beef are the meats that are most specifically associated with men. 33 of the 101 respondents specifically associate pork with men and 31 associate beef with men.

When looking at the geographic distribution of responses, there are minimal differences at the district level. Further exploration at the village level shows:



- None of the respondents from Gahengeri (Kayonza), Mikingo (Nyamasheke) and Muganza (Kayonza) associate pork with men.
- None of the respondents in Gahengeri (Kayonza), Gihari (Rutsiro), Kivungiza (Rutsiro) and Musave (Gakenke) associate beef with men.

Though less frequently mentioned than pork and beef, goat and chicken are also associated with men. 25 respondents associate goat meat with men, and 21 respondents associate chicken meat with men. There is also similar geographic variation in responses for these two types of meat, but a few differences are reported:



● None of the respondents in Gahengeri (Kayonza), Mikingo (Nyamasheke), Muganza (Kayonza) associate goat with men.

● Rwamutabazi (Ngoma) is the only village where most of the respondents associate chicken with men. In all other villages, some respondents associate chicken with men, but not most.

Eggs were mentioned less frequently than other types of ASF. According to respondents, because men are often in motion, eggs offer a small option that can be eaten while they are in transit and away from home.

> *"Foods that are associated for the men are pork (No, no, no, pork can't be for women). This is because men have money and access to income-generating activities. Women do not have money. If you are given 200Frws how can you dare to buy cow meat? What if a woman has an income-generating activity, what would be the change in the purchased food? A woman with money is a man. She behaves like a man. This is a rural area where gender equality and equity are yet not applicable." – Caregiver*

> *"Food that is associated with men include pork, chicken meat, and milk. Back some years ago, in the culture, they said that milk is reserved for men. Why have we put these foods on men? Men are respected. They are some of the things that you can give him while you can't consume them. They are superior to women. Men are household leaders." – Caregiver*

Foods associated with women

In the previous section, the findings show a clear association between flesh foods and men. When collectively examining the cards that were associated with women, only eight respondents said that flesh foods are associated with women. ASF that are associated with women are eggs and small fish. Overall, ASF is not associated with women, and instead vegetables are linked to women. These food associations will be explored in the coming sections. There were also several findings about the affordability and availability of the foods associated with women.

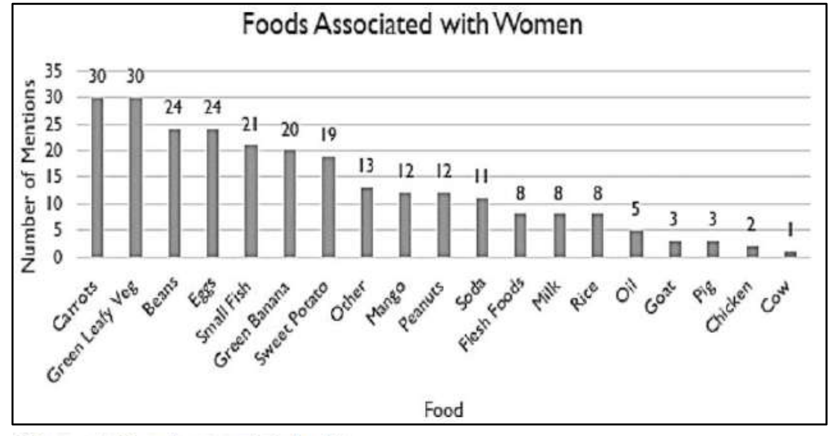


Figure 4: Foods associated with women

> *"The foods in the women's column are associated with women because they like soft foods and bananas, and women like to buy cheap foods, because they don't want to waste the money of a family, as they are thinking more about the development of family than men do." – Caregiver*

Some respondents elected to place foods in the middle – but for a variety of reasons including:

- Association with children
- Association with both men and women
- No clear association with anyone
- The most consistent responses reflect that everyone should share all food if it is available

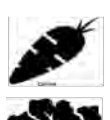
> *"In fact, all foods are placed in the middle, because except for some people who have bad attitudes, no one in a family should be eating alone. Both women and men should be sharing everything they have in a home." – Older woman*

> *"If financial capabilities remain constant, I think all these foods (those in the women's column, those in men's column, and those one I did not classify) can be considered as foods for all of us,*

women, men and youth. What we don't eat is not because we don't like them, it is because we cannot afford them." – Partner

Foods most associated with women: Carrots, green leafy vegetables, beans

Study findings show a clear link between vegetables and women. Carrots, green leafy vegetables and beans are thought to be foods that women consume, are allowed to purchase or need to support biological processes and social responsibilities related to reproduction.



"These foods are associated with women simply because a woman can purchase them without asking me." – Partner

"For women, we target the cheapest food because you cannot buy meat or any other expensive food on your own and ignore your family, it is not possible." – Caregiver

"The foods that help women increase breast milk. Women have to take care of babies, so they purchase what they can feed their children, these are things they can afford." – Partner

ASF associated with women: Eggs and small fish

53% of respondents from Nyamasheke, which is bordered by Lake Kivu, associate small fish with women (though only one respondent associated small fish with men in the same district). In Nyamagabe, which is not bordered by a lake, respondents also associate small fish with women. ASF associated with women are mentioned because of the women's role in parenting and pregnancy.

"Eggs and fruits because women take off their children. These foods are associated with women because they need body nutrients due to having little life. When a woman is pregnant needs fruits and eggs." – Caregiver

"Dried fish (This is the meat for women)." – Caregiver

In Rwamutabazi, about half of the respondents said that flesh foods are associated with women.

No one from Biraro, Buvungira, Gahengeri, Gashore, Gihari, Kivugiza, Mikingo, Musave, Nyanza, Rubirizi associates flesh foods with women. The eight responses came from Rwinkuba, Rwamutabazi, Nsyabire, Murangara, Muganza and Kinunu.

Foods associated with physical strength and weakness

The foods that are associated with giving body strength are, in order of frequent mention: beans, sweet potatoes, yams, and meats. While there are other foods associated with offering strength, beans, sweet potatoes, yams, and meats are collectively mentioned at a significantly higher frequency. Approximately one third of the respondents mentioned meats as foods that offer strength.

Much of the sample included farmers whose perception of foods that are good for strengthening the body are those that give farmers enough energy to perform duties without difficulty and keep the body satiated throughout the day.

"Sweet potatoes, taro and beans are associated with giving the body strength because when you eat them you get strength and become satiated so that you can be able to work." – Caregiver

"Sweet potatoes, coco yams and beans provide energy in our body. When you have eaten them, you may even spend two days without eating, you really feel strong." – Caregiver

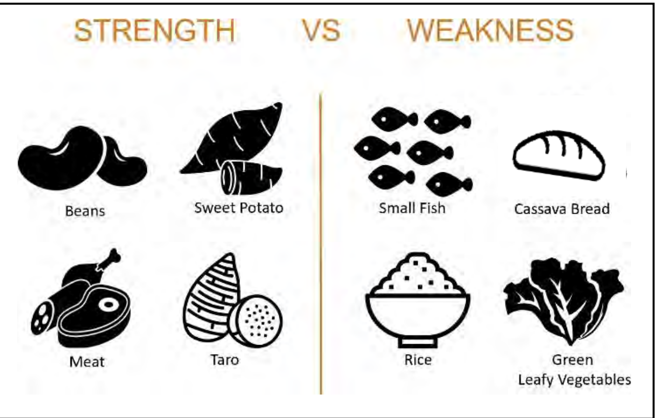
"Sweet potatoes and beans provide strength in the body because when one has eaten them, he can go to the farm and cultivate courageously." – Caregiver

Respondents also specifically note that because some foods have a tough or hard texture, they can offer you strength.

"Potatoes and cocoyam - They are tough and last longer than others in the stomach, the foods that last longer in the stomach can make the body stronger, especially during working hours." – Caregiver

"These foods are hard when you eat them; you feel strong. When you consume sweet potatoes [or] beans you feel strong which is different from consuming bananas." – Partner

Figure 5: Visual representation of those foods associated with physical strength or weakness



Continuing with the idea that you take on the physical properties of the food when you eat it, respondents mention that when you eat an animal that has strength, you also gain that strength.

"Yes, all of these food give the body strength, you can consume any animal having strength and you gain that strength, and when you eat beans you can gain strength since you are consuming good and healthy foods." – Partner

Unlike foods that give strength, respondents demonstrated less consensus about foods that weaken the body. Nearly half of the respondents say that there are no foods that weaken the body. Cassava dough/bread and small fish (cooked in oil or soup) are among the most consistently mentioned "weakening" foods because they increase lethargy. Rice and green leafy vegetables are also mentioned but without a consistent explanation of how/why they make the body weak.

Exploring food-related cultural norms through special occasions

As a part of the food cards activity, respondents were asked which foods they would expect to eat during a special occasion. Special occasions mentioned included New Year's Day, Christmas, and weddings. Typical foods and drinks served during special occasions include rice, green banana, green leafy vegetables, soda, and meat. Specifically, almost 90% of respondents who answered this question said that meat is expected to be available during special occasions and approximately one third of those emphasize cow meat.

Figure 6: Visual representation of those foods associated with special occasions

About 50% of respondents in Burera and Nyamagabe districts mention cow meat.

"I would expect to be served cow meat, cooking oil, carrot, green plantain, beans, rice, green leafy vegetables, and Fanta because they look like modern food for us (farmers) who live in the countryside." – Caregiver

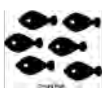
"Beef is food that I would expect to be served at a special occasion. Because beef is cheaper than poultry and goat meat." – Caregiver

"Yes, there are foods eaten at special occasions such as meat; we rarely eat them because they are expensive. We eat them when celebrating Christmas and New Year. Even before, when we were children, our grandfather used to slaughter one of the livestock and tell us to take some to the relatives and neighbors or invite them to come and share with us on these special days (Christmas and New Year). There should be beer as well." – Older woman

For those respondents who did not expect to have meat during special occasions, eggs, small fish, beans, sweet potatoes, and rice are mentioned as common foods. These respondents were dispersed across the districts and evenly represented caregivers, partners, and older women.

Most popular ASF

Despite the considerably low consumption of ASF in the study population (as seen in the 24-hr recall and food frequency findings) and its clear association with men, all respondents generally like ASF and would like to consume their favorite types. Pork, beef, and small fish are the most popular ASF across the study population. This aligns with the findings from the food card associations where pork and beef are the key ASF associated with men and small fish are associated with women. These ASF are preferred over others because of their general availability, affordability (especially pork), and taste.



While there is not much variation in popularity by respondent type or ASF producer status, there are distinctions by location.

In Ngororero, 100% of respondents say that beef is the most popular type of ASF, but only 29% of respondents mention pork's popularity.

Egg consumption

Because egg consumption is so low across Rwanda, respondents were asked specifically about their perception of eggs. The perceptions are similar across all respondent identifiers. In general, respondents either expressed that they liked or had no strong aversion to eggs. Eggs are described as having important nutritional value for everyone in the household by most respondents – especially by caregivers. The respondents further highlighted the nutritional benefits that eggs have for adults but emphasized their benefit to children. In some cases, respondents even suggest egg consumption is preferable to meat.

"Yes. It is better to feed the baby eggs than meat, because eggs are the cheapest and better for the child's health than meat." – Caregiver

"I eat eggs when I am sick only to get vitamins and improve recovery." – Caregiver

"We know that eggs are good for the growth of children. As parents, we would like to rear chickens so that we get eggs to feed our children." – Caregiver

"Eggs are very preferred to help our child in growing healthy. So [there is] no problem with them." – Partner

Despite the widespread understanding that eggs are nutrient-rich, the dietary recall and food frequency show significantly low consumption of eggs. The food card activity also does not clearly associate eggs with any particular person. Furthermore, when asked about ASF preference and popularity, respondents did not mention eggs. According to the respondents, the infrequent consumption of eggs and its unpopularity in households is a result of price and associated status. Respondents mention that eggs are expensive and associated with improved economic status, as suggested in the excerpts below.

"Eggs are consumed but with a bad understanding that [they] are for wealthy people." – Caregiver

> *"Most people tend to sell eggs so that they solve other problems." – Caregiver*

> *"The producers/farmers sell eggs instead of eating some. Our understanding is that eggs are for [money] making, not for consumption." – Caregiver*

> *"People in this area like eggs but the problem is money to buy. You cannot buy eggs. Each is 100rwf while children have no food. I think people do not eat eggs because of poverty. If you have, they can eat." – Caregiver*

> *"Eggs are for citizens. For rural we buy dried fish." – Caregiver*

A notable finding is that even though raising chickens would remove the structural barriers of availability and affordability of eggs in the household, having chickens does not increase consumption because the value is seen more in selling the eggs.

Household production: ASF producers (men and women) sell their animals or their products and do not prioritize their own ASF for household consumption

ASF production

Caregivers and respondents shared information about the animals that they raise, detailing who owns them, who makes decisions about them, and how they are utilized. The most commonly raised animals are cows and chickens, followed by pigs, goats, sheep, and rabbits. Several respondents in the North and East note that they are able to raise cows because of Girinka, a government program that seeks to increase access to and consumption of milk by providing low-income households with a cow. Of the respondents who produce ASF, most families own more than one animal. On average, families who own cows own one to two. Families with chickens own as many as thirteen.

Nearly all animals are raised near the house, within the compound or within five meters from the home. Mostly chickens, but some goats and pigs, are raised in the household. They are free range during the day and inside during the evening and night to protect from theft. Observations and responses confirmed that many of these animals are kept in or near cooking areas.

Ownership and rearing

Overall, there is joint ownership of animals within the households. A few respondents raise animals that are owned by neighbors and relatives. Though ownership is generally shared, mainly caregivers (with some support from children) are responsible for caring for the animals. However, many households mentioned that the whole family shares the responsibility of caring for the animal. In general, the type of animal does not dictate who should care for it.

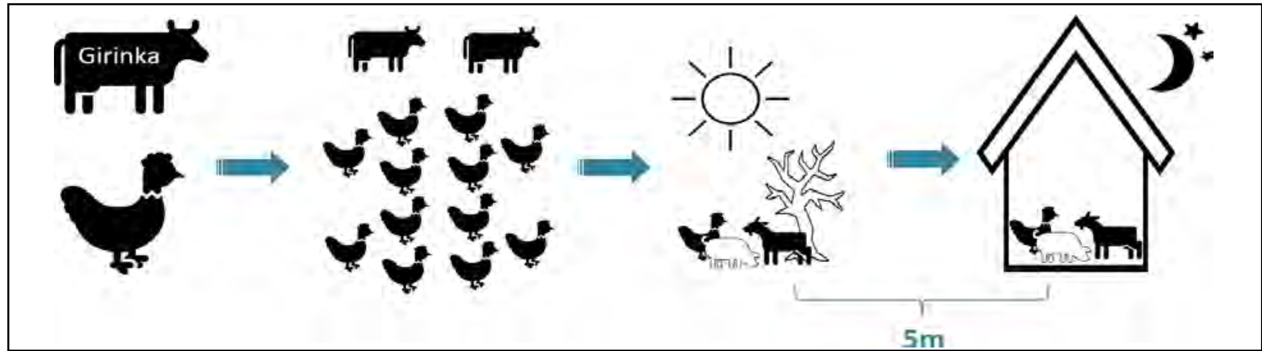


Figure 7: Visual representation of where ASF are generally raised and kept

Selling, consumption and decision-making

According to respondents, most households sell their animals and ASF products or use them for manure production. Seldom do household members consume ASF products from the livestock that they rear.

If the animal is owned by someone outside of the household, the animal's owner makes the decision about whether the animal is sold, used as fertilizer, or consumed. If the animal is owned by someone within the household, most decisions are mainly made jointly by the husband and wife or solely by the husband. However, women are allowed to make decisions about specific animals. In this study, some women alone are allowed to make decisions. All of those women can make decisions about chickens only.

Chickens are specifically mentioned for 'solving family problems.' Because live chickens retail at a high price, families tend to sell them when needed.

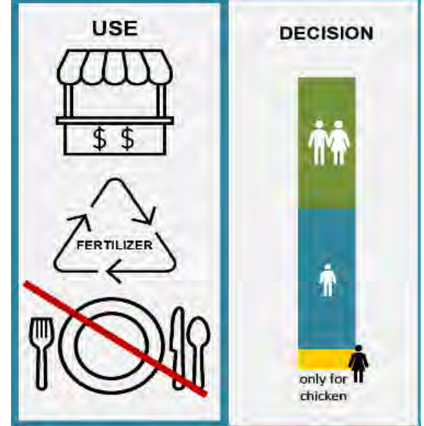


Figure 8: Primary uses of animals/ASF products is shown on the left; the right bar shows decision making

There is limited mention of consuming the animals that are raised by ASF producers. Although chickens are mentioned as being critical for income generation, they are also the ASF that is consumed most by producers, specifically their eggs. When animals are eaten at home, they are consumed by everyone in the household. While this study finds that ASF is generally perceived as a food that is associated with men, when it is available in the household it is eaten by everyone.

Purchasing: ASF are overwhelming purchased by men and women, although men tend to purchase for themselves away from home and women for family meals

Caregivers and partners shared details about the ASF procurement process in their household, including their preferred location, the frequency of procurement and the decision-making process for procurement. Table 2 outlines the responses.

Table 2: Key procurement locations, average procurement frequency, and decision-making in purchasing eggs, fish, milk, and meat

Value Chain	Procurement Location	Average Procurement Frequency	Decision-Making
	Shops, markets, vendors and neighbors	For those who purchase eggs - about half procure weekly and half procure monthly	Location, Quality, Vendor Trust/Relationship are not factors considered in decision-making. The key factor in decision making is the availability of money to purchase
	Shops, markets, vendors	For those who purchase fish – most purchase weekly	
	More regular procurement happens when the neighbor or they have a cow.	For those who purchase milk - about half procure weekly and half procure monthly	
	Shops, markets, vendors	Of those who purchase meat, over half purchase yearly. Some purchase monthly	

In general, ASF can be purchased from anyone who sells it. There were no dominate procurement locations. However, milk purchase was more frequent if the respondent had a neighbor with a cow.

Eggs and milk are procured weekly by half of the respondents and monthly by half of the respondents. Most families procure small fish weekly. Meats are rarely purchased by respondents – most mention yearly purchases. These procurement findings are consistent with the food frequency recall data.

Procurement specifically for children under 2 years of age

Caregivers consider children when purchasing ASF. They mention that they purchase small fish, eggs, and milk, especially for their young child. Because most families all share the same food, ASF is not purchased *specifically* for the child all the time, however children are kept in mind when making food choices. Responses are consistent across all descriptors.

Decision-making and women's empowerment

Throughout this study, several questions were asked to better understand women's level of agency and their ability to make decisions about food consumption, especially ASF, in their household. A set of questions was designed to specifically explore partner perceptions of women's rights and whether partners would be open to making an accommodation to support increased agency by the woman if it was necessary. (See also decision-making dynamics under 'Willingness to Try'.)

100% of respondents answered affirmatively by saying that women should have equal rights. According to the respondents, empowering women to make decisions helps improve the family and reduces disagreements in marital partnerships.

Previous findings demonstrate respondents explicitly mention that men control the money and therefore have the right to eat more expensive foods (e.g., meats). The responses also say that they play key roles in making decisions about consumption and procurement. However, all partners say that men are willing to share these responsibilities with women.

12 of the 31 responses to this question explain that women in their household and community already independently make decisions or share decision-making responsibilities in the household. However, none of these responses were from partners in the South.

> *"The woman is like the engine (the heart) of the family, it is better to give her value for the family to develop."*

Though specifically asked, none of the men spoke about accommodations that they might be willing to make in cases where women are not empowered to support decision-making. The men in the study instead spoke about the government's responsibility in supporting women and suggested that women should join empowerment groups to help them use their voice.

Exploring and overcoming ASF procurement obstacles

Caregivers were asked to explain the obstacles (if any) that make it difficult to obtain ASF. The findings did not vary by age of respondent, number of children, age of youngest child, or ASF producer status. Most of the respondents mention that they encounter obstacles, most of which are financial. The financial barriers are interrelated and include lack of money, lack of employment, and cost of ASF compared to other foods.

All other obstacles relate to the availability of ASF in the respondents' communities. Some ASF is only sold in distant markets, thus respondents must travel outside of their village, which is an added financial burden. Respondents also mention that there is a shortage of animals in general.

Notably, all respondents from Burera say that they can get all foods that they want from animals. In addition, there is a small sample of respondents who report that they do not face obstacles when obtaining ASF. All but one of those respondents resides in the West but they are from different villages.

Fish is the most desirable but unavailable animal-sourced food. 100% of respondents from Gakenke say they would like to have fish but cannot get it.

The study explored ways that respondents might overcome food purchase obstacles by asking questions about food exchange and trading in their village. There is significant evidence that food trading and exchanging is not popular in Rwanda. Of the 52 coded responses, 40 say that they do not trade or exchange food. Most simply say that these methods of obtaining food are not common, but those who elaborated say things like:

> *"We do not exchange food here in Gakenke. If you don't have money to buy what you need, you are doomed."*

> *"No, we don't. It doesn't exist. We only provide money for getting food [especially] from animal sources."*

Of the 12 who say that they trade for food, eight listed a specific food, milk.

Perceptions of how to overcome obstacles obtaining ASF

When older women and caregivers were asked what they believed they could do to overcome problems they had mentioned in obtaining more ASF in their family's diet, responses varied.

Caregivers are divided about what they think is needed. There is variation based on whether respondents were in an ASF-producing household and where they lived.

Half of the caregivers felt they needed to get animals or the money to procure animals.

> *"If we have a cow, we can get milk easily. Raising a hen can enable us to eat eggs."*

Most of these women are in non-ASF producing households. Three-quarters of non-ASF producing households say they need animals to boost their consumption of ASF, although several other data points within this study suggest that families who own animals do not eat ASF more often than those who do not own animals.

Some caregivers say that they need more support from partners and other family members to obtain ASF or to get the money to purchase the foods. Of these caregivers, the majority are in ASF-producing households.

> *"The idea is to work as a team so as to get and find all the basics to satisfy our needs."*

Some caregivers mention that they need to work harder or get a job to be able to serve ASF. There is no difference between caregivers in producing or non-producing households, but there is a provincial difference. Most of these caregivers are in the Western or Southern Province.

> *"The main advice is to work hard for self-reliance and affordability of buying."*

A few caregivers and a few older women say that they hope that prices of ASF would go down and that they would look for cheapest animal-sourced foods: eggs, rabbit, and pork (if there was no alternative).

A few caregivers and half of the older women feel there is nothing that could be done to provide ASF for the family; a few say only God could change things.

Three caregivers say they would join associations of women to see if there is anything that could be done and to combine their resources. All these caregivers are in ASF-producing households.

Understanding foods eaten outside household and option to bring foods home

As animal-sourced foods are often expected to be consumed outside of the household, the study explored the frequency at which these foods are consumed outside the house, by whom, and (specifically partners') willingness to bring foods back to the household.

There are mixed responses in terms of whether the majority of ASFs are eaten at home or outside of the home. Many partners say that they spend most of their time at/near home, so their meals are taken there. Other partners say they frequently eat foods outside the home, for example, when they are on a journey or at a bar.

> *"I cannot finish the whole day without consuming sambuusa made with small fish (called Indege in local language) with tea with groundnuts. As you see our center has small shops that have tea and different [snacks]. It is where we sit with others and we talk while consuming." – Partner*

When caregivers describe their experiences with eating outside the home, they specifically mention ceremonies, holidays, or visits to family – all of which happen infrequently. Most say that this happens only a few times in a year and the meals vary.

Nearly half of the partners (caregivers were not asked) state that they either do not eat food outside of the household or they do not bring any food back home. The reasons for not bringing food back home include lack of money and insufficient amount of remaining food.

> *"No, I don't bring to them because when you are in fete, you are served a quantity that is enough for you [only]." – Partner*

> *"No, I do not take food home for my family, it is very rare. Most of the time I have money to buy only one or two eggs. That is why I do not take any to people at home." – Partner*

For those respondents that do bring food home, they bring ASF (pork, fish, egg), avocado, snacks (sambuusa or biscuit), or drinks (juice or tea). These data are illustrative and inconclusive as there were not enough repeat mentions to draw conclusions.

> *"I cannot bring cooked food at home, and I cannot come empty handed, so I bring a biscuit and cake for the children." – Partner*

> *"Yes, sometimes I bring sambuusa to my family because I know they like it too" – Partner*

> *"When I get money, I bring an egg or an avocado." – Partner*

> *"I bring home pork meat if I have money because it is my favorite meat." -Partner*

> *"Yes, I sometimes bring meat at home by surprise." – Partner*

EXPLORING VENDOR PERCEPTIONS AND BUSINESS

To better understand the role that other market actors have on ASF consumption, the vendors who service the caregivers and partners in this study were interviewed and observed. Many vendors mentioned that they were not operating as normal because of the pandemic. According to vendors, availability of meat and demand from customers has decreased because of national lockdown regulations. This change in operation should be considered throughout this section.

Vendor business perceptions: Vendors sell a variety of ASF and see high demand

None of the vendors in the study sample sell ASF from their own production. All ASF are purchased from a producer and then sold in their shops. The commonly sold forms of ASF include pork, beef, sheep, rabbit, goat, and chicken.

Chicken is infrequently mentioned. According to vendors, chicken is not preferred by consumers due to unaffordability and size. It is more expensive than other ASF, and its small size lends itself to a low value.

Vendors also sell eggs, milk (including cow's milk, goat's milk, and sour milk) and small fish, though these are not regularly sold.

Most vendors sell a variety of ASF products. Only a few mentioned that they specialize in selling or preparing goat meat, beef, milk, pork, or small fish.

Vendors operate in a kiosk, bar or restaurant, in their house, in the open marketplace, and by visiting households in the village. Many of the vendors' operations double as abattoirs and bars. Here, meat is slaughtered and prepared for consumption on-site.

Demand for ASF

The vendors reported that they sell all of their ASF products every time they operate, even though most said that there are other nearby vendors who sell the same products. Although they tend to sell each time they operate, it is unclear if there are gaps in operation because of food shortages. Some vendors mentioned that procurement of products is inconsistent.

> *"Sometimes eggs become scarce. I may spend 2 days without eggs, because here we used to have youth cooperatives that raised chickens, but now they closed their business. We no longer have enough eggs. Before the closure of that youth business for chicken, I used to buy I000 eggs and sell it in 4 days, because here they consume eggs a lot, but now eggs are expensive (one at 150 rwf) and we take much of our time going to look for eggs in different villages and sometimes you don't get them." – Vendor*

> *"I sell goat meat daily except when I could not find where to buy it. Sometimes, I may pass two or three days without goat meat. A goat may be bought at 30,000 rwf or 40,000 rwf or 50,000 rwf or 70,000 rwf. For cow meat, we work as a cooperative of Rwinkwavu slaughters, so I sell it when it is my turn to sell cow meat, once or twice a month. I buy a cow and it is slaughtered in Rugunga village. Some meat is sold in Rugunga and other meat is sold in Kayebe village (this village is a neighboring village of Rubirizi). Cow meat is available either once a month or twice a month. In a cooperative, a member buys a cow and sells it, but he has to contribute monthly in a cooperative. Only a member of a cooperative can sell cow meat." – Vendor*

About half of the interviewed vendors sell their products in different forms.

- Eggs are sold raw, boiled or as an omelet.
- Milk is sold both fresh and fermented.
- Goat and beef is sold raw or as brochettes.

ASF purchaser

When vendors were asked about who typically purchases their ASF, they had the following responses:

- Where brochettes are sold, men buy meat. Women only purchase meat if asked by their husband.
- Men buy cooked meat and eggs. Women purchase raw meat and small fish.
- People like to buy boiled eggs because they said eating an egg is like eating a chicken, so if they cannot afford a chicken, they eat egg instead.

Advertising

Most vendors do not promote their commodities through advertisements. For the few that do advertise they use the following tactics:

- Phone regular customers to inform them when fresh meat has arrived,
- Position their newest products in the front, as a form of advertisement,
- Use signs outside of the establishment that promote different foods,
- Hire a person to announce fresh foods around the village, and

- Encourage purchase by sharing different ways to cook the product (e.g. mixing them with vegetables).

Most popular ASF

Organ meat, across all vendors in all provinces, is mentioned as most popular.

> *"The most wanted meat is organ meats (Zingaro) because at about 10:00 AM all Zingaro are all finished. Maybe because [they] are easily prepared and are cheaper that other meat." – Vendor*

> *"The [favorite] meats are grilled organs meats (Zingaro, heart, liver, etc.) compared to other meat. The organ meat is delicious, and it is mostly served on prior order. They are quick in cooking and require little time to prepare. If these organ meats are not available, they are replaced by muscle meat." – Vendor*

In addition to organ meat, goat meat (specifically meat from the head) and pork (specifically meat from hind limbs) are mentioned as popular foods. Pork is popular because of its affordability. Lastly eggs are mentioned for their popularity.

> *"People like to buy boiled eggs because people say eating an egg is like eating a chicken, so if they cannot afford a chicken, they eat egg instead." – Vendor*

GAUGING CAREGIVERS' WILLINGNESS TO TRY DIFFERENT ASF

All respondent groups were asked for their viewpoint regarding trying or increasing the amount of specific ASFs or feeding specific ASFs to their children. The questions varied slightly by respondent group.

Opportunities: The majority of caregivers are willing to try to serve ASF or serve it more frequently, although many have conditionalities

Meat

Caregivers were asked whether they would be willing to try to serve more meat more frequently (chicken, beef, goat, or pork) to their family and/or children.

All caregivers, but one from a family that does not eat meat, are willing to try to serve meat. However, opinions about how easy it would be are mixed.

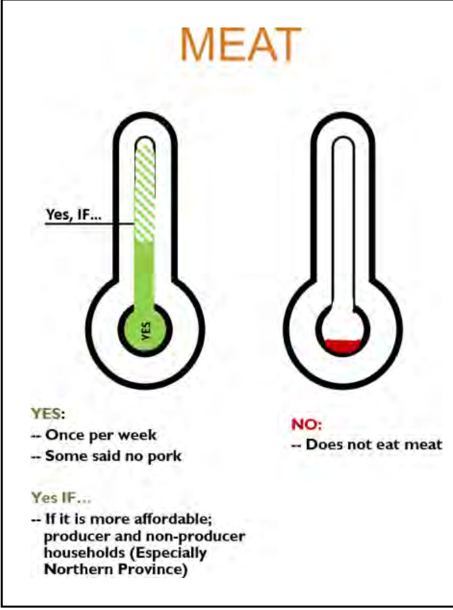
Citing no reservations, about half of the caregivers are willing to try all types of meat although several specify that they cannot offer meat more than once a week and a few of these caregivers specify that they will not serve pork (especially Rutsiro).

About half of the caregivers are willing to serve meat but say they do not have money to do so or to offer meat with any frequency.

"(Laughing), where can I find it? I would try any kind of meat, but I don't have the means."

"We cannot find the money to buy meat every week, but we wish we would be able to do so, because meat is very good for both children and adults."

Figure 9: Gauging caregiver willingness to serve meat more frequently



Money and/or unavailability of meat are constraints for almost all caregivers in the Northern Region. In the south and eastern regions, about half of the caregivers say money is a major impediment to being able to serve meat with any frequency.

Money is cited by more caregivers from non-ASF producing households (half) than from ASF producers (one third) as a reason they have trouble offering meat. Although several caregivers in ASF producing households say their use of meat is restricted to about twice a year when an animal is slaughtered.

Organ meat

Caregivers were asked about purchasing and serving organ meats like liver, and especially to their young children.

Overwhelmingly caregivers are willing to try to obtain and serve organ meats. Although some express constraints, constraints are fewer here than for non-organ meat. Many caregivers had never cooked organ meats or given them to their child. Those willing to try say:

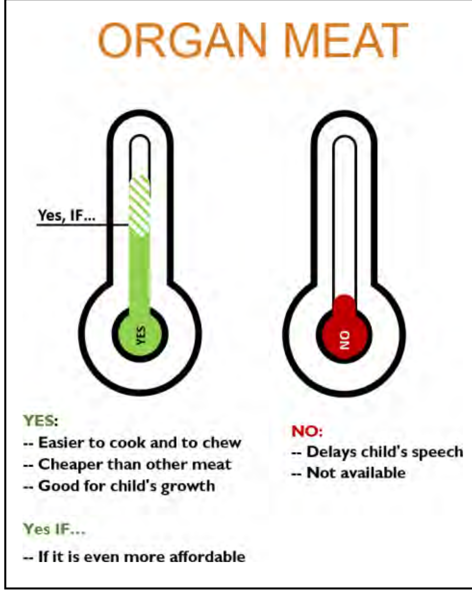
"Organ meats are even cheaper than other meats."

"They (organ meats) improve (children's) growth."

"They (organ meats) are the easiest one's to cook and consume."

"(Organ meats are) easy to chew."

Figure 10: Gauging caregiver willingness to serve organ meat more



Among those willing to try, but with some reservations, about a third say that they are prevented from putting the idea into practice because they cannot afford these foods.

"I can serve them (organ meats), but I don't have the money to buy them."

Half of those citing financial issues are in Northern Province.

The financial constraint is cited equally by caregivers in ASF-producing and non-producing households.

About one-fifth (20%) of caregivers say they are not inclined to try to serve organ meats, especially to a child.

Most of these caregivers say they would have problems feeding these meats to their child because they have been told that these meats delay children from speaking. These caregivers are mostly from Eastern Province and have a child 7- 15 months of age.

A few caregivers say they cannot try this recommendation because they never find these meats available to buy.

A few caregivers say that they do not find that these meats "make a tasty sauce."

One caregiver says the family does not eat meat, and another says the family does not like organ meats.

Fresh fish

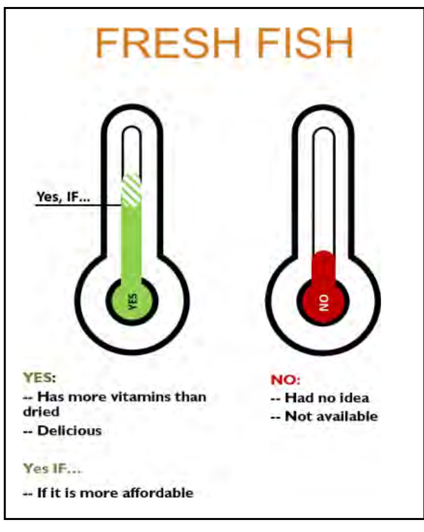
Caregivers were asked about purchasing and serving fresh fish, especially to their young children.

The majority (three-quarters) say that they are willing to serve fresh fish, even to their young children. Fresh fish is preferred because:

> *"In dry fish I thought that all the vitamins go because of the sun."*
>
> *"It is delicious."*
>
> *"It is what we have; we live near the Lake."*

Of those willing to try, some (~20%) say their challenge is either enough money to purchase fresh fish or availability of the fresh fish.

Figure 11: Gauging caregiver willingness to serve fresh fish more frequently



Southern and Western Province has the highest percentages of caregivers already using or willing to try fresh fish with their children because of their proximity to the Lakes. They appear to be using primarily fresh small (silver) fish.

One caregiver mentions the need for caution because of bones when giving fresh fish to children.

About one quarter of the caregivers say that they could not try to serve fresh fish primarily because it is not available where they live and they have no idea about it.

Two people who live in fishing areas say they prefer dried fish because they do not spoil.

Dried small fish or fish powder

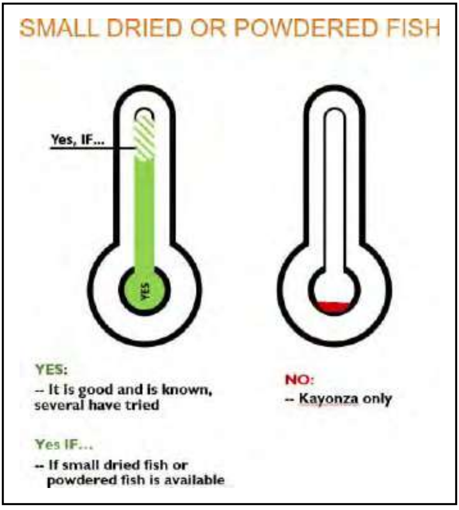
Caregivers were asked about purchasing and serving small dried fish or small dried fish powder to their young child.

All but two of the caregivers respond yes, they are willing to/want to feed small, dried fish or fish powder to their children.

Three-quarters of the caregivers say they have no reservation or constraint to doing this. One third of these already use dried fish or dried fish powder when they feed their child.

> *"I used to mix small dry fish with the food as they are, and my children are in good health."*
>
> *"Yes, this has been taught by our health community agent since before and we try to do so."*
>
> *"Yes, because it can help a child to eat all food without separation and selection."*

Figure 12: Gauging caregiver willingness to serve dried or powdered fish more frequently



There are some caregivers in Northern and Southern Province who say they want to use small dried fish and powder, but they do not have the financial resources to purchase the fish.

"I would love to use powdered small fish if I had money."

"I used to add small dry fish to my children's food but now I do not have money to buy it."

There are a few caregivers who report that they do not have access to small, dried fish in their markets. Most of these caregivers are living in the Southern Province in Nyamagabe.

The two caregivers who are unwilling to try small, dried fish with their child are from Eastern Province: Kayonza. One woman with a child about a year old says her child is not old enough for the dried fish and the other says her family does not use small, dried fish.

Goat milk

Caregivers were asked whether they would be willing to use goat milk and to give it to their children. Opinions are divided among those who are willing, many with conditions, and those who say they cannot offer goat milk. Just under two-thirds of caregivers say they are willing to try goat milk.

Of these:

About half do so without reservation, many citing nutritional benefits of goat milk.

"Yes, it is even more nutrient rich than cow milk."

"Yes, because we know that milk is one of medicine to fight stunting."

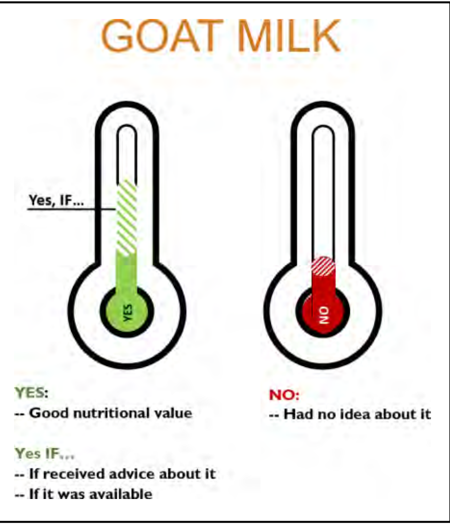
About half cite availability barriers.

"If I could find goat's milk, I could offer it to my children and there would be no challenge."

"I have heard from people and radio that goat's milk has protein and helps children to grow up well, but in this region this milk is not available."

A few people say they would be willing to try goat's milk if they received advice about it.

Figure 13: Gauging caregiver willingness to serve goat milk more frequently



Many caregivers (~40%) say they would not offer goat's milk to their child because they have never seen it used and they know nothing about it.

"I cannot give goat's' milk to my child. I don't have information about that milk."

"I don't even know. I cannot give my child before I test it."

A minority of caregivers say they would not give goat milk at all because:

"Goat's milk is not accepted in our culture."

"I can't offer it to her because people do not consume it."

While there are no big differences between provinces in the number of caregivers accepting or saying no to goat's milk, Eastern Province has the fewest caregivers accepting goat's milk without citing a condition that must be met for them to try. Most of these caregivers cite lack of availability as a major constraint to their trying goat's milk with their child.

Because goat's milk has been promoted over a long period, older women were asked their opinion about goat's milk and giving it to children. They are divided in their opinions:

Just over half agree that it is good; they mentioned past use of goat's milk.

"Long ago, it was said that goat's milk is good and can heal a child suffering from diseases. If it was recommended for the family, I can do it. Before there was ignorance, but we nowadays know what is important or not, so I can try it since it is very important to my life."

Some who are willing to use it said:

"I can't drink it unless it is recommended by a doctor, but I can give it to the children."

"I can take it only because of hunger."

The older women who are unwilling to try goat's milk are divided between those who do not believe that goats give milk and those who say they know nothing about the practice of drinking the milk.

Sour milk

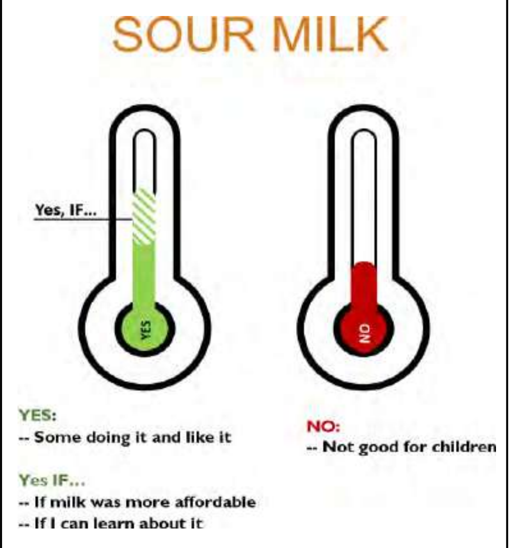
Caregivers were asked about serving sour milk to children in their porridge.

The majority (about two-thirds) said they are willing to try sour milk. Of these, the majority has never tried the practice, but are open to trying it. Three caregivers say they currently use sour milk and like it.

Of those willing to try sour milk for their children, some (20%) said they can only do it if they had the money to buy milk.

Caregivers in Southern and Western Province are more willing to try this practice while caregivers in Eastern and Northern Province are evenly split. Cost of milk seems most prohibitive in Northern Province.

Figure 14: Gauging caregiver willingness to serve sour milk more frequently



The third of caregivers who are unwilling to try the practice said that they do not believe that sour milk is good for children. They do not give the consequences of the practice. One or two caregivers mention that one has to know how to make sour milk properly.

Eggs

Caregivers were asked about purchasing and serving eggs (multiple times a week) to their family, especially to their young children.

Almost unanimously, they agree to try to offer eggs more frequently saying that eggs are liked and that they are "nutritious" and a good food for children.

Some caregivers offer specifics on how often they feel would be feasible for them to feed eggs, especially to their children. The range is two to four times per week, with most saying three times per week is the most that can be expected.

Close to half of those who agree to try offering more eggs to their children cite financial constraints to doing so in practice.

"There is no problem in giving eggs to the children. The only challenges are the income shortage."

Financial constraints to offering eggs are cited by all but one caregiver in Southern Province and by the majority of caregivers in Northern Province.

About one quarter of the caregivers, often those who say they face a financial barrier, say there is also a problem with the availability of eggs, and they feel they would need to have a laying hen to be able to offer eggs with any frequency.

The two caregivers who say they would not try to give eggs say the family does not like them and that it is not good to eat eggs more than once a month.

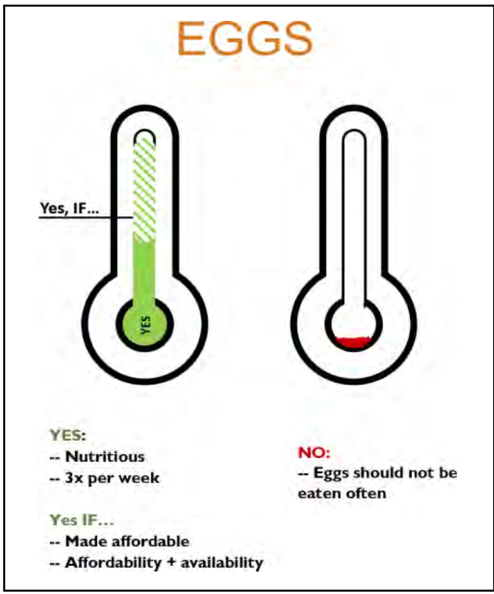
Eggs are often a food that carries deep seated cultural taboos related to who can eat them and the consequences of eating eggs. Therefore, older women were asked their opinion about eggs and whether they would encourage eggs for children.

Unanimously they agree that eggs are good.

> *"I think eggs are good foods to be consumed by anyone, anytime. Especially for young children."*

> *"No problem about eggs. Eggs are good for health, and when I find money, I try to buy them for my family."*

Figure 15: Gauging caregiver willingness to serve eggs more frequently



A few offered that eggs could not be eaten every day, because that was not good, and a few mentioned that money to obtain eggs is a problem.

Opportunity hurdle: Ability to try new practices, including shifting some purchasing responsibility, is often tied to decision-making dynamics between partners and the family economic situation

The need for permission to purchase ASF, especially to try a new food

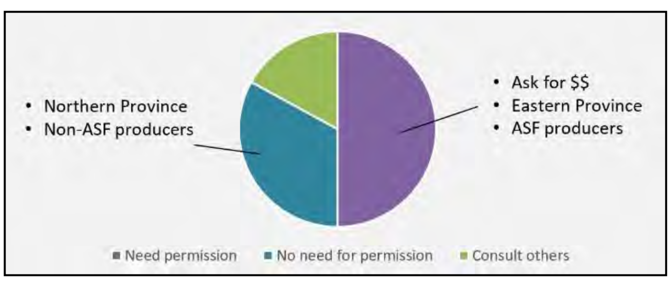
Caregivers were asked if they would need to get permission to try new foods and if yes, from whom. There were a variety of responses in terms of the need for permission and who they would ask.

Half of the caregivers say they would talk with their husband or partner, it seems, primarily because they would be asking for money. In the decision to try a new food a few caregivers mention their husbands, but they also mention other family members, including children.

> *"I would only speak to my husband because he is providing money to buy different food products for the family."*

> *"Yes, we can discuss it with my husband together."*

Figure 16: The need for permission to purchase ASF



Caregivers from households that are ASF producers are twice as likely to mention consulting their husband than caregivers from non-producer households.

Almost half of the caregivers who mention consulting their husband are from Eastern Province.

About one-third of the caregivers say they would not need to consult anyone; they make decisions by themselves. The majority of these caregivers are in non-ASF producing households. They tend to be from Northern Province.

> *"I can ask for information or advice to make a decision, but I can decide on my own."*

Caregivers also mention consulting their mother or an older woman; a community health worker or someone who has already tried it; other women; a neighbor or a trusted friend.

Male partners were asked if they would need permission or need to consult anyone if they were going to buy ASF for the family, and if yes, who.

The majority of partners say they would consult their wife or partner (permission is not mentioned, rather consultation).

A minority of partners said they would not consult anyone; they make these decisions on their own. All of these men reside in Eastern Province. A few respondents said that they primarily make these decisions, but occasionally they consult their wife.

Two partners in Southern Province said they would consult someone outside their family: one a health worker and the other, the person who is helping them with chicken raising.

Asking male partners to take more responsibility for ASF food purchases

Caregivers with partners were asked if they would be willing to ask their husbands/partners to take more responsibility for ASF purchases.

The majority (three-quarters) respond that they would, although some have reservations.

Slightly more than half of the caregivers are willing to talk with their partners about taking more responsibility with no reservation, either to buy ASFs or to buy more animals.

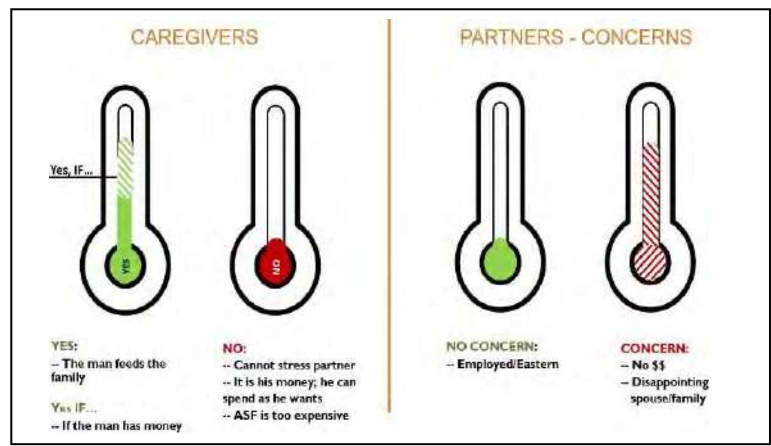


Figure 17: Caregiver willingness to ask partners to take more responsibility to purchase ASF; and partner's concerns about taking more of this responsibility

> *"Yes, I would, because it is the man that feeds the family."*

> *"...she would ask her partner to increase the number of goats and chicken reared."*

> *"Yes, I would, and I always ask him to bring something once having money."*

All of these caregivers are in ASF-producing households.

Just under half of the caregivers who say they would ask their partners say they would do it only when the partner has money.

> *"Now my partner doesn't have enough money to afford them; if he does, he will not hesitate to buy them."*

> *"I can tell him, depending on his financial ability."*

Many of these caregivers are in Northern Province.

Some of the caregivers (19%) say that they would not ask their partners to take on this responsibility for a variety of reasons.

> *"I cannot stress my husband asking him to buy things he cannot afford."*

> *"No, I can't ask him that. He cannot accept it."*

> *"No, because he has many responsibilities."*

"It is needed, but I cannot ask for it because it is expensive."

"If he gets money he can go to the vendor of meat (Mutariyani) and will consume himself. Money which has a role for the household is for the women."

A few caregivers offer other thoughts about their willingness to ask their partner:

"But it depends on what we're having at home."

"When I have the ability to find it myself there is no reason to ask."

Partners were asked about their concerns around being asked to obtain ASFs or more ASFs for their families. Overwhelmingly, the men cite the lack of financial resources as a concern. Some mention that they are unemployed and without money for food.

A few of the respondents express worry about disappointing their partner by not having the resources to provide ASF if asked.

A minority of partners say they had no problem getting ASF or more ASF for their families. Of these, all but one lives in Eastern Province and all but one are laborers, not farmers (producers).

CONCLUSIONS AND RECOMMENDATIONS

Defining Orora Wihaze Behavioral and Social Change Themes

The findings from this study should allow Orora Wihaze to define priorities and the behaviors that are critical for Orora Wihaze families to achieve the desired project outcome of improved diet diversity for young children and women. While all the Orora Wihaze behaviors cannot be defined at this juncture, a few critical ones tied to improving consumption are clear. Through dialogue, balancing income generation with consumption needs, and the feasible partnership opportunities particularly for product development and end-market solutions, behaviors more specific to value chain and geographic area will be defined.

Behaviors

As each Orora Wihaze intervention area is reviewed in light of these findings, it will be critical to start each review by focusing on what the intervention can do to enable the key behavioral outcomes for consumption (see below). That means how to address demand issues of availability and affordability for the most promising ASF value chains for increasing consumption.

Recommendation: The Orora Wihaze behavioral outcomes to improve diet diversity would be:

- Caregivers include ASF in the family's food each day.
- Caregivers feed children less than 2 years of age an ASF every day.
- Note: National guidelines encourage eating an ASF at every meal (NCDA and Ministry of Health). That seems out of reach of the Orora Wihaze population, given that many people are eating ASF only occasionally during a week.

Recommendation: Improved daily meal frequency cannot be forgotten; thus, an additional Orora Wihaze behavioral outcome would be:

- Caregivers eat three times a day, taking a morning meal with the children.
- Sub-behaviors can be determined when Orora Wihaze knows more about feasible partnerships.

Recommendation: Key to reaching the behavioral outcomes is male engagement and these enabling behaviors:

- Men purchase ASFs for the family when they are consuming ASF outside of the home.

- Retailers who provide cooked ASFs to men at bars and restaurants sell a "family package" (as either a cooked brochette or raw meat) to men as they pay for their meal.

Define which ASF

Each ASF is different in the minds of the Orora Wihaze population. Some are associated with men, others with women; some with wealthy people, others are clearly for people with less income. Flesh foods are distinct from other ASF products.

> **Recommendation**: Orora Wihaze must be mindful when promoting ASF not to lump them together and not to show a table or basket full of these products. In fact, the definition of the behaviors and the messaging package should be as specific as possible to the food, and to *how* to use it. Extremely practical advice is required. Caregivers cannot feel overwhelmed. Rather they must feel that the use of specific ASF is within their abilities, i.e., the recommended behavior is doable.

Create Demand

Demand is created when consumer desire is matched with access (availability and affordability) of the product. The study showed that the biggest obstacle to promoting increased consumption is not the desire for ASF. Rather it is the ability of households in the areas of Orora Wihaze operations to access ASF.

> **Recommendation**: Therefore, to drive demand Orora Wihaze's activities tied to boosting production should focus on those foods within the buying power of Orora Wihaze caregivers and ensure distribution closer to consumers to respond to their need. As production activities are developed, the specific behaviors tied to use of each product can be defined, the critical pathways developed and support for their consumption can proceed apace. (See value chain recommendations.)

Looking at factors beyond access, the major issue is not that the Orora Wihaze population does not understand the nutritional value of ASF foods. In fact, for many foods, they articulate the value of these foods for children's growth, and some foods they identify for children recovering from under-nutrition. Required in the first phase of promotion, as activities are developed to address access, is attention to two underlying factors influencing behavior: gender dynamics and perception of who is "entitled" to eat ASF. These social norms are seen in:

- The poor purchasing and decision-making power that most women feel they have when it comes to buying "expensive" foods which include most ASF.
- The right of men to consume ASF outside of the home without providing them for the family.
- The perception that most ASF are for wealthy people; ASF is a luxury, not a necessity.

> **Recommendation**: ASF must be repositioned as part of a healthy Rwandan diet. A "value" food, especially value for the money when talking specifically about eggs, small fish, and milk. Combined with everyday foods like beans and sweet potato, they add to a feeling of satisfaction, not only filling the body but building strength.

> **Recommendation**: Offer practical enabling advice and demonstrations of *how* to include ASF within the family diet. Support caregivers to visualize, plan, and then try to add an ASF each day. Provide reinforcement and a way they can see their success (home reminder/score card material). Small actions, such as to give a half an egg with a meal, adding milk to porridge, and using small fish add up to a big effect.

> **Recommendation:** Engage men in ASF procurement (see above).

Segmentation of the Orora Wihaze Population

This study showed that while many perceptions and practices are similar across the Orora Wihaze population, there are also important differences within the population. These differences must be considered in programming. The distinctions include:

The differential impact of COVID-19 restrictions

Many in the Orora Wihaze population are significantly affected by the COVID-19 restrictions—both consumers and retailers. While this might be a set-back, it could also be an excellent opportunity to engage with entrepreneurs and small businesses eager to support their communities and do something different.

Families who raise animals and have ASF available without purchase

This is a critical audience for Orora Wihaze activities and behavior change. While many families raise animals, they do not raise enough or have a focus on animals that produce food like eggs and milk to allow the family to benefit. The prevailing opinion is that animals are assets, providing income, not food to the family. Of note, it is not clear that raising more animals or having more products (eggs and milk) will increase consumption without considerable efforts to promote consumption of self-produced foods.

> **Recommendation**: Seek channels that reach these producer households, such as in agriculture extension, at markets or in cooperatives or savings groups.
>
> **Recommendation**: This will have to be done with specific suggestions by ASF type and will need to include men, women, and adolescent household members. This targeted promotion effort merits consideration as part of Orora Wihaze intervention area 4.

Producer households appeared to have better communication between partners, or at least more of it. However, women in these households tend to be less autonomous, perhaps because they are not employed outside of the house.

> **Recommendation**: Encourage intra-family communication, through a recurring concept of "Discuss and Decide Together." This fits well with the social change themes that can be developed immediately.
>
> **Recommendation**: Producer households, particularly during the period of scale-up, should be supported to develop local markets for eggs and milk which currently are bought from neighbors. If local, trusted sources were developed, it could prove profitable, especially for women.

Geographic variations are important

Recognizing specific geographic differences as product and promotional strategies are developed is important given ecological and cultural differences even within Orora Wihaze districts. For example, Gahengeri, Gashore, Kivugiza and Muganza are villages that consistently showed different and sometimes conflicting trends around ASF perceptions, when compared to other villages in their districts: Burera, Rutsiro, and Kayonza. For Orora Wihaze, this is a reminder that regardless of the geographic foci of the activity, both subtle and pervasive sociocultural and socioeconomic factors should be considered, as this study shows that they influence attitudes and norms associated with consumption.

Regional differences were also notable. For example, Northern and Southern Province have significantly inadequate diet diversity, where most women consume three or fewer food groups in a day and no child met the MAD standard.

> **Recommendation**: Expansion of the fish market, especially dried fish and the development of fish products, seems a logical priority for Orora Wihaze. Promoting increased fish consumption across many Orora Wihaze districts makes sense. Most ASF promotions currently tend to leave fish out.
>
> The one place where eggs were in the diet of Orora Wihaze families was near DRC. It seems that cultural influences from DRC and trading may make this a good area to develop partnerships to improve the local egg market and to promote domestic egg consumption.
>
> In milk producing areas, sour, or cultured milk, was a traditional way of preserving the milk. Some people mentioned still using sour milk. This type of product should be explored and promoted.

Value Chains

Orora Wihaze has many ASF value chains to consider as it addresses weaknesses or gaps in the market system. Critical to meeting both Orora Wihaze objectives will be Orora Wihaze's ability to tailor value chain investments by ASF type to best match the needs of Orora Wihaze families for income and improved household diets.

Recommendation: Small fish, eggs, and milk, even goat milk, and perhaps chicken should receive priority. They are perceived as foods women control and they are the foods most likely to boost ASF consumption. The investment in animals that offer these products is needed.

Recommendation: Small business ventures that handle these value chains (fish, eggs, and milk) should receive support to keep the foods in the community rather than being sold to aggregators. Local availability of these products will stimulate purchase because the consumer wants to buy these products from local, trusted producers. And these products can be developed in multiple ways to meet other consumer needs: the sale of hard-boiled eggs to make transport easier; dried fish powder for children's food; prepared snacks with fish powder or egg; goat milk; sour or cultured milk to extend the viability of milk. All of these foods and products can be promoted specifically when they are more available.

The larger animals (goats, sheep, and pigs) are rarely eaten. Investing in these value chains, unless at a local level will do little to boost ASF consumption (although potentially boosting incomes for some). If investments in goats and pigs (sheep were not mentioned by any study participant) can be kept local, filling the demand for meat from local bars, restaurants and butcher shops then supply could be more consistent, potentially the price would drop, and the frequency of purchases would increase. Investments in small scale production of these animals to increase local supply could benefit both consumer and producer by removing the aggregator.

Of note is a high demand for organ meats among women. More exploration is called for to determine how this demand can be fulfilled. If organ meats are inexpensive and perhaps less desirable for brochettes, organ meats could be used for the pre-package meat a man could buy from a bar or restaurant for the family.

Gender Inclusiveness

Important to improving household nutrition is the ability of women to participate in, and to make decisions about, the use of household resources and to have some financial control. This does not mean a sole focus on women. Outcomes are better when women and men participate in changing the norm from male dominance over resources to shared decision-making.

Recommendation: Even as Orora Wihaze focuses on including women in ASF production and the income generated from that, the key behavior of "discuss and decide together" should be practiced.

The study reinforced the importance of:

- Investing in value chains that are within the female domain: fish, eggs, and milk.
- Developing small businesses that allow women who are not working away from home to earn income that they control.
- Supporting male responsibility for providing food, especially fleshy foods to the family.
- Sensitizing retailers of meat to women shoppers. Developing packaging that meets their needs and building trust in the products being sold by having meat inspected, for example.

ANNEXES

Annex I - Bibliography

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Annex II: Areas of Inquiry

Areas of Inquiry	
1. Household-level perceptions of ASF	Normative/non-normative view of flesh foods—goat, sheep, pig, and any other animal relevant to the targeted population
	Normative/non-normative view of fish
	Normative/non-normative perception of dairy foods
	Normative/non-normative view of eggs
	Perceptions about ASF procurement (ex. home grown vs. bought; within whose domain)
	Perceptions tied to ASF preparation/storage
	Perceptions about feeding ASF to children, pregnant women, and other vulnerable populations
2. Properties of ASF	ASF comparison to other foods in typical diet
3. Obtaining ASF Including the exploration of decision-making considerations: who decides; how is the decision made; why and how often are certain decisions taken; what are the trade-offs	Home production of ASF and its consumption
	Purchase of ASF for home consumption
	Purchase and consumption of ASF outside of the home (cooked food)
	Food safety: Storing and preserving ASF
4. Day-to-day dietary practices and the use of ASF	Family 24-hour dietary food recall; Individual recall particularly related to ASF
	ASF food frequency recall
	Family vs individual consumption, particularly the vulnerable (young children; pregnant / post-partum women)
5. Special uses (avoidance) of ASF	Special occasions
	Personal issues

Annex III: Village Characteristics Table

Province	District	Village	Characteristics
North	Burera (2)	Gashore	- Sufficient population/HH size: 915/183 - Religion: Protestant - Female Occupation: Fishing - Male Occupation: Fishing - Rural Community - ASF: Fish, Pigs, Sheep, Poultry
		Rwinkuba	- Sufficient pop/HH size: 875/175 - Religion: Egise - Female Occupation: Fishing - Male Occupation: Fishing - Rural - ASF: Pigs, Sheep, Poultry
	Gakenke (1)	Musave	- Population/HH: 890/178 - Religion: Catholic - Female Occupation: Famer - Male Occupation: Farmer - Rural - ASF: Pigs, Sheep, Poultry
South	Nyamagabe (3)	Murangara	- OK Population/HH: 900/172 - D. Religion: Protestants - Female Occupation: Aggregators/Collectors/Market Vendors - Male Occupations: Casual Worker/Manpower - Semi-urban - ASF: Chicken, Goats, Rabbits
		Biraro	- Population/HH: 746/116 - Religion: Catholic - Female Occupation: Farmers - Male Occupation: Farming - Rural - ASF: Pigs, Chicken
East	Ngoma (1)	Rwamutabazi	- Good sized population/HH: 1230/448 - Religion: Catholic - Female Occupation Farmer - Male Occupation: Farmer - Rural - ASF: Cows, Goats, Pigs - If the climate is good, the harvest will be enough. There are cow, goat, and pig in some households. There is also poste de santé in the village. Meat of cow is available at market, but meat of small livestock can be available at small center in the village.

	Kayonza (3)	Muganza	- Smaller population/HH: 736/135 - Religion: Methodist - Female Occupation: Farmer - Male Occupation: Mining - Rural - ASF: Chicken, Pigs, Goats - More households have women as head of households. Their prevalent work is working in mining. This village is among the poorest village in Nkondo. Some have small livestock, but they are not many. Most of its population does not have land even if they have been living there for a long time. They live in the land of mining and they do not have access to land.
		Rubirizi	- Population/HH: 892/213 - Religion: Catholic - Female Occupation: Farmer - Male Occupation: Farmer/Mining - Rural - ASF: Goats - Water, school are available for the community. They rely on agriculture and working in mining. The health center is far from the village (8 km) but they are planning to construct poste de sante in the village.
		Gahengeri	- Population/HH: 430/115 - Religion: ADEPR (Muslim 3rd) - Female Occupation: Small business - Male Occupation: Mining - Rural - ASF: Pigs, Goats, Rabbits, Chicken - Food items are very expensive due to bad climate but normally the land is good. Rearing livestock is hard because you should have animal shelter and many people don't have enough land for it.
West	Nyamasheke (2)	Buvungira	- Large Population/HH: 1400/239 - Religion: Catholic - Female Occupation: Farmer - Male Occupation: Tea Plantation - Rural - ASF: Small fish, Eggs, Graze Bulls
		Mikingo	- Good size population/HH: 1000/200 - Religion: ADEPR - Female Occupation: Coffee/Farmer - Male Occupation: Farmer - Rural - ASF: Pigs, Small Fish, Eggs - Some potters; near Lake Kivu
	Rutsiro (3)	Kinunu	- Good Population/HH Size: 963/224 - Religion: Adventist - Female Occupation: Cultivating/Small business (Some small fish) - Male Occupation: Cultivating/Taxi

		Kivugiza	- Population/HH: 1132/254 - Religion: Catholic - Female Occupation: Tea Companies - Male Occupation: Tea - Rural - ASF: Cows, Pigs, Sheep, Goats - Borders the lake. Most of the people in Rutsiro fall in the first and second wealth quantiles. In general, Rutsiro is lower income as a district.
		Gihari	- Population/HH: 1132/244 - Religion: Catholic - Female Occupation: Cultivating/Small Business - Male Occupation: Cultivating/Mining - Rural - ASF: Cows, Pigs, Goats
	Ngororero (2)	Nsyabire	- Population/HH: 1234/264 - Religion: ADEPR - Female Occupation: Cultivating/Small Business - Male Occupation: Mining/Cultivating - Semi-urban - ASF: Cows, Goats, Pigs
		Nyanza	- Population/HH: 800/204 - Religion: Muslim - Female Occupation: Businessman/Government - Male Occupation: Businessman/Government - Semi-Urban - ASF: Goats, Poultry