

Impact Evaluation of USDA's Local and Regional Food Aid Procurement Program (Rwanda 2017-2019)

Baseline Final Report

Decentralized Evaluation

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Executive Summary

1. This Baseline Report was commissioned by the Rwanda WFP Country Office and has been prepared as part of the impact evaluation of the Local and Regional Food Aid Procurement (LRP) Program project funded by the United States Department of Agriculture (USDA). The baseline which took place in October-November 2017 comprehensively documents the situation at the start of the LRP. It provides a benchmark against which progress will be assessed at the endline in June 2019.
2. The objective of the LRP project which started in 2017 is to improve the effectiveness of food assistance. The strategy to reach this objective is to procure food for school meals from Small Holder Farmers (SHF) through cooperatives. The focus of the project is on strengthening farmer cooperatives to promote increase use of locally purchased food for school meals. Expected outcomes include improving access to loans and markets and enhancing cooperative capacity which will be reflected in increased sales, improved quality of produce, and reduced commodity losses. At endline the evaluation will provide a comprehensive assessment of the relevance, effectiveness, efficiency and lessons learned from the intervention. At baseline the evaluation establishes key benchmarks of cooperative and SHF practices and capacity which will be monitored again at endline. Because the project has not yet started some aspects of the evaluation's inquiry can only take place at the endline. As a result the baseline report covers only eight out of the 10 questions.

Table 1 - Overview of evaluation questions and their coverage at baseline

Evaluation question	Focus at baseline
To what extent was the design of the intervention: relevant to wider context; aligned with needs of the most vulnerable groups; cognizant of the needs of male and female beneficiaries; and in line with priorities of the government and WFP partners?	Relevance of the design
What are the effects of the project on the cooperatives ability to be, to organize, to relate, and to do?	Cooperative starting situation
How does the LRP programme affect male and female SHF capacity and behavior?	Behaviour of SHF at baseline
Has the LRP contributed to creating new opportunities for male and female Small Holder Farmers (SHF)?	SHF opportunities at baseline
How does the procurement, delivery and distribution of the locally procured food modality for school feeding - which is promoted through LRP - compare in terms of cost effectiveness and timeliness to the alternative modalities of food procurement?	n/a at baseline
What is the level of participation of men and women? Are women well represented, including in leadership positions? What are the disaggregated impacts on women? Has the LRP programme affected male and female SHF differently?	Participation of men and women at baseline
What internal and/or external factors affected the project's achievement of intended results?	n/a at baseline
How and to what extent does the LRP programme contribute to producers marketing food products that meets quality standards and is nutritious, and is culturally acceptable?	Current marketing practices
How does the LRP programme affect male and female SHF income?	Male and female income at baseline
Is there emerging evidence that the cooperatives have capacity to create linkages with schools?	Linkages with schools at baseline

Methodology

3. The evaluation used a before and after approach to examining the effects of the intervention. At baseline (T₀), quantitative and qualitative data was collected using a combination of documentation/secondary data review, a survey, in-depth key informant interviews, and observation. The survey was applied to the 16 targeted cooperatives, and also covered 841 SHF and 10 primary schools. In-depth interviews were conducted with 11 cooperatives, value chain actors (producers, middlemen, buyers, agro-dealers), support actors (MFI, local NGOs, extension agents), schools and staff in schools, as well as national and local authorities and decentralized units from the relevant ministries. Data collection for the baseline took place in August and September 2017.
4. At final evaluation after the intervention (T₁), data will be collected on the same variables as the baseline, and a comparison done to determine changes in the indicators. The before and after design will be combined with a contribution analysis approach at endline which will identify whether the changes can be attributed to LRP or other interventions.
5. The baseline data collection faced some limitations. Data collection was done at a time where there was no maize and beans on the market and no marketing operations by cooperatives and SHFs. This made it difficult to have precise information on practices and processes¹. In terms of data collection, the participants in the focus group discussion were chosen by cooperative leaders which could lead to bias in terms of their level of representation of cooperative membership. The data on volumes, income and plot size is based on self-report by SHF, and there are some challenges of precision in the responses. To mitigate these issues, and to the extent feasible, the evaluation triangulated the information from survey and qualitative interviews to establish whether there was consistency in the response, and also cross checked where possible with WFP data and information from reporting.

Key Findings and conclusions

6. **EQ 1 - Project relevance:** The design of the project is relevant. The project targets some of the most important constraints that SHFs face in developing agriculture activities in a profitable way (access to inputs, credit, capacity building and development of marketing are the most important ones). LRP design is aligned with the policies and strategies of the GoR and with the interventions of development partners. Particularly LRP is fully aligned with the strong drive from the GoR to promote farmers' cooperatives, commercial cultivation of maize, and global intensification of agriculture.
7. **EQ 2 – Cooperative capacity:** LRP cooperatives have widely ranging levels of capacities. This evaluation examined cooperative capacity from the perspective of ability 'to be', 'to do', 'to relate' and 'to perform' and finds that:
 - Cooperative ability 'to be' is relatively good, though ownership and existence of a common vision remain low.
 - Abilities of cooperatives 'to do' is limited, especially as relates to management tools.

¹ The endline evaluation will take place in June-July 2019 when maize and bean from season B are on the market.

- In terms of the ability ‘to relate’ cooperatives are already connected to a network of partners but they tend to be reactive rather than pro-active, i.e. the focus is on grabbing opportunities rather than strategically defining their needs and building partnership to solve their problems or to develop new opportunities.
 - Cooperatives ability ‘to perform’ is low. Aggregation of products is limited and the majority of cooperatives does not have a business mind set. Cooperatives do not know whether they are making profit.
8. **EQ 3 – Male and female capacity and behaviour:** Male and female SHFs behaviour is driven by the need to secure household food consumption, the lack of funds to invest in production, and a focus on minimizing production risks (climatic hazards or pest attacks for example). Farmers’ exposure to good production practices is relatively good, mainly through extension support provided by the GoR. The main limiting factor is the cost of fertilisers and manure. Knowledge and use of good practices for post-harvest handling are far more limited. SHF have low capacity for economic analysis of their practices and choices. Exposure to market information is very low and is not an important factor in explaining their choices. Access to credit is limited: farmers have a good knowledge of credit conditions and there are institutions providing credit (SACCO), but farmers are not confident in credit and the conditions can sometimes make access to loans difficult.
 9. **EQ 4 – Opportunities for male and female SHF:** Agriculture is the main source of income for SHFs, but their connection with the market is low and most of what they produce is consumed or sold locally to purchase other food products. Farmers usually have a plot in the cooperative land (marshland) where they do mono-cropping and one or several plots on the hillsides where they do mixed cropping. Yields are low because of soil fertility problems, inadequate use of inputs, climatic hazards and pest attacks. Under the current cultivation and market conditions, both maize and beans cultivation are not profitable, but both can potentially be profitable (with better agriculture practices, access to inputs, investment in quality and organized sales, which are factors tackled by LRP).
 10. **EQ 5 – Procurement and distribution of school feeding:** The current framework is relatively conducive to the development of partnership and contracts between buyers and SHFs though there is no specific strategy. Big buyers are already purchasing maize from SHF and they have specific arrangements for cooperatives but it only represents a small part of their procurement. Cooperatives have a low level of awareness of these buyers and their requirements and do not yet have capacity to implement and monitor this type of contracts. Issues affecting the development of these partnerships between buyers and farmers are low product aggregation, poor quality of maize and beans produce, and the lack of contract enforcement (hence a high defaulting rate).
 11. **EQ 6 – Income of smallholder farmers:** SHFs cropping choices are mainly driven by household food needs. An important element of strategy is minimizing risks. Crops that contribute the most to farmer income are maize, coffee and Irish potatoes. Beans are not seen as a source of income.
 12. Farmers focus on limiting production risks through mix-cropping practices and use of crops that are considered as famine crops (cassava and sweet potatoes). Income generating crops are gaining importance (mainly maize). Beans are also a high priority crop for farmers.

13. With the current production practices maize and beans production are not profitable. For both crops, it is currently less economically interesting for a farmer to work one day in his maize or bean farm than to sell his workforce. Sustainability of the cropping system is an issue. It is not possible to apply the recommended level of manure and to generate profits which over time reduces soil fertility.
14. **EQ 7 - Quality of the food marketed by producers:** Current quality of maize and beans marketed by SHFs is low compared to buyers' expectations (and WFP standards). SHFs market small portion of what they produce. Production is mainly reserved for consumption. Consumption habits have changed in the last five years. Consumption of maize has increased. With the introduction of maize cultivation, LRP farmers are now eating maize flour several times per week. They have limited quality requirements (colour and dryness). Beans are consumed every day and stored by farmers. They are only sold if the household is in urgent need of cash.
15. **EQ 8 – Participation of women:** Equal numbers of male and female SHF are members of cooperative (although with variation between cooperatives) but this does not reflect in the decision making structures (which are male dominated). Factors limiting the participation of female SHF are time and capacity (given limited skills in literacy, book keeping and leadership).
16. **EQ 9 – Capacity to link with schools:** An important objective of LRP is to support the development of local procurement for school feeding programmes. So far, there is no direct linkage between schools and cooperatives, cooperatives do not supply schools. However, they do supply to local processing units that are selling maize flour to schools (secondary schools). For primary schools, apart from WFP supported schools, there is no budget for school feeding.

Recommendations

1. **Recommendation 1:** Further strengthen the LRP project's focus on SHF by paying specific attention to economic profitability for SHF of the practices that promote production and strengthen post-harvest practice. Detailed cost estimation could help in sensitizing big buyers on the price.
2. **Recommendation 2:** Consider extending the current approach to training to a more comprehensive capacity building approach, to maximize the appropriation of practices. For the LRP this would imply promoting close support by extension services and visits to work with cooperatives to develop their capacities. Looking at the current scope of LRP, this could be done through fostering partnership with other actors to provide additional capacity building to cooperatives.
3. **Recommendation 3:** WFP should consider working from an approach where cooperatives are encouraged to take responsibility to invest in their own development and should systematically make a financial contribution to any equipment or infrastructure that is provided. Similarly, the first priority should be to look at the existing market based solutions² before providing direct support.
4. **Recommendation 4:** Ensure the LRP includes specific strategies to improve the inclusion of poor and female farmers in cooperatives. In paying attention to gender inclusion in cooperatives, the specific place and roles of women in the maize and bean value chain, but also in the global production system should be analysed.

² Market based solutions being solutions for key inputs such as credit, agricultural inputs, and storage that are locally available.

Specific capacity building activities of women are recommended to increase their involvement in decision making (book keeping and leadership for example). Attention should be paid to the organisation of the activities to ensure these do not contribute to an overload of women's work.

5. **Recommendation 5:** Promote a sustainable approach to production of maize and beans through lobbying and partnership. LRP implementation partners should take account of the key factors that may affect sustainability of agricultural practice: mono-cropping, pest attacks and soil fertility, and include modules on soil conservation, agro-ecology, integrated pest management and fertility management in its approach. Specific attention should be paid to availability and access to manure and lime.
6. **Recommendation 6:** To develop business linkages between cooperatives and schools for the school feeding program, WFP should explore the option of developing linkages with local processing units as these are already providing secondary schools and are closer to cooperatives. Possibilities to develop contracts between these processing units and cooperative should be explored. This would require building the capacities of the processing units.

1. Introduction

1. This Baseline Report was commissioned by the WFP Country Office (CO), funded by United States Department of Agriculture (USDA) and has been prepared as part of the impact evaluation of the United States Department of Agriculture's (USDA) Local and Regional Food Aid Procurement (LRP) Program project in Rwanda. It is implemented by the World Food Programme (WFP) in four districts in Rwanda (Annex 1 provides insight into the locations of the LRP).
2. The purpose of the baseline is to comprehensively document the situation at the start of the LRP intervention. It provides a benchmark against which progress will be assessed at the endline. The other products of the impact evaluation are an Inception Report (finalized in October 2017) and an endline report which will draw on data collection that will take place in Rwanda in June 2019.
3. The impact evaluation combines accountability and learning objectives:
 - a. From an accountability objective, the Terms of Reference (ToR)³ for the evaluation indicate that the evaluation will (at end line) assess and report on the performance of the LRP project to help WFP present credible and high quality evidence of impact to USDA and other relevant stakeholders.
 - b. From a learning objective, the evaluation will – again at end line - provide insight into the reasons why certain results occurred or not, and bring out lessons, good practices, and priorities for learning.
4. The choice for an impact evaluation relates to the need to demonstrate impact of the intervention on the target population to external stakeholders, and in particular to USDA for which this evaluation is a requirement.
5. In line with WFP and USDA requirements, this baseline report provides information on the context and the subject of the evaluation, the evaluation methodology, and the findings of the evaluation against each of the key questions and sub-questions. The baseline report also includes recommendations for WFP regarding the implementation phase of the LRP programme. A detailed overview of the design of this baseline phase can be found in the Inception Report.
6. During the Inception phase the key overall evaluation questions from the ToR were revised and agreed. The table below shows the coverage of these questions through the baseline and end-line phases.
7. The final impact evaluation will compare the baseline and endline measurement of progress. Selected evaluation questions in the Table below will therefore only be fully answerable at the end-line, i.e. those that are concerned with sustainability, appropriateness, and effectiveness. The baseline thus provides a picture in time at the start against which the end-line will measure change and seek explanations for what worked well and what worked less well.

³ A copy of the Baseline ToRs is part of the Inception Report.

Table 2 - Overview of evaluation questions and their coverage at baseline

Evaluation question	Evaluation criterion	Data collected at	Focus at baseline
To what extent was the design of the intervention: relevant to wider context; aligned with needs of the most vulnerable groups; cognizant of the needs of male and female beneficiaries; and in line with priorities of the government and WFP partners?	Relevance	Baseline and end-line	Relevance of the design
What are the effects of the project on the cooperatives ability to be, to organize, to relate, and to do? ⁴	Effectiveness	Baseline and end-line	Cooperative starting situation
How does the LRP programme affect male and female SHF capacity and behavior?	Effectiveness	Baseline and end-line	Behaviour of SHF at baseline
Has the LRP contributed to creating new opportunities for male and female Small Holder Farmers (SHF)?	Effectiveness	Baseline and end-line	SHF opportunities at baseline
How does the procurement, delivery and distribution of the locally procured food modality for school feeding - which is promoted through LRP - compare in terms of cost effectiveness and timeliness to the alternative modalities of food procurement?	Efficiency	End-line	n/a at baseline
What is the level of participation of men and women? Are women well represented, including in leadership positions? What are the disaggregated impacts on women? Has the LRP programme affected male and female SHF differently?	Effectiveness & impact	Baseline (aspects 1 and 2) End-line (aspects 1,2,3,4)	Participation of men and women at baseline
What internal and/or external factors affected the project's achievement of intended results?	Effectiveness & efficiency	End-line	n/a at baseline
How and to what extent does the LRP programme contribute to producers marketing food products that meets quality standards and is nutritious, and is culturally acceptable?	Impact	End-line	n/a at baseline
How does the LRP programme affect male and female SHF income?	Impact	Baseline and end-line	Male and female income at baseline
Is there emerging evidence that the cooperatives have capacity to create linkages with schools?	Impact	Baseline and end-line	Linkages with schools at baseline

8. The expected users for this report are USDA and the WFP Rwanda CO who will use the report in decision making, notably related to more detailed programme design and implementation, and in informing decisions on possible adjustments to the strategies. The report is also expected to be of interest to other stakeholders who are working on cooperative and small holder farmer strengthening in Rwanda or similar settings.

⁴ We will use and adapt different tools to measure cooperatives capacity: the ability methods (South research), the governance matrix (IRAM) if relevant, the 3 circles models (SNV), the level of development of producers organization (IRAM), the PO trajectory tool (IRAM) as well as some scoring tools developed based on these tools (reference : "Sélection de références méthodologiques en analyse organisationnelle", IRAM, 2009)

1.1. Overview of the Evaluation Subject

9. USDA's LRP was awarded in 2016 and runs for a duration of two years from April 2017 to March 2019. The LRP project has a total budget of two million of which 1.36 million USD will be used for the procurement of food from Small Holder Farmers (SHF). The objective of the program is to improve the effectiveness of food assistance and the expected outcomes include increased value of sales by project beneficiaries. The food will be procured by WFP from farmer cooperatives or through pro-smallholder aggregators, and will be distributed to WFP schools as part of the school feeding programme in two districts in the South of Rwanda (Nyamagabe and Nyamaguru) where WFP is implementing the McGovern- Dole International Food for Education and Child Nutrition program. Two other districts under the McGovern-Dole Program HGSF are serving meals that are prepared using Corn Soya Blend (CSB) porridge which is donated by USDA. Of the remaining LRP budget, 127.000 USD will be used for capacity augmentation (mainly of SHFs and cooperatives) and 370.000 USD will be used for direct support costs (i.e. costs directly related to management of the LRP project).
10. In terms of beneficiaries the LRP will support primary school students and SHFs. The main direct beneficiaries in terms of project activities (capacity building and support) are SHFs who will be targeted through 16 cooperatives. These cooperatives were selected by WFP in four districts (Nyamagabe, Nyamaguru, Huye and Gisagara).
11. The total number of beneficiaries of the LRP over two years is 46.790 primary school pupils and 5,133 farmer beneficiaries (approximately 10 percent). Forty nine percent of the planned beneficiaries are female farmers, and 52 percent of the planned beneficiary pupils are girls.
12. The focus of the project will be on strengthening farmer cooperatives. Expected outcomes include improving access to financial services and markets and enhancing cooperative capacity which will be reflected in increased yields, improved quality of produce, and reduced commodity losses. As noted, the produce that is marketed through the cooperatives will in part be purchased by WFP, using for this purpose the funds of the LRP and in this manner leading to an increasing use of locally purchased food for school meals. Through these interventions the intention is to improve food security among target beneficiaries. An overview of the main project activities is found in Annex 1. The link between WFP/USDA inputs and the outputs, outcomes and impact of the LRP is explained in more detail in the LRP Theory of Change (ToC) which was drawn up at the Inception phase and is also presented in Annex 1.
13. The main partners of LRP are: USDA, the 16 cooperatives that are part of the project who will benefit from training and inputs, two Non-Governmental Organization (NGO) partners⁵ who will be supporting WFP in implementing the project, and various government ministries and departments who also provide support to cooperatives and will have an oversight and learning role in the project (MINAGRI, the Ministry of Local Government (MINALOC), the Ministry of Trade and Industry, the Ministry of Finance and Economic Planning, and the Ministry of Gender Promotion). MINEDUC (Ministry of Education) is a partner as far as school feeding is concerned and will be involved in the supervision of the school feeding

⁵ The specific NGO partners were not known at the time of the drafting of the baseline report.

components. The provincial government monitors and coordinates support for the cooperatives.

14. As noted in the IR, several other interventions by WFP Rwanda are of relevance to this operation. WFP has been supporting SHF and private sector in Rwanda since 2009. Earlier work through WFPs Purchase for Progress (P4P) programme and a follow-up pilot - the Patient Procurement Platform (PPP) - focused on increasing market access for SHF. P4P continues to be implemented by WFP, together with the Farm to Market Alliance (FTMA) initiative (FTMA is the new name for the Patient Procurement Platform-PPP). FTMA and P4P are of direct relevance to the LRP. P4P has supported over 70 cooperatives with capacity development, provision of market and market linkages since 2009. FTMA provides access to markets, finance and post-handling services for approximately 100 cooperatives. The cooperatives commit to supplying mainly maize and WFP acts as a neutral broker and facilitator bringing together potential buyers and cooperatives, and facilitating access to services.

1.2. Situational Analysis

15. Agriculture plays a key role in the Rwandan economy, contributing 33 percent of the national Gross Domestic Product (GDP). Agricultural is key to export earnings and represents over 80 percent of the total value of exports. Coffee and tea are the two main export crops and the most widely cultivated cash crops. Small-scale subsistence farmers produce most of the agricultural output. The Government of Rwanda has made efforts to diversify the country's exports by investing heavily in horticulture geared towards exports. The country produces several products as staple foods: maize, sorghum, rice, wheat, beans, soya beans, Irish potato, sweet potato, cassava and bananas. Ninety percent of agricultural production is food crops and 66 percent is consumed by producers.
16. The Strategic Plan for Agriculture Transformation (PSTA III) is part of EDPRS (Economic Development and Poverty Reduction Strategy) 2. It puts the accent on four programme areas: a) agriculture and animal resource intensification; b) research, technology transfer and professionalization of farmers; c) value chain development and private sector investment; and, d) institutional development and cross-cutting issues. The strategic prioritizes value chain development, products quality and obtaining premium prices, as well as arrangements for bulking up production in order to ease access to inputs, services and markets.
17. Cooperatives are considered important vehicles to achieve the GoRs strategic plans. The number of cooperatives in the country has expanded very rapidly over the past years (GoR, 2011; USAID, 2013). At national level, more than 8000 cooperatives are officially registered. In addition, there are also numerous informal producers' organisations. There are about 1500 cooperatives registered in the Southern province where the LRP is being implemented. There are different types of cooperatives and the way they function varies. Cooperatives also differ in their degree of success in promoting intensification, increasing market orientation and stimulating agricultural growth.
18. Rwanda has made significant progress in promoting gender equality, largely driven by strong Government commitment, and has the fifth highest score in the world on the 2016 Global Gender Index Gap Report⁶. Gender equality is enshrined in the

⁶ <http://reports.weforum.org/global-gender-gap-report-2016/economies/#economy=RWA> Accessed 07 February 2017.

constitution and Rwanda was the first country in the world to have more than 50 percent female members of Parliament (64 percent in the lower chamber). Nonetheless, challenges remain in terms of female representation in some areas, in particular in the education and health sectors. Women are also less represented in agribusiness. Women and men farmers in dual households are characterized by unequal power relations, which leaves women with very limited decision-making powers. This affects their control over agricultural assets, inputs, produce and capacity building opportunities, which results in low agriculture productivity. Thus, women's plots are typically less productive than those operated by men.

1.3. Evaluation Methodology and Limitations

19. The evaluation uses a before and after approach to examining the effects of the intervention. The table below summarizes teams members' roles and tasks. At baseline (To), quantitative and qualitative data was collected using a combination of documentation/secondary data review, a survey, in-depth key informant interviews, and observation. The survey was applied to the 16 targeted cooperatives, and also covered sample of SHF, and a selection of primary schools. In-depth interviews were conducted with cooperatives, value chain actors (producers, middlemen, buyers, agro-dealers), support actors (MFI, local NGOs, extension agents), schools and staff in schools, as well as national and local authorities and decentralized units from the relevant ministries.

Table 3 - Division of tasks among members of the baseline team

Team Member	Roles and Tasks
Muriel Visser	Team leader: general coordination of the baseline study and report and compilation of inputs from other team members. Overall technical inputs
Laure Steer	Qualitative data collection and analysis Technical inputs on cooperatives, production, marketing and organisation of the value chains
Ernest Midega	Quantitative data collection and analysis
Alexis Dukundane	Qualitative and quantitative data collection Technical inputs on school feeding

20. The data collection instruments drew on the evaluation ToC and the evaluation matrix. To ensure that the quantitative data is meaningfully collated with qualitative data collected for this study, a preliminary descriptive analysis of the quantitative data was carried out during the data collection phase, and the results were used to develop question for qualitative data collection tools. This ensured that the qualitative data collection provided a deeper understanding and explanation of the trends observed from the quantitative data analysis.
21. At final evaluation after the intervention (T1), data will be collected on the same variables as the baseline, and a comparison done to determine changes in the indicators. The before and after design is combined with a contribution analysis approach which will identify whether the changes can be attributed to LRP or other interventions.
22. The contribution analysis will be reported on at the end line stage. It will map the overall changes in the environment (more broadly therefore than those that would be picked up by the indicators that compare the baseline to the end line), and through a

rigorous process of identification will allow the final evaluation to capture the contribution of the LRP and WFP to the observed. This is deemed particularly important in the context of this intervention given that there are a multitude of different actors at local level providing support and services to SHF and cooperatives.

23. A total of 15 cooperatives were covered by the qualitative work, and all 16 participated in the quantitative survey. The survey planned to reach 782 SHF but actually reached 841 as more SHF participated in the survey than planned. All participants were provided with an explanation of the purpose of the study and with the option to withdraw at any time should they wish to do so. Individual responses were kept confidential and coded so that they cannot be related to specific respondents.

24. For the baseline study gender has been considered for all the steps of data collection:

- An equal number of male and female respondents were included in the quantitative survey.
- All the FGDs included 50% women. No gender specific FGD has been organized but a specific attention was given to women participation in the discussion.
- Some specific questions were included in KII and FGDs about place and role of women

25. The qualitative information collected was analysed to triangulate the ideas and words of the actors and with elements of context and emphasize the main issues affecting the actors.

26. Limitations

- Data collection was done at a time where there was no maize and beans on the market and no marketing operations done by cooperatives and SHFs. It results in difficulties to have precise information on practices and processes. Where possible we triangulated the information provided verbally by SHF with that of other informants.
- Cooperatives rarely have records or accounting system, which limits the information collected on production and sales by cooperatives to what they recall.
- Participants to FGD were chosen by cooperative leaders. This may produce a bias concerning how representative they are of cooperative members. The research team sought to address this by explaining to cooperative leaders that SHF selection should reflect the diversity of the full group of members.
- It was not possible to have precise and measured information concerning volumes, incomes and plot size. All the data collected on volumes, prices, plot size is the one mentioned by SHF or cooperative leaders. Triangulation with different cooperatives, and with other sources of information (sector or district agronomist and official statistics mainly) was done when available.

2. Evaluation Findings

27. The evaluation findings and the evidence to substantiate them are presented below. They are structured as a response to each evaluation question in turn, and follow the sub-questions that are in the evaluation matrix (Annex 3).

2.1. Evaluation Question 1: How relevant is the design of the intervention in terms of the context needs of the most vulnerable groups; needs of male and female beneficiaries; and priorities of the government and WFP partners?

28. Evaluation question one analyses the relevance of the intervention. It is typically a question that can only be answered at the end line stage. However, the baseline study reviewed some elements about how the project was designed.

Key findings and conclusions – Question 1

- Working in agriculture and promoting staple crops are relevant choices. Rwanda's staple food sector is growing substantially and the country still faces serious food insecurity issues.
- Supporting cooperatives to improve their production and marketing capacities through forward delivery contracts is particularly relevant. It allows farmers to access new opportunities and increase their income. Inclusion of poorest farmers in cooperatives is not a point of attention for cooperatives and local authorities.
- The project's design is in line with the GoR strategies and policies as well as district orientation and priorities.
- There are dialogue mechanisms at national level between development partners and the Government of Rwanda. WFP is into regular dialogue with MINEDUC but dialogue with MINAGRI and district authorities is not sufficient.
- LRP design is promising in terms of potential sustainability of the intervention.

2.1.1. *Sub-question 1: To what extent are LRP's location, priorities and beneficiary's selection in line with the needs of the most vulnerable groups?*

Integration of beneficiary characteristics and needs in the design and activity of LRP

29. Rwanda's economic structure is dominated by agriculture. Nonetheless, the most recent integrated household living conditions survey (EICV 4) (2013) estimates that poverty level is still of 39%. In 2012, according to the CFSVA, half of all Rwandan households reported food access problems. In that context, targeting improved production of maize and beans is a relevant orientation. LRP programs follows the Crop Intensification Program orientation (mono-cropping and focus on a few priority crops. There is a widely held consensus among many actors⁷, that cooperative organization is important to reducing poverty and exclusion. Working with cooperatives is therefore a relevant choice for LRP. However, There is no specific

⁷ Cooperative and the Sustainable development goals: A contribution to the post 2015 development debate, ILO, COOP

mechanisms in place to ensure that cooperative are inclusive (the main factors to become a member being having access to cooperative land and being able to pay the shares).

30. Forward delivery contracts can be an effective way to promote production and marketing in agriculture and to increase investment in quality or production standards. When efficiently organized and managed this type of contracts reduces risks and uncertainties for both parties⁸. Promoting this type of arrangement in the context of LRP is therefore relevant, providing attention is paid to contract conditions (to design contracts that fit with needs and constraints of both parties).
31. In terms of education, primary enrolment in Rwanda is among the highest in the region and the national net enrolment has practically reached the Education Sector Plan target of 97 percent in 2015, with slightly higher enrolment rates for girls than for boys (97.4 percent compared 96.3 percent). However, the Rwanda Demographic and Health Survey (RDHS) 2015 finds that stunting among children, which is an indicator of chronic malnutrition linked to specific livelihood profiles (such as agriculture and daily labour) has defined geographic distribution patterns and its prevalence is 50 percent along the Congo Nile Crest, which include the covered HGSP project area (Nyamagabe and Nyaruguru districts). In that context, continuing support to HGSP seems particularly relevant, especially if these interventions are combined with attention to deworming.

Integration of specificities of districts & agro ecological regions in LRP's design

32. The LRP is particularly relevant to the challenges and priorities of the four selected districts⁹. For the four districts, emphasis is clearly put on increasing production through better access to inputs and improved practices. Post-harvest handling and value addition are also key priorities. Working with cooperatives is also particularly relevant as they are identified as a lever for SHFs to access improved production practices, inputs and consolidated land. Developing access to finance for farmers is a key issue in the DDPs (District Development Plans).

Attention to the different needs and situation of male and female beneficiaries

33. In Rwanda's rural areas, women are the poorest group. This category of Rwanda's population is basically involved in agricultural activities; they also are responsible for maintaining the welfare of the household. In Rwanda, cooperatives have been used as breeding grounds for socio-economic empowerment of women. In the project design, gender has been taken into consideration in beneficiaries' selection. Performance indicators selected for monitoring of the project also take into account gender. However, the evidence reviewed fails to demonstrate that the specific needs of men and women in agriculture have been sufficiently taken into account (for example, there are no specific attention points on the roles and tasks of women in the maize value chain).

⁸ Notes sur la contractualisation, CGAAER, 2016

⁹ See Annex 5.1

2.1.2. To what extent does the LRP project contribute to the government's objectives?

34. The areas of intervention for LRP project are in line with the policies and strategies currently in place (see table below). More information on policies and programs are in appendix 7.1:

Figure 1. Policies and strategies concerning LRPs field of intervention

Policy/strategy	Key focus of the policies and strategies
Government Program (2010-2017)	Promotion of modern farming, increase in production and quality, storage and processing Promotion of cooperatives Regionalisation of crops
Economic Development and Poverty Reduction Strategy 2	Increasing economic growth by investing in and modernizing agriculture. Increasing agriculture productivity Connect Rural Communities to Economic Opportunity
Vision 2020	Promotion of intensification in agriculture Production of high value crops Replace subsistence farming by a fully monetarised, commercial agriculture sector Integration of gender into development policies and strategies
PSTA III	Increased production of staple crops Greater involvement of the private sector to increase agricultural exports, processing and value addition Transform Rwandan agriculture from a subsistence sector to a market-oriented, value creating sector Key pillars: Land, irrigation, inputs and infrastructure, soft skills and farmer capacity, value chains and markets, private Sector.
Crop Intensification Program	Increasing agricultural productivity. Facilitation of inputs (improved seeds and fertilizers), consolidation of land use, provision of extension services, and improvement of post-harvest handling and storage mechanisms six priority crops: maize, wheat, rice, Irish potato, beans and cassava.
National policy and promotion of cooperatives	Facilitate development of the cooperatives in the country Creation of National Cooperative Agency (RCA). Cooperatives to become autonomous, self-reliant and democratically managed institutions that are accountable to their members
National Post-Harvest Staple Crop Strategy	Strengthening the harvesting, post-harvest handling, trade, storage, and marketing of staple crop value chains Strengthening food security strengthening competitiveness of the staple crop value Improve efficiency and decrease marketing costs Enhance producers' access to, and linkages with, markets.
National Gender Policy	Promote gender equality and equity Mainstreaming gender needs and concerns across all sectors of development
The Rwanda Education Sector Strategic Plan	Strengthening school nutrition Expansion of a HGSF Programme
National School Health Policy	Improve and expand food and nutrition, as well as school performance in schools (pre-primary, primary and secondary

35. WFP has close relationship with MINEDUC, based on the previous experience with HGSF programme. The focal point in the ministry already has a good knowledge on LRP. However, the links are not so tight with the Ministry of Agriculture. Both at national and district level, representatives from MINAGRI reported that they had no information on LRP and that they were not consulted for project design and in beneficiary selection. There is also a focal point in MINAGRI, but there is far less communication inside the ministry than in MINEDUC about WFP's activities.

36. In terms of School Feeding (SF), Education for All is one of the priorities of the Vision 2020, the EDPRS-2 and the Government's "7-year programme" (2010-2017) where SF is identified as a key strategy to eliminate malnutrition. The Rwanda Education Sector Strategic Plan (2013/14 – 2017/18) and the National School Health Policy developed in 2012, focus on strengthening school nutrition, through community participation and expansion of the HGSP Programme. There is a distortion in practice between WFP's SF approach and the priorities of the GoR from two angles. The first is the fact that a part of WFP's food distribution in SF comes from regional (in the case of salt) and international (vegetable oil and CSB+) imported food (the other part - maize and beans - is locally procured as much as possible), while the GoR preference is that food should be provided by parents or procured from local farmers in the country, thus creating a stable and predictable market for the local SHF. The second angle is the government's priority for SF covering the full nine and 12-year basic education cycle, while WFP school feeding targets only the primary levels.

2.2. What is the level of complementarity with other development interventions targeting the same regions, including with WFP's own intervention?

37. There is a dialogue mechanism in place for development partners and the GoR. Sector Working Groups (SWGs) are a forum through which stakeholders meet to discuss sector planning and prioritization. WFP is part of the Agriculture Sector Working Group.
38. Some partners are directly supporting LRP's beneficiaries. They are very diverse organisations (from local NGO to international donors). They have been identified through qualitative data collection. Information on their intervention is found in Annex 5.2. Alignment with other WFP programmes is developed in the introduction.
39. Most of the development partners have a similar approach to agricultural development, working on productivity and yields and using cooperatives as the main lever of intervention. Some of the cooperatives that LRP has selected have already received support, but capacities remain weak. The interviews in the context of this baseline show that WFP's (potential) added value in terms of relevance comes from the linkages with buyers and with schools.
40. There is no dialogue mechanism at district level with WFP, local authorities and other development partners. So far, none of the development projects and programs met at baseline was actually aware of LRP and its strategy. Partners met consider that the approach is interesting and complementary to what they are doing but suggested that WFP should put more emphasis on learning lessons from previous projects (both those implemented by WFP and those implemented by other stakeholders).

Does the logic of intervention promote sustainability?

41. In the assessment of the baseline team, some elements of the LRP design are promising in term of sustainability. This includes:
 - Increasing the proportion of locally supplied food in the school feeding program.
 - Focusing the intervention on capacity building and "soft skills development".

- Aligning the intervention with the market-based inputs supply promoted by GoR (through agro-dealers).
- Selecting crops with potential to improve food security and income.
- Strengthening producers' capacities to access credit, which is a market-based solution to the structural needs of funds in agriculture.
- Building cooperatives' entrepreneurship capacity to enhance their position in the value chain and help them become market players.
- Supporting development of maize production and hence supporting Rwanda in increasing its market share in the region.
- Helping cooperatives to build direct relations with schools.
- Supporting cooperatives and buyers to implement forward delivery contracts that are beneficial to: a) guaranteed markets for SHF; and, b) economies of scale and quality's improvement for buyers

42. The extent to which these interventions are actually sustainable will need to be further assessed at end-line.

2.3. Evaluation question 2 – cooperatives' ability 'to be', 'to organize', 'to relate', and 'to do' at baseline level

43. This question examines cooperative capacity. The baseline used four criteria¹⁰ to assess cooperative capacity, as follows:

- Cooperative capacity 'to be': referring to governance, ownership, leadership, existence of a common vision and a strategy to achieve its objectives.
- Cooperative capacity 'to organize': reflecting human, material and financial resources, management and organization of activities, planning and assessment of the results.
- Cooperative capacity 'to relate': ability to develop relations with public sector (local or national authorities, extension agents), with development partners (local or international) and private sector partners (input providers, microfinance institutions, buyers and other value chain stakeholders).
- Cooperative capacity 'to do': ability to produce, existence of a post-harvest and marketing system that enables both the cooperative and its members to generate profits.

44. Information on the general characteristics of the cooperatives is provided in Annex 6.1. to assess capacity, eleven cooperatives (qualitative data collection) were scored against the four abilities (see Annex 6.1). Scoring covered all criteria covering capacity indicators. Each criterion was assessed by the evaluation team, and when possible this was complemented by a self-assessment from cooperative leaders. Each criterion was ranked from zero (inexistent or very low) to five (very good). This score was then compiled per each indicator in a percentage form. It provided a transparent and objective guide to assess capacity and to identify gaps that need to be addressed.

¹⁰ These criteria refer to the ability methods developed by South Research but they are at the core of most assessment method of organization and cooperatives, as shown by IRAM in the "Sélection de références méthodologiques en analyse organisationnelle", 2009)

An overview of the scoring is presented in Section below, and will be used to compare progress at end-line stage.

45. The summary box below provides an overview of key findings and conclusions for evaluation question 2. The evidence behind each of the findings and conclusions is discussed in the sections that follow below the box and in the relevant annexes. Subsequent evaluation questions follow a similar structure i.e. presenting a summary findings and conclusion box followed by detailed discussion of findings.

Key findings and conclusions – Question 2

- LRP cooperatives are young. They do not yet have the skills and capacity to manage economic activities. Most cooperatives are organised around the common exploitation of marshland, with limited experience of collective operations.
- Capacities of the cooperatives ‘to be’, ‘to do’, ‘to perform’ and ‘to relate’ are very variable.
- Cooperatives have been formed in an exogenous and top-down way. This has hampered their ability to build strong relations with SHFs. It has also restricted their capacity to define a common vision and an implementation strategy.
- Overall, governance of cooperatives is good. Savings and credit groups are particularly strong in bringing together cooperative members. They represent a first level of organisation to build upon.
- Cooperative members have a good vision of the organization of the cooperative and of the roles and frequency of the different statutory meetings
- Capacity of cooperatives to keep records is low. Book keeping is a constraint and none of the cooperative has an operational vision on their financial management.
- Cooperative resources are low. Shares and dues are only partially paid. There is limited self-financing for services. Access to credit is challenging. Current credits conditions are difficult for SHFs.
- Some cooperatives remain very passive and do little to build partnerships. As a result, they are poorly connected to their business environment.
- Cooperative capacity to aggregate production is low, although a few cooperatives manage to sell quantities above 100T. Farmers have financial constraints at harvest time and frequently cannot wait for collective sales to be organised.
- Farmers have limited economic benefits from their cooperative, and this limits the ability of the cooperatives to develop activities and services.
- Cooperatives capacity for providing services varies. The most frequent services are on input supply (provided directly or through a sector agronomist).

2.3.1. Sub-question 2.1: Are cooperatives well organized?

Quantitative findings

46. The quantitative data collected for this question are about the dues that members pay to their cooperatives (see tables below).
- 64.7% of the SHF pay dues to the cooperatives (64.0% of the females, 63.3% of the males)
 - 84.1% of the SHF who pay due either pay regularly or always.
 - Average amount of dues paid by SHF per month is RWF 1414.95 (1.68 USD).

- Significantly more members of high potential cooperative (81.2%), mature cooperatives (74.4%) and large size cooperatives (67.5%) pay their dues to cooperatives. (the specific tables are in Annex)

Table 4 : Descriptive statistics, percentage of SHFs paying dues to their cooperatives (quantitative data collection)

	Frequency	Percent	Valid Percent	Cumulative Percent
No	295	35.3	35.3	35.3
Yes	541	64.7	64.7	100.0
Total	836	100.0	100.0	

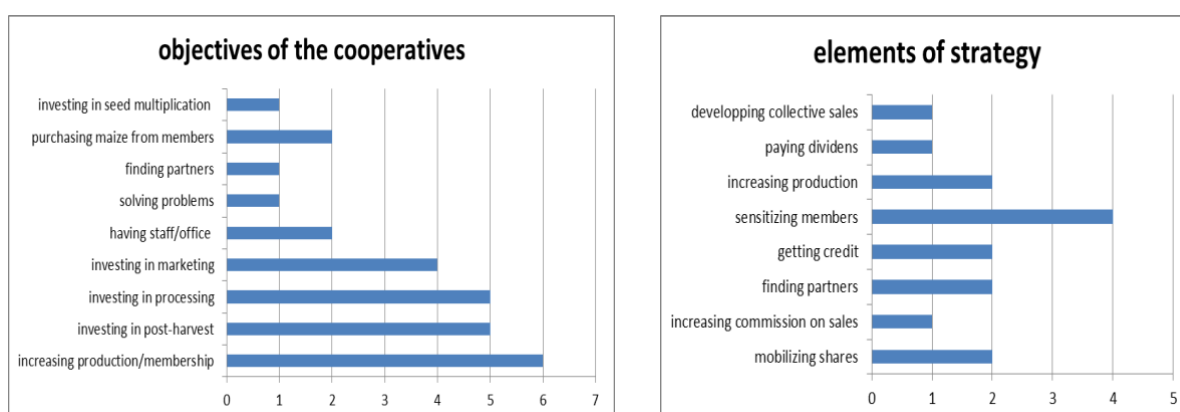
Table 5 : Descriptive statistics, amounts of dues paid (quantitative data collection)

	N	Minimum	Maximum	Mean	Std. Deviation
Amount of the dues	541	0	15000	1414.95	1738.702
Valid N (listwise)	541				

Existence of a common vision

47. Creating a common vision gives any group or organization a strong foundation to build on. The sustainability of a cooperative, as well as its risk of failure, is very much connected with the understanding and sense of ownership members have in respect for their cooperative.¹¹ Detailed analysis on the existence of common vision for LRP cooperatives is in Annex 6.3.
48. The baseline data suggest that the establishment of LRP cooperatives is the result of a top-down exogenous process (mainly driven from the government). As a result, most cooperatives are struggling to create strong relations with members.
49. Interview evidence highlighted that overall LRP cooperatives have no clearly defined common vision and strategies. At best, leaders can explain some objectives (see figure below) of the cooperative.

Figure 2. Number of cooperatives mentioning specific objectives and strategies of cooperative existence (multiple options possible)



¹¹ Orientations pour la construction de programmes de renforcement des capacités des OP, Romain Valleur, AVSF, 2014

Meetings of members and leaders

50. Mandates and roles of the General Assembly (GA) are clearly provided by the RCA (Rwanda Cooperative Agency)¹². Guidance from RCA is well respected by cooperatives. Out of 15 cooperatives (cooperative checklist) two meet once a year, and thirteen meet twice a year. Out of these thirteen, eight can meet more often if a specific need requires the organization of a meeting. The GA (in March) is mainly used to discuss the results of season A and to plan and organize season B and the second (October) GA is used to discuss results from season B and plan for season A. Only a few cooperatives reported asking all members to join the GA. In most cases, representatives from groups or from zones¹³ are invited to the GA. Most cooperatives report facing challenges in getting members to participate in the GA.
51. Cooperatives usually have an Executive committee and a supervision committee. RCA advises that both committees meet once a month. Cooperative committees meet regularly. Meetings are convened around issues related to member mobilization, marketing of the products, looking for solutions in case of problems. As the table above shows, five of the 15 cooperatives meet every month. Four cooperatives meet less than three times per year. It appears that frequency of meetings may be correlated with other aspects of cooperative formation, i.e. three of the cooperatives who meet infrequently have not developed a common vision and two of them have very low ownership (Abinumbye and Duterimbere cooperatives).
52. Cooperatives do not undertake many common activities – there was little evidence of product aggregation and the level of collective sales is low. As cooperative activities focus mainly on the organization of the work¹⁴, there is no need for frequent meetings, but the frequency of meetings is not sufficient for cooperatives to manage more complex activities.
53. Operational meetings are organized every week. Members meet every week (usually on a day of joint work on the cooperative plot) at group level. For the majority of the cooperatives, meetings are not directly linked to the activity of the cooperative - members mainly meet to around their informal saving and credit group (locally called “tontine”). Only one cooperative mentioned that they intended to implement a sanction mechanism in case of non-attendance. Three cooperatives also mentioned that they were implementing meetings at zone level (once a month), mainly to discuss agriculture and production related issues.

Leaders

54. All the cooperatives report having a committee in place. All committees also have leaders who have a relatively good understanding of their mandates. Six cooperatives (out of the 11 for qualitative data collection) mention that the committee’s abilities to guide and organize the activities of the cooperative are “good”, four cooperatives report they are “fair” (only one cooperative is not yet up to the task). According to the Rwandan law on cooperatives, committees are elected for three years and committee members can only be reelected once. These rules are respected and all committee members have been elected. In all cooperatives that exist for more than three years committee membership has been renewed.

¹² Reference: Training programme on management of cooperatives, RCA, 2011

¹³ Groups refer to informal organisation of 15 to 20 farmers (for saving groups and organisation of extension services), zone refers to subdivision of the marshland.

¹⁴ Organization of the cropping seasons and choice of day to work on the cooperative plots

55. Leaders are well identified, and members know that the role of the committee is to manage activities of the cooperatives. Committee members appear committed and truly interested in the future of the cooperative. Most committee members show some leadership capacities even if there is a need to strengthen it.

Record keeping and use of accounting system

56. Article 45 of the Law No50/2007 specifies requirements in terms of documents and management books for registered cooperatives. The list is impressive (see Annex 6.4). The evaluation interviews highlighted that the requirements are also extremely demanding for relatively young cooperatives, in an environment where literacy is often an issue and capacity is limited.
57. Most of the cooperatives have a visit and minute book, a register of members (with shares) and bank documents. Some also have cash books. However, with the exception of one cooperative, none of the cooperatives had a full set of documents for review. As a result, estimation of the quality of the documents kept by cooperatives could only be done through self-assessment by leaders.
58. Four cooperatives (out of the 11 met for qualitative data collection) seem to be particularly weak in terms of book keeping¹⁵. All cooperatives face challenges in financial book keeping and consider this activity very difficult and time consuming. Interviews highlight that book keeping is seen as an obligation but that the utility for the cooperative is not clear i.e. it is not clear how bookkeeping might help the cooperative be more effective and achieve better results.
59. Four cooperatives have a staff member (manager or accountant) in charge of record keeping and have delegated book keeping to the accountant. This may pose a risk as failure to keep the accounting and payment functions separate – as was the case in one cooperative that was visited¹⁶ – may lead to fund embezzlement.
60. Cooperatives that aggregate products or sell inputs to their member have a relatively good accounting system. These cooperatives keep individual records of the funds and products exchanged with members. For example, Coamanya Gisghubi Cooperative records the shares paid per member, the commission on sales, the sanctions paid (if applicable), the contribution to transport expenses, the taxes, and a fee for a political party. Nonetheless, even these cooperatives lack a global view on the cooperative finance and on whether they are making money.

Number of collective operations

61. Annex 6.1 gives an overview of cooperatives' capacity engage in collective operations (either buying or selling).
62. Globally, the evaluation's analysis of collective cooperative operations (see Annex 6.5) highlights that cooperative capacity to implement collective operations is not very strong. For most farmers, cooperative membership brings benefits in terms of access to land on the equipped marshland. It also provides a means of access to government subsidized inputs. SHF do not necessarily see a role for cooperatives in

¹⁵ See Annex 6.4

¹⁶ At Kopiana cooperative inputs were being provided to members (on credit) and non-members (without credit), but the staff in charge of the activity gave credit also to non-members and embezzled the from sales. The control from the committee was not tight enough and the cooperative has not only lost part of their capital but they are also struggling to recover the amount given on credit to non-member (they don't recognize that they got inputs on credit).

sales. Ownership by SHF is generally low and members do not feel bound to their cooperative and its rules.

63. In some cases – and as highlighted by SHF interviews - there is also very limited trust in the capacity of the cooperative (and its committee) to manage funds or production from members. Collective sales are also hampered by the practices of buyers who are frequently approach farmers before harvest to purchase maize. It is very tempting for a farmer to sell the crop at this stage and to access cash immediately, even if the profit will be lower. This phenomenon is amplified because most cooperatives have limited post-harvest handling capacity (frequently drying space is insufficient for all members, and engaging in collective sales becomes more difficult once farmers have taken their production home)

Cooperative resources

64. Funding is often a critical issue for farmers' organizations and cooperatives¹⁷. Depending on their business model, cooperatives need funds for agricultural activities (e.g. to purchase inputs), to invest (in post-harvest infrastructure or agriculture equipment), to develop services for members (e.g. extension) and as a guarantee to access credit. Capital is also a key for cooperative sustainability and to ensure its independence vis-à-vis authorities, partners, donors and others.
65. Cooperatives can acquire capital in various ways: through shares (the initial dues that need to be paid when a member joins a cooperative); dues (to be paid per year or per season) and commissions on sales (inputs or maize).¹⁸ Low financial capacity can place the cooperative in a vicious circle where low capital reduces the cooperative capacity to fulfill its economic functions. This results in low credibility and makes it more difficult to raise funds, which in turn contributes to reducing capital.
66. Analysis of the data shows that low shares do not necessarily result in increased numbers of members paying. Overall, the amount of shares per farmer seems to be reasonable. The proportion of shares enables cooperatives to have a capital of between 2000 000 RwF and 88200000 RwF (between 2381 USD and 10502 USD), depending on the number of members (if all members pay)¹⁹.
67. In addition to shares, some cooperatives also require regular payment of dues (paid in cash or kind), and charge commissions on sales²⁰ of inputs or of products (Annex 6.6). They use dues to pay for operational costs (for example for security guards), to pay committee costs (e.g. for travel), or to pay for staff. Cooperatives that do not have a system of regular dues, often demand a direct contribution from members when they need funds.
68. SHF interviews highlight that for them there is not really a distinction between dues and shares. Evidence reviewed also highlights that many SHF do not meet their obligations in terms of shares. For example, most members of the Icyerekezo cooperative were paying a quarter or less of the required amount of 2000 RwF (2.38 USD), and about 20 percent of the members did not mention any dues/shares. This suggests that there is low ownership from members and that member resource mobilization is a difficult task for cooperative.

¹⁷ Pedagogical material on farmers' organization and farmers organization support, CIRAD-CIEPAC, 2006

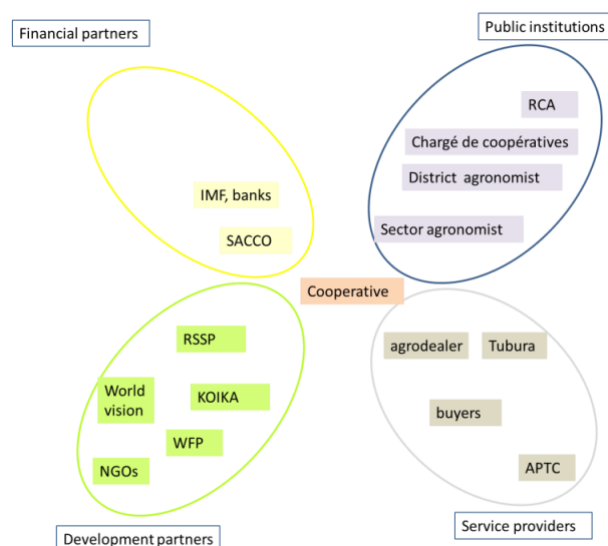
¹⁸ It is therefore interesting to note that the LRP impact indicator "increased number of members paying their dues/increased timeliness of payment by member" only covers one dimension of capital building.

¹⁹ Except for Kopianya which has a potential capital of only 100 000RwF (119 USD).

²⁰ Commissions on sales are analyzed in sub question 2.4.

2.3.2. Sub-question 2.2: Are cooperatives developing partnerships?

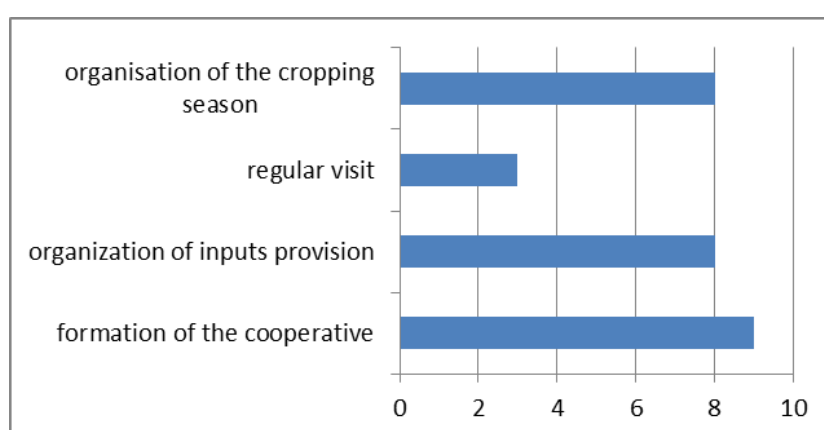
Figure 3. Representation of LRP cooperative environment (based on qualitative data collection)



69. As shown in the figure above, LRP cooperatives are not isolated; they already have a network of partners (public sector, service providers, financial partners and development partners). Annex 6.7 provides more details on the different partners of the 11 cooperatives met during qualitative data collection and Annex 6.9 provides more information on each of the partnerships that follow below.

70. **Public institutions:** The sector agronomist is reported to play a role in the establishment of the cooperative, in organizing inputs, and in organizing the cropping season. Visits from the sector agronomist are irregular.

Figure 4. Types of support received by cooperatives from the sector agronomist (qualitative data for 11 cooperatives). Multiple options possible.



71. Only three cooperatives reported receiving regular visits from sector agronomist, and only three cooperatives mentioned that there were model farmers working with SHFs. None of the cooperatives mentioned that they received extension services. Surprisingly, the focus group discussions highlight that the SHF do not see the sector agronomist as an extension service provider, and do not actually know where/whom to ask specific questions or look for advice.²¹ RCA is only identified as a partner for registration.
72. **Financial partners:** All the cooperatives have bank accounts and are familiar with formal banking and credit services. Most of them use the services of the Savings and Credit Cooperatives (SACCOs) which is considered as closer to the farmers than commercial services. Interviews with a selection of commercial banks underscore that agriculture is not a priority for them and only represents a very small part of their portfolio.
73. **Service providers:** Input providers are the only service providers that have partnerships with cooperatives (Tubura, agro dealers or Agro-Processing Trust Corporation-APTC). They are well identified by the cooperatives and SHFs.
Partnership with cooperatives: The vast majority of cooperatives do not have a relationship with surrounding cooperatives, although they will be aware of their existence. Only one cooperative is a member of a union of cooperatives.
74. Most **development actors** work with cooperatives. Various development partners provide support to the LRP cooperatives: among the 11 cooperatives included in qualitative data collection, only one never got support from a development partner. The main support received concerns training on production (mentioned by 10 cooperatives). Other supports received includes: training on post-harvest handling (four cooperatives); provision of funds and inputs (four cooperatives); and, equipment of terraces and marshland (five cooperatives).
75. In most cases the partnership is a response to opportunities, rather than an active seeking out of partners. Sector agronomists are key actors to link cooperatives to partners.
76. Some cooperatives already have relatively good abilities (Annex 6.1) to develop partnerships (CCM Muganza, Coamanya Gishubi, Icierekezo) whilst others are still poorly connected to their business environment (Koaimu, Koabiwa and Abibumbye).

2.3.3. Sub-question 2.3: Are cooperatives economically dynamic?

77. Before analyzing the current situation of the cooperatives in the view of the indicators, it is essential to try and understand what the economic activities of the cooperatives are and to have an idea of their potential. Cooperatives are production cooperatives. The first crop they grow together, as show in the figure below is maize, followed by beans. More information on cooperatives' choice of crop and rotation is in Annex 6.10.

²¹ Only in cases of pest attacks did SHF mention that they warned the sector agronomist and that some treatments were organized from the district level.

78. Even if the largest part of the production in the cooperative plots is used for SHFs home consumption, they consider that their plot for the cooperative is a “commercial plot”. The choice of crop to be grown is decided according to the recommendation and the restrictions which are communicated by the sector agronomist. For example, crops like sweet potatoes or cassava are forbidden and mixed cropping is forbidden (some elements on the interests and risks of that choice are developed in evaluation sub-question 2.4). The survey showed that LRP cooperatives are mainly growing maize (15 cooperatives) and beans (13 cooperatives). Other crops grown are Irish potatoes (5 cooperatives), vegetables (5 cooperatives). SHFs all have other land on the hillsides where they grow food (usually with a mixed crop system).
79. Maize is seen as a cash crop. Season A is considered as the main cropping season, which is why a majority of cooperatives plant maize during season A. However, in some cases (depending on the drainage capacity of the marshland) the amount of water in season A is too high to grow maize (there are more risks of flooding of the plot). Cooperatives in this situation (Abibumbye or Coamanya Gishubi, for example) prefer growing maize in season B or C. Growing maize in season C is rarely possible - it is a dry season and in most cases crops need to be watered
80. Beans are considered food crops. Except in one case, cooperatives do not (or do not plan to) aggregate and sell beans collectively. Beans are a crop that SHFs consider essential to their food security and that they barely sell.
81. Some of the crop rotation systems used by cooperatives appear risky in terms of soil fertility as they do not insert any legumes in the rotation. Maize and Irish potatoes are very nutrient-demanding crops and even if farmers do use fertilizers and manure, the quantities applied are often below standards. In the long term there is a risk that yields decline.

Business planning

82. In order to successfully develop their activities, cooperatives must manage their activities as a business, and as a means of making profit (both for the cooperative and for its members). There are two parts to business planning. The first is the managerial skills needed to start and run a profitable business and the second is entrepreneurial spirit to seek out opportunities.
83. The evidence suggests that capacities of the cooperatives to plan their business are low. None of the cooperatives have a real business plan. None develop an expense plan or a forecast of expected benefits before the season or analyze the results at the end of the season. As a result, very few have an idea of their benefit.
84. The result of the scoring exercise, show that there are three different levels of business planning amongst the LRP cooperatives:
- Cooperatives with no, or very low business mindset and no or minimum planning of their activities e.g. Abibumbye, Kaiimu, Kobarwo, and Koaimu cooperatives.
 - Cooperatives with low business orientation but with some level of planning of their activities: Abmerehiigo, Kopianya, Koabiwa, and Duterimbere cooperatives.
 - Cooperatives with some business mindset, they to plan activities as well as expenses and production: Icyerekezo, CCM Muganza and Coamanya Gishubi cooperatives.
85. Overall, business mindset and entrepreneurship are not well understood by cooperatives. Cooperatives rarely consider the different options (e.g. in terms crops

choice, work organization, aggregation of the production) in relation to the profit they can expect. They do not have an idea of the expected benefit and of the expenses they made to get benefit. As a result, cooperatives make opportunistic decisions which are partly externally driven (often by the sector agronomist, or by other partners) in the hope to get some benefits at the end.

Skills for credit and loan management

86. Credit is a key element of the business environment. SHFs in developing countries usually face considerable difficulties in accessing credit. However SHFs in Rwanda are in a better position than many other countries because SACCOs provides them with access to microfinance institutions (MFI).²²

87. All the cooperatives are interested in accessing credit and most were at least partially aware of the conditions. Most cooperatives (7 out of 11) have not accessed credit. Three of the four cooperatives that received credit had difficulties repaying the loan due to low yields and were obliged to renegotiate the repayment duration.

88. Overall the credit conditions are not adapted to farmers' realities. From the interviews, it appeared that key factors limiting cooperative's access to credit are:

- Mutual lack of knowledge and trust.
- Low cooperative capacity to manage funds and credit.
- The cost of credit (interest rates are considered very high and collaterals are hard to get).
- The risk of credit (loss of collateral, difficulties to repay in case of climatic hazards).

89. More information on the limiting factors are on Annex 6.11.

Volumes of products sold/net margin

90. It is not possible at this stage to assess the net margin of cooperatives.²³ However, analyzing the volumes and amount of sales provides interesting information on cooperatives' business (see o).

91. Cooperative sale figure collected at the evaluation baseline differ from those collected by WFP. Most cooperatives do not have weighing scales and estimate their production based on the number of bags collected. In some cooperatives sales were higher than the estimated production (Icierekezo and Coamanya Gishubi).

92. Maize represents about one third of the potential cooperative production (the global amount of maize sold is about 307T). Three cooperatives have not aggregated any maize. Some of these cooperatives are still very young (e.g. Duterimbere or to a lesser extent Kobarwo and Kaiimu cooperatives). Seven cooperatives sell below 20 percent

²² Credit offered by SACCO is a 2% interest rate and cannot exceed duration of 2 years (in most cases, loan duration is below one year). The credit given cannot exceed 4 million RwF (4763 USD) (and a minimum of 30 000 RwF, 35.7 USD). The requirements for a cooperative to receive a loan are presented in the text box below. Rates offered are similar from one MFI to another (except Duterimbere that offers 1% interest rate to finance activities led by women).

²³ Cooperatives have low book keeping skills, books were not available and they mostly do not register their expenses. Most cooperatives mentioned that they were not making any profit (and looking at their capacity and business organization, this seems realistic).

of their potential production. Only one cooperative sells beans representing about 0.2 percent of production potential.²⁴

93. All the cooperatives consider that it is difficult to aggregate members' production. This is because of the following factors:

- Farmers largely engage in subsistence farming and keep their production or sell their maize to their neighbors, to middlemen or to the local markets.
- Members see their cooperative essentially as a means of collective production and are not aware that their cooperative is aggregating products.
- Members are not convinced of the ability of the cooperative to sell their products and to distribute the funds to members.
- When cooperatives purchase maize from members (Kopianya for example) and pay them cash, members think it is safer and more profitable to sell to the cooperatives. They view the price as good and believe the cooperative does not cheat them (unlike buyers who may use fake weighing scales).
- Some cooperatives cannot find buyers to absorb the production.
- Farmers are in need of cash at harvest time and it is difficult for them to wait for the cooperative to aggregate, find buyers, and organize sales and payment.
- It is tempting for farmers to sell their maize fresh (on stem) either to be grilled or to be used to produce alcohol. Buyers will approach farmers directly just before harvesting time and in this case the buyer will harvest the plot.²⁵
- Lack of cooperative drying space does not encourage aggregation. Once members take their production home to dry it, it is harder to control the quantity of maize that they will bring to the cooperatives.

94. There is an important variability in the price of maize from one cooperative to the other - ranging from 270 to 320 RwF (0.32 to 0.38 USD) per kilo (see Annex 6.12). The price is higher than the government minimum price (220 RwF, 0.26 USD). Prices also fluctuate during the year. Prices increase soon after harvest to reach between 400 and 450 RwF (0.48 and 0.54 USD) per kilo at planting time. There are also periodic and local variations of price based on the quantity of maize available on local markets.

2.3.4. Sub Question 2.4 Do activities of the cooperative benefit the members?

95. A cooperative is a business owned and controlled by its members. For a member, there are two ways to benefit from its cooperative:

- Receiving part of the profit made by the cooperative (dividends).
- Accessing services adapted to their needs.

²⁴ Targeting beans to develop cooperative sales is likely risky because beans are not seen as a cash crop, and few farmers are willingly going to increase the amount of beans they deliver to the cooperative.

²⁵ This explains why the quantity of aggregated maize is sometimes lower than specified in cooperative rules. Cooperatives usually share the production once it is dried, so if part of it has been sold fresh, it will not be part of the production to be divided. To avoid this, some cooperatives actually hire security guards during harvest time. This is also one of the reasons why cooperatives try to harvest at the same time. One cooperative - Coamanya Gishubi - has experimented with dialogue when a member is defaulting to convince him/her to respect his commitment towards the cooperative.

96. Quantitative analysis has been done on two different topics: the payment of dividends and the services offered by cooperatives to their members.

97. **Dividends** (the tables are in Annex)

- Approximately one in eight cooperatives (12.9%) normally distribute dividend to members (females 12.5%, males 13.2%).
- Of cooperatives that normally distribute dividends, 59.3% distributed in 2016.
- On average, SHF's received dividends amounting to 10300.9 RwF (males RWF 10565.6, females RWF 9960.7)²⁶

98. Services offered by cooperatives

- Trainings (72.7%), supply of seeds (61.0%) and fertilizers (54.2%) and finding buyers (42.8%) are some of the key services offered by the cooperatives. There is no notable difference in the services offered to male and female SHF's.
- High potential cooperatives engages more in finding buyers (95.5%), while small cooperative supply more seeds to members (95.0%). The other cooperatives of different ages, capacities and sizes did not however have notable differences from the main services offered.

99. Of the services currently offered by the cooperatives to the members, SHF considered trainings (23.3%) as the top most important service offered, with supply of fertilizers (22.6%) and other agricultural input and other services (24.0%) being the second and their most important services offered consecutively. The table below details the priority of importance of cooperatives services in relation to cooperatives capacities and ages. More than half (63.5%) of the SHF's reported to be able to find the services offered by cooperatives outside the cooperatives in which they are members. The cooperative capacity and size did not have a notable effect in the possibility of getting's the services from outside the cooperative.

Table 6: Possibility of receiving services outside the cooperative (quantitative analysis)

	Frequency	Percent	Valid Percent	Cumulative Percent
No	531	63.5	63.5	63.5
Yes	305	36.5	36.5	100.0
Total	836	100.0	100.0	

Table 7: Cross tabulation of possibility of receiving services from outside the cooperative (quantitative data collection)

			Gender		Total
			Female	Male	
Possibility of receiving services from outside the cooperatives	No	Count	261	270	531
		%	49.2%	50.8%	100.0%
	Yes	Count	122	183	305

²⁶ 12.27 USD on average, 12.58 USD for males and 11.86 USD for females

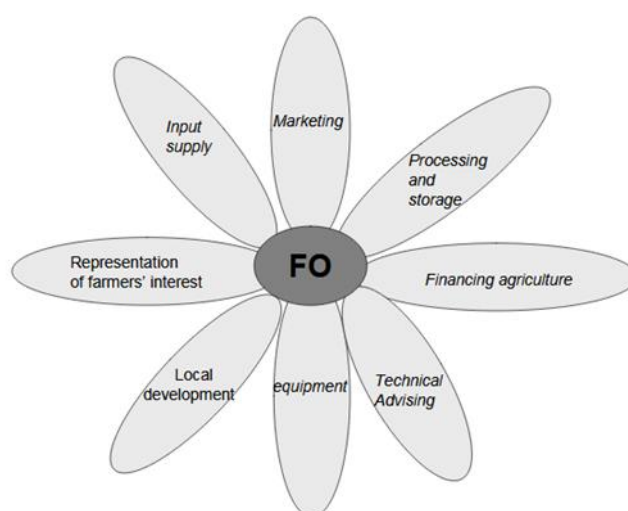
Dividends

100. In the absence of up to date financial records, it is difficult to know whether cooperatives are distributing dividends, but the low economic strength and business capacities of LRP cooperatives do not seem very compatible with the regular distribution of dividends to members.

Services to members

101. In theory, there are different kinds of services to members that a cooperative can offer to its members (see Figure below).

Figure 5. The different types of services that a farmer organization can offer (CIRAD-CIEPAC, 2006)



102. Low level of services is usually directly linked to lack of ownership and participation by members and may reflect that the decision on services to offer was made without member involvement. If a cooperative does not offer its member services that address their constraints, they will not be interested in participating in the cooperative activities.
103. Most LRP cooperatives do not offer a high level of services. Nonetheless FGD highlighted that SHFs see several advantages of being in a cooperative:
- Some farmers started to grow maize because they joined a cooperative.²⁷
 - Being a cooperative member ensures access to support by government partners. For example, to build a drying space, an office or a warehouse.
 - Farmers have easier access to inputs when they are part of a cooperative. Six of the eleven cooperatives interviewed during the qualitative data collection reported purchasing and selling inputs to their members, and five of these sometimes provide inputs on credit (to be reimbursed after harvest).
 - Some cooperatives have a drying space. In Duterimbere cooperative, members also have a processing unit, which increases the added value of maize.

²⁷ Maize was introduced as a cash crop on the equipped marshland and terraces and joining cooperatives, farmers had the opportunity to access growing techniques, seeds and fertilizers.

- Farmers have easier access to sector agronomist.
- For some farmers, joining a cooperative enabled them to access more lands.²⁸
- Working on a cooperative plot creates a valuable exchange between members around good production practices, use of appropriate amounts of seeds and fertilizers, as well as respecting an adequate cropping calendar.

104. Farmers were less aware of the advantages that cooperative membership can bring in marketing of products. However, some SHF mentioned that selling together enables them to get a better price. One cooperative (Icierekezo) reported that selling together enabled them to place a bigger quantity of maize on the market as a result of which buyers are now coming to them (rather than vice versa) and they now have more flexibility to choose among buyers.

Self-financing mechanisms

105. As Annex 6.15 shows, only three cooperatives have financing mechanisms with good prospects of sustainability. These cooperatives aggregate production in an efficient way and have put in place a commission on sales that enables the cooperative to develop its activity. Other cooperatives have either no or very little awareness of the importance of financing their activities.

106. Farmers have little economic benefits from their cooperatives and this clearly limits the capacities of cooperatives to develop their activities, to invest and to become reliable business actors. One interesting exception is the provision of inputs to members. When cooperatives have enough resources to procure and make inputs available, this appears to work relatively well (though it was not possible to assess the economic results of the operations or to know the number of farmers that actually benefits from the service). Farmers are satisfied with this service that responds directly to one of their needs, especially when cooperatives supply inputs on credit. Aggregation of products and marketing are only successfully implemented by a few cooperatives and it is something that the others are having difficulties with.

107. Nevertheless, cooperatives provide farmers with a frame to organize their activities, work together, learn, and implement good production and post-harvest practices. Though this is not enough to ensure cooperative sustainability and to allow cooperatives to develop business linkages with high end buyers, it is a good base to work with cooperatives to develop members' participation, business awareness and common vision building.

2.3.5. Conclusions - evaluation question 2

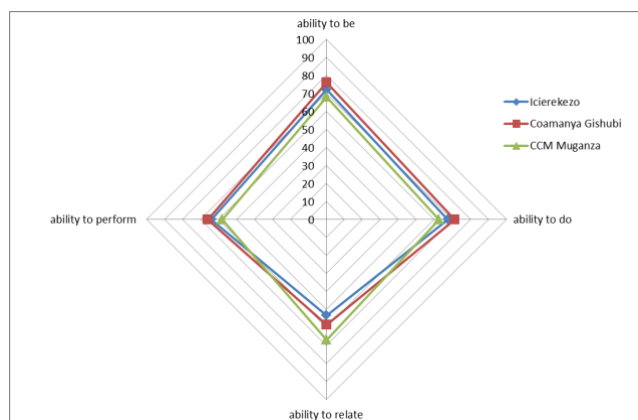
108. LRP cooperatives differ considerably in terms of their capacities and challenges. Three groups of cooperatives can be distinguished: high potential cooperatives, losing momentum cooperatives, and still nascent cooperatives.

Group 1: High potential cooperatives

109. Some cooperatives emerge as promising in terms of their capacity to develop business linkages.

²⁸ Some farmers were cultivating on the land before, but some of them received a plot there only later once they joined the cooperative. They pay a tax to access this land but it is less expensive than renting.

Figure 6. High potential cooperatives' abilities representation (scoring based on qualitative data collection)

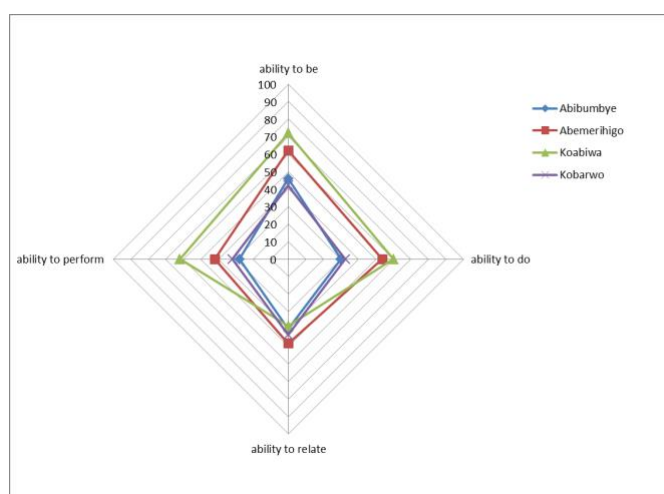


110. These three cooperatives have relatively balanced abilities 'to be', 'to do', 'to relate' and 'to perform' (see figure above). They are able to aggregate relatively big quantities of maize whilst offering several services to their members. They are relatively well managed and already have a base to fund their activities. They are well connected to their environment (though market information is very limited) and are able to develop partnership without being overly dependent on a single partner.

Group 2: cooperatives losing momentum

111. These are cooperatives that are facing production losses, governance or management issues (or theft) which have stopped the cooperative from developing. The problems differ from one cooperative to another and abilities are also different (therefore showing a less balanced result) but the end result is similar: loss of interest from member and difficulties for leaders to galvanize the cooperative and to conduct collective activities.

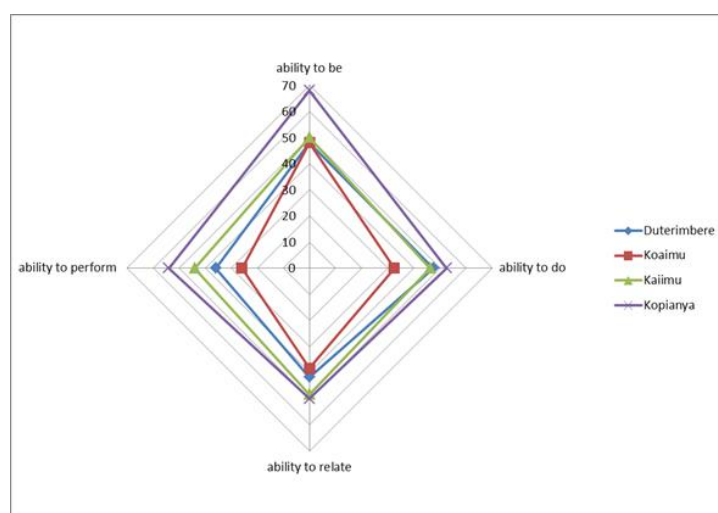
Figure 7. Cooperatives losing momentum abilities representation (scoring based on qualitative data collection)



Group 3: Still nascent cooperatives.

112. The situation of these cooperatives is relatively similar to group two but for different reasons. These cooperatives are young and have not yet developed their business or functioning model. Overall their capacities are still weak (see figure below). These are recent cooperatives that need to be supported to be able to develop strong relation with their members and sound business systems.

Figure 8. Nascent cooperatives abilities representation (scoring based on qualitative data collection)



2.4. Evaluation question 3- How does the LRP project affect male and female SHF capacity and behaviour?

113. For LRP to achieve sustainable impact capacity's strengthening is a key element. The objective is that farmers gain the knowledge and skills to change their behavior, not only because a project is supporting them and they are expecting direct benefits but because they are convinced that this change will be profitable for them. At baseline level, the objective is therefore to analyze the current SHF and cooperatives production and marketing behavior to understand the cause and explanations of their choices. During the final evaluation, the SHFs and cooperatives' situation will be assessed again to establish whether LRP has managed to act on the underlying factors of their behavior. If some change happens at this level than the impact of the project will be sustainable.

Key findings and conclusions – Question 3

- Farmers have very limited market information which weakens their capacity to have good marketing conditions for their products.
- Market information is limited to information on prices (from local traders and middlemen and from relatives or the district agronomist).
- SHF knowledge on technical itinerary and input use is relatively good.
- Sustainability of crop systems, adequate crop rotation, erosion control and soil fertility management are less known by SHFs, although these issues are affecting their production.
- Farmers usually use improved seeds and fertilizers on the cooperative plots, but far less on their personal hillside plots.
- Most SHF receive some extension services, mainly from the agronomist and

development partners.

- Extension focuses on technical issues. Sustainable production, post-harvest handling and economic analysis are not sufficiently taken into consideration.
- Farmers' knowledge of post-harvest practices is limited to mature harvesting and drying. Information on cleaning and sorting grains is not common.
- Productive investment is limited. Farmers use casual labour services to face peak of activities but they also sell their own labour.
- Access to credit is limited (both for formal institutions and from middlemen). Farmers prefer receiving credit from their informal saving and credit groups or selling their workforce to finance their agriculture activities. Farmers recognize that having access to credit can be interesting but they consider it as risky because of climatic hazards. Main limiting factors are the lack of capacity to prepare loan applications and to manage funds, and the need to secure a guarantee and collateral.

2.4.1. Sub-question 3.1.: What knowledge do SHF have of options and alternatives? Are there differences between male and female farmers?

Quantitative findings

114. The quantitative analysis focused on SHFs knowledge and application of the good practices as well as on the access to extension services.

- Almost all 92.7% (males 94.5%, females 90.6%) of the SHF have heard about good agricultural and post-harvest handling practices.
- Government agricultural extension workers (70.5%), cooperatives (59.6%) and NGO's (32.1%) are the main sources of information on good agricultural and post-harvest handling practices.
- High potential cooperative members mainly receive training on good agricultural practices from their cooperative (75.8%) however members of cooperatives of different sizes and ages receive trainings mainly from government extension workers.
- Though SHF are trained on most of the good agricultural and post handling practices, almost all the SHF are trained on use of fertilizers (98.4%), planting and spacing (97.9%) and when to harvest (91.4%). There is no notable difference between male and female SHFs.
- Almost all SHF's who reported to have been trained on different agricultural practises reported to have been practising the same but use of fertilizers (98.4%), planting and spacing (97.9%) and timely harvesting (91.4%) are the most practised. There was no notable difference in the practise of good agricultural practise between males and females and also among members of cooperatives of different sizes, capacities and ages.

115. More than three quarters of the SHFs reported to have received extension services (see table below). The GoR remains to be the main provider of extension services (78.4%) to SHFs among other providers including local and international NGO's (34.0%) local CBO's (44.3%), WFP and other UN agencies (11.2%). However, more SHFs from smaller cooperatives (85.7%) rely on extension services from the government compared to members of medium (76.4%) and large cooperatives (79.3%). There was a marginal difference ($p=0.049$) between males (74.8%) and females (69.4%) in relation to receipt of extension services. The illustration below details the extension services to SHFs.

Table 8: Access to extension services (quantitative data collection)

	Frequency	Percent	Valid Percent	Cumulative Percent
No	231	27.6	27.6	27.6
Yes	605	72.4	72.4	100.0
Total	836	100.0	100.0	

Table 9: Source of extension (quantitative data collection)

		Responses		Percent of Cases
		N	Percent	
Source of extension services	WFP and other UN agencies	68	6.7%	11.2%
	Government extension workers	475	46.7%	78.5%
	Local and international NGO's	206	20.3%	34.0%
	CBO's	268	26.4%	44.3%
Total		1017	100.0%	168.1%

Dichotomy group tabulated at value 1.

Table 10: Source of extension according to the size of cooperatives (quantitative data collection)

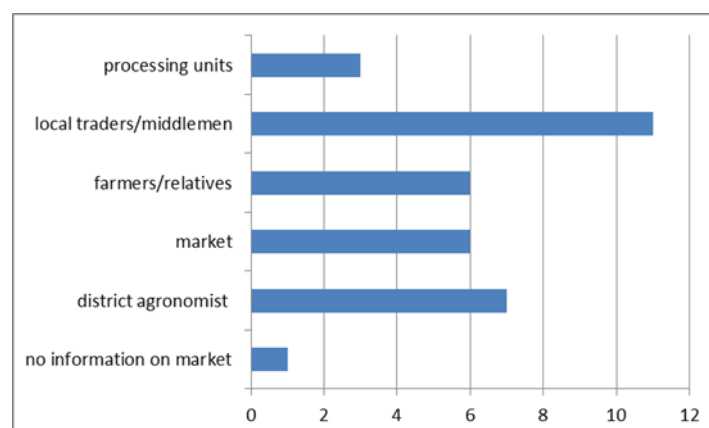
			Cooperative size			Total
			Large	Medium	Small	
WFP and other UN agencies	Count		40	26	2	68
	% within coop size		10.2%	13.1%	14.3%	
Government extension workers	Count		311	152	12	475
	% within coop size		79.3%	76.4%	85.7%	
Local and international NGO's	Count		139	65	2	206
	% within coop size		35.5%	32.7%	14.3%	
CBO's	Count		161	101	6	268
	% within coop size		41.1%	50.8%	42.9%	
Total		Count	392	199	14	605

Percentages and totals are based on respondents.

Market information

116. Farmers who do not have information on main markets, buyers and prices tend to take their productive and commercial decisions based on minimizing risks, rather than on balancing risk and profits. Market information enables farmers to identify new market opportunities and to have a stronger bargaining power.²⁹

Figure 9. Cooperative sources of information (qualitative data collection on 11 cooperatives), multiple choice options



117. According to the results of qualitative data collection, for most of the cooperatives, access to market information is limited to information on price. Information on markets, organization of the value chain, buyers and demand is very limited.
118. As seen in the figure above, most cooperative sources of information are local. None of the cooperative is aware of the e-soko market information system³⁰. Information is collected mainly by sending members to visit the markets or processing units before trying to sell their maize, or through local traders. In one case a cooperative (CCM Muganza) mentioned they used to have a committee that would travel to Kigali to collect information on price and to find buyers, but this was abandoned when the strategy was found to not be cost-effective (they had to pay for travel fees but could not get any market). Eight cooperatives do not seek out market information. In this case, the price is imposed on them by buyers and middlemen.
119. The agronomist reportedly plays a key role in market information. S/he informs cooperatives of the minimum price fixed by the government. However, this price is considered as very low. Some cooperatives hold meetings between members to discuss and collectively decide on the price for their products. However, cooperatives may not succeed in selling at this price.³¹ Most cooperatives are convinced they would benefit from better market information, but only a few can give specific reasons.

²⁹ Experiences from other country show for example that market information systems (MIS) can have a very positive impact on farmers' income. In Uganda, for example, the introduction of MIS led to a 15% price increase for maize and a 32% increase of the volume of sales for agriculture products in genera (Reference : les systèmes d'information sur les marchés agricoles dans les pays en développement : nouveaux modèles, nouveaux impacts, Galthier, David-Benz, Subervie, Egg, 2014).

³⁰ E-soko has been established in 2011 by GoR. It enables farmers to access information on prices of agricultural products through their mobile phone or internet on a weekly basis.

³¹ Most of the cooperatives that have consulted members on the price have sold at a cheaper price because they could not find buyers at the agreed price and could not wait.

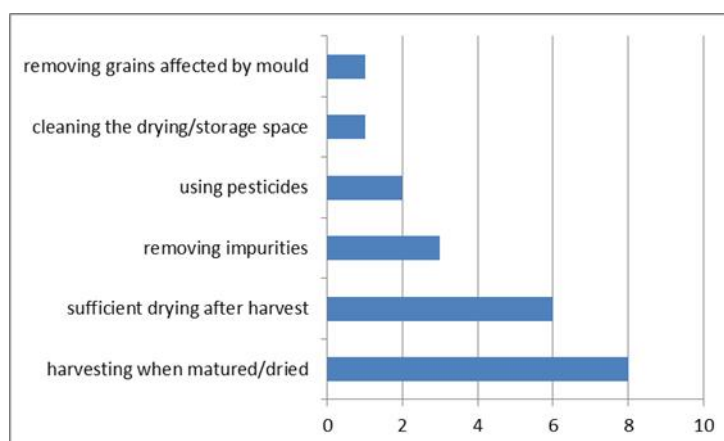
120. Information on formal buyers (big buyers) is very limited. Cooperatives do not know buyers. One cooperative mentioned that they were scared of this type of markets because they did not know the conditions. Some cooperatives (Abemerhiigo and Iciyerekezo) believe they can get a better price on the local market (especially by targeting processing units). These cooperatives also stated that the WFP price is far too low to interest them.³²

SHFs knowledge of production practices

121. For SHFs, good agriculture practices correspond to what is promoted by the GoR through the sector agronomists. This includes respecting the technical itinerary (spacing for example), using fertilizers and improved seeds, and harvesting when the maize is mature. Annex 7.1 provides further details on these practices and on SHFs specific knowledge about them. However, good agriculture practices have a broader meaning and include growing crops in ways that both optimize productivity and ensure sustainability.
122. Overall, knowledge on technical itinerary and inputs use is relatively good (except for pest management) as far as maximizing production is concerned. Sustainability of cropping systems, crop rotation, erosion control and soil fertility management are far less known by SHFs.
123. The attitude of producers and cooperatives toward intercropping is mixed. Following the official recommendation from the RAB they consider that monocropping is the best way to boost productivity and they respect it but they also perceive it as very risky (their traditional system usually combines numerous crops on the same plot). All the cooperatives met have a rotation pattern for their crops but introduction of leguminous crop is not systematic and producers were not considering it as an issue.
124. The main source of information on production for SHFs is the sector agronomist. At the beginning of each season, s/he advises them on the appropriate quantity of seeds and fertilizers to use. Also, most of the cooperative have received some training on agriculture production by NGOs or UN agencies. Information is also shared between farmers when they are working on the cooperative plots.

SHFs knowledge of post-harvest handling

Figure 10. Cooperative knowledge on post-harvest handling practices (qualitative data collection, on 11 cooperatives multiple option choice)



³² The cooperatives mentioned that the WFP price is the minimum price + 10 RwF/kg (0.01 USD).

125. Good post-harvest-handling practices stimulate agricultural production, prevent post-harvest losses and add value to agricultural products. They are critical issues to improve quality of the food produced by SHF. For maize, the main issue is to bring down the maize grain to a 13 percent moisture level. That requires an adequate drying as well as a timely harvesting. Other important practices are grading out clean from infested or contaminated grain before storage. Proper storage practices include cleaning storage space, good aeration and avoiding storage with other products, especially one that can contaminate maize. For bean, good practices include improved threshing and sorting before storage as well as preventing measures to reduce infestation during storage.
126. The baseline shows that farmers have a lower knowledge on post-harvest handling practices than they do of agricultural practices. The figure above shows that the majority of cooperatives know that they have to harvest maize when it is mature and that maize must be dried. However, they have no information on how to guarantee sufficient dryness of the maize and on the minimum drying time. Good practices in terms of post-harvest handling are not well known by SHF and cooperatives. Information on cleaning and sorting the grain is not common and farmers do not know how to store maize in a good condition.

SHFs access to relevant extension services from LRP implementing partners and from the government

127. It was clear from FGDs (and confirmed by the quantitative survey) that most farmers have received extension services. The first source of extension service is the sector agronomist who is guiding farmers in organizing the season and provides information on farming practices they have to apply. However, the sector agronomist does not providing day to day extension support. The system implemented by the GoR is the farmer to farmer approach” (“twigire muhinse” system), where a voluntary model farmer is in charge of supporting a group of farmers. However, model farmers are apparently not always well identified (only three cooperatives mentioned that there were model farmers in the area).
128. Access to extension services is well-developed already but there are still issues that should be taken into consideration in the strategy and implementation of the LRP. Extension service is mainly focused on technical issues and implementation of the government standards on maize and bean production. Post-harvest handling is supposed to be part of the extension package, but it is not much developed. Similarly, technical issues and support are not linked with an economic analysis of farmers’ expenses and profit, which does not help farmers acquiring a business-oriented vision of agriculture.

2.5. Male and female SHF choices around short term productive assets, marketing and good practices. What are the benefits?

Quantitative findings

129. The quantitative analysis focused on SHFs investment on short term assets (seeds, tools, fertilizers, and casual labor). The analysis also covers the cropping choices of SHFs, access to credit.

130. **Seeds:** More than nine in 10 SHF's reported to have purchase seeds in the last planting session A and B. 88.6% reported to have purchased maize seeds while 51.3% reported to have purchased beans seeds.

131. On average, SHF's spend an average of 12168.9 RwF (14.49 USD) (min 0, max 300000, sd. 22552.8) on purchase of seeds. There was no noted significant difference on the average amount spent by females (av. 11345.73 RwF, 13.51 USD) and males (av. 12862.37 RwF, 15.32 USD) on the purchase of seeds. The difference in amount spent by SHF on seeds was though significant among members of large (Av. 14537.8 RwF, 17.31 USD), medium (Av. 8270.2 RwF, 9.85 USD) and small (Av. 2939.3 RwF) cooperatives.

Table 11: Seeds purchase (quantitative data collection)

	Frequency	Percent	Valid Percent	Cumulative Percent
No	29	3.5	3.5	3.5
Yes	807	96.5	96.5	100.0
Total	836	100.0	100.0	

Table 12: Purchase of maize and beans seeds according to gender (quantitative data collection)

		Gender		Total
		Female	Male	
Maize	number	316	399	715
	%	88.3%	92.8%	
Beans	number	197	217	414
	%	55.0%	50.5%	
Total	number	358	430	788

Percentages and totals are based on respondents.

Table 13: Amount spent on seeds (quantitative data collection)

Gender	Mean	N	Std. Deviation	Minimum	Maximum
Female	11345.73	369	21789.056	0	229600
Male	12862.37	438	23178.861	6	300000
Total	12168.89	807	22552.830	0	300000

132. **Tools:** Most of the SHF's (81.8%) purchased tools during the last planting season A and B and on average SHF spent F 4271.93Rw, 5.09USD (min 0, max 65200, sd. 4963.8) on tools (see table 15 below). It is a very small amount compared to other expenses.

133. **Fertilizers:** Almost all (91.3%) the SHF 's reported to have used fertilizers in the past the past season A and B. More than half (59.2%) of the SHF's reported to have purchased the fertilizers from agro dealer (35.8% from cooperatives and 16.5% from government donations). On average, SHF's spent 13114.12 RwF on fertilizers

(min 0, max 125000, sd. 17856.24) with males spending significantly more (average 16401.22 RwF) compared to females (av. 9009.33 RwF)³³.

Table 14: SHFs use of fertilizers

	Frequency	Percent	Valid Percent	Cumulative Percent
No	73	8.7	8.7	8.7
Yes	763	91.3	91.3	100.0
Total	836	100.0	100.0	

Table 15: Sources of fertilizers (quantitative data collection)

	Responses		Percent of Cases
	N	Percent	
Government donation	126	12.6%	16.5%
Local and international NGO's	89	8.9%	11.7%
Cooperatives	273	27.4%	35.8%
Donations from friends & family	28	2.8%	3.7%
Purchase from agricultural dealers	452	45.3%	59.2%
Others	15	1.5%	2.0%
Borrowing from friends and family	15	1.5%	2.0%
Total	998	100.0%	130.8%

134. **Casual labor** :50% of the SHFs hire casual labor for the last planting seasons. Men are more frequently hire casual labor than women. As table 15 shows, casual labor is the main source of expenses for SHFs.

Table 16 : Use of casual labour by gender (quantitative data collection)

			Gender		Total
			Female	Male	
Household use of casual labour	No	Count	229	184	413
		%	55.4%	44.6%	100.0%
	Yes	Count	154	269	423
		%	36.4%	63.6%	100.0%
Total		Count	383	453	836
		%	45.8%	54.2%	100.0%

³³ 15.6 USD on average, 19.53 USD for males and 10.73 USD for females

Table 17 : Amount spent by SHFs on fertilizers, tools and casual labour

	N	Minimum	Maximum	Mean	Std. Deviation
Amount spent on fertilizers	441	0	125000	13068.80	17820.169
Amount spent on casual labour	410	1400	9000000	72107.93	446626.200
Amount spent on tools	666	0	65200	4305.40	5019.273

135. **Cropping choice and size of the plots:** Normally, almost all the SHF household plant maize (97.5%) and beans (98.8%). The other crops planted by households include sweet potatoes (79.4%), vegetables (36.1%) and Irish potatoes (34.3%) among others. In the past planting season, A, this trend was consistent but with fewer households planting beans (91.4%), maize (67.0%) sweet potatoes (53.5%) and vegetables (19.7%) compared to the number of households who reported to normally plant these crops. In season B, there were even fewer SHF's who planted maize (44.7%), beans (82.9%), sweet potatoes (42.7%) and vegetables (24.6%). On average, SHF's allocated 0.156ha for maize (average of 67.1% of the total farm land owned by SHF's) and 0.185ha (62.06% of the total farm land owned by the SHF's) for beans in the planting season A compared to 0.136ha for maize (56.6%) and for beans 0.171ha (55.5%) in season B. The amount of land allocated to both maize and beans was significantly higher in males (maize 0.197ha, beans 0.233ha) compared to females (maize 0.099ha, beans 0.126ha); ($p > 0.001$) in season A. However, for season B, the amount of land allocation was only significantly high for beans among males (males 0.206ha, females 0.127ha; $p > 0.001$) and not for maize.

Table 18: Area planted for maize and bean (quantitative data collection)

	N	Minimum	Maximum	Mean	Std. Deviation
Area planted maize	568	.0012	2.0000	.155803	.2510013
Area planted bean	764	.0015	4.0000	.184589	.2929460

Table 19: SHFs cropping choices

	Responses		Percent of Cases
	N	Percent	
Maize	815	19.9%	97.5%
Coffee	81	2.0%	9.7%
Vegetables	302	7.4%	36.1%
Bananas	138	3.4%	16.5%
Tea	1	.0%	.1%
Peas	51	1.2%	6.1%
Groundnuts	48	1.2%	5.7%
Sorghum	343	8.4%	41.0%
Beans	826	20.2%	98.8%
Soybeans	199	4.9%	23.8%
Others	25	.6%	3.0%
Irish Potatoes	287	7.0%	34.3%
Rice	83	2.0%	9.9%
Sweet potatoes	664	16.2%	79.4%
Cassava	236	5.8%	28.2%
Total	4099	100.0%	490.3%

136. **Access to credit:** In the last planting session, about 1/5th of the SHF's (62.3% males, 37.7% females) required a credit/loan to finance their agricultural activities. Mainly the SHF's required the credit facilities/loans for purchase of farm inputs (64.6%) and paying for farm labor (27.4%). Of the SHF who required the loan, 69.7% (males 59.0%, females 41.0%) received it. The loans/credit facilities were mainly secured from banks and MFI's (37.7%), friends and family (32.0%) and from cooperatives (10.7%). More males (47.2%) opted for loans from banks and MFI's while more females (42.0%) opted for (42.0%) opted for soft loans from friends and family. Main reasons mentioned for not receiving the loan is the lack of collateral.

Table 20: SHFs main reasons for acquiring credit

	Responses		Percent of Cases
	N	Percent	
Purchase farm inputs	113	46.5%	64.6%
Sustain family during the faming season	28	11.5%	16.0%
To pay for labour	48	19.8%	27.4%
To purchase extra land	17	7.0%	9.7%
To pay for extension services	32	13.2%	18.3%
To pay for transportation costs	5	2.1%	2.9%
Total	243	100.0%	138.9%

Investment in short term productive assets for maize and beans

137. With LRP's intervention lasting only two years, it is very unlikely that the interventions promoted by the programme will produce structural changes in the income and livelihood of farmers. Therefore, to assess the potential of LRP programme to create some change in the long run, changes in short term choices made by farmers need to be analyzed. The hypothesis is that if farmers are convinced of the interest of maize and beans they will invest in the crop through renting more land, purchasing more tools, and using more inputs. Also if the crop takes a commercial orientation, it is likely that SHFs will use more labor.
138. First, investment in productive assets is not a priority for farmers. It was clear from the FGD that if farmers had the opportunity (hence more funds) they would first invest in paying school fees and collective health insurance, then purchase personal items (clothes, equipment for the house) and then invest in saving through their saving and credit groups. Detailed information on SHFs investment in short term productive assets is in Annex 7.4. Quantitative analysis on productive assets is in Annex 7.
139. Farmers are renting land already. The two main reasons for renting land is because farmers do not have enough land for their households and because they need more land to feed their family. Only a small number of farmers are actually able to rent land to produce for the market (and use the cooperative plot for this purpose). Apparently, farmers do not have difficulties in finding land, but the limiting factor is clearly their ability to buy for the rent of land.
140. Regularly investing in tools is compulsory for farmers. They have to purchase hoes every year as they are getting worn out after six months to one year of utilization. Other small equipment is not frequently used (shelling tools and pesticide sprayers).
141. Hiring casual labor concentrates agricultural activities over a short period of time at the planting season. Casual laborers mainly work on land preparation (clearing the land, preparing the soil) and they also help farmers to transport products (for example farmers use sticks to plant beans, and they often ask a laborer to bring these to the plot). Labor cost is similar in all the villages visited (. Finding laborers is not difficult, and they usually find laborers amongst relatives or in their nearby environment. Most farmers also work as casual laborers themselves. Actually, this is the main way for farmers to get cash when they face an unexpected expense, or when they need to purchase agriculture inputs.
142. All the cooperatives try and follow the recommendation from the sector agronomist concerning the quantities of inputs to be used on the cooperative plots. On their own hillside plots, farmers mentioned that is impossible to respect the established standards. Farmers all try to apply some fertilizers as they consider it is impossible to produce without fertilizers but sometimes the quantity applied is very low (about 25 to 50 percent of the recommended quantity). Most farmers do not plant improved seeds on their personal plot. An important issue with improved seeds is their timely availability. Farmers need to have their seeds early enough in the season so their crop can benefit from the rain. From the last two seasons, farmers reported encountering numerous difficulties in accessing seeds early enough. It is clear from the FGD that high costs limit the use of fertilizers by SHF. The SHFs know they will get a better production with fertilizers, but they cannot afford the costs of

the full dose. Their strategy is therefore to apply a minimum quantity in all their plots.

143. This insufficient use of fertilizers is not only an issue for production, but it questions the sustainability of their cropping system. Maize is a very nutrient demanding crop, there is no period of fallow, and in some case SHFs do not even add beans in the crop rotation. There is a risk that this will result in a decrease in soil fertility in the medium term. This phenomenon is amplified by the fact that farmers do not use enough manure.

Area cultivated with maize and beans

144. Statistics on the areas cultivated in the different districts for the main crops are in Annex 7.6. To be able to establish whether LRP will result in an increase in the area cultivated in maize and beans, information was collected during the baseline study on the area cultivated by LRP farmers before intervention.
145. Both maize and beans are cultivated both on the cooperative plots and on farmers' own plots on the hillside. For maize, priority is given to cultivation in the marshland, because farmers consider they can get a higher production. Beans are grown everywhere because it is the most important consumption crop.

SHF access to credit

146. Access to credit is a key to better agricultural results. Access to finance enables investments, which in turn improves economic performance of SHFs.³⁴ Farmers do not have enough funds to purchase an adequate level of inputs. At the same time a majority of SHFs consider that they do not need credit. This shows a lack of understanding of credit purpose and a fear of credit. Farmers prefer growing with their own limited means even if it means they will have a lower production at the end. Farmers also sell their workforce to purchase farm inputs. Only a minority of SHFs report acquiring informal credit from middlemen to purchase inputs.
147. The quantitative survey found that 68.2 percent of the credit requests concern financing of agriculture activities (inputs or/and labor). Only a small percentage of loans are used to invest in land. This is in line with the credit institutions' policy - they only provide SHFs credit for business activities, not for investment.
148. Information on the loans available to farmers was analyzed in evaluation question 2.2 above. Most farmers who submit a loan application receive credit. It confirms that there is globally a good knowledge and understanding at farmers level of the conditions needed to get credit.
149. Constraints on the credit system have already been explained in sub-question 2.3. Key barriers to SHF's access to credit relate to: the requisite skills to prepare a loan application, capacity to manage loans and funds, need for an active bank account with at least 20 percent of the required funds, and unavailability of the required collaterals. Climatic hazard is a major issue. Results of the cropping seasons are increasingly difficult to foresee.³⁵ So far, there is no crop insurance system available for farmers. Also there is a need to take a more global approach to the credit

³⁴ Rural financing market in Rwanda : determinant of farmers Housholds credit rationning in formal credit market, Wageningen university, 2012

³⁵ Several cooperatives explained that due to floods or droughts, they had poor production in three out of the four last seasons.

needs. It is very understandable that if a farmer need funds to pay food for his family and gets credit to purchase inputs he will use part of the credit to purchase food, even if that will hamper his potential production (and therefore his ability to repay the loan).

150. Soft loans and informal credit are important in facilitating farmers' access to credit, and do so in a simpler and more accessible way. Savings and credit groups are relatively common. These groups are important because they encourage savings. At the same time, some of the problems affecting formal loan systems also affect these groups. Poor management of funds is a frequent source of conflict amongst members and can also affect the cooperative's functioning as saving and credit groups as it affects willingness to participate in cooperative initiatives. Cooperative leaders mentioned that when they had to intervene in conflict solving in the cooperative it was very frequently linked to loan repayment difficulties by members (hence blocking loan attribution to other members).

SHF practices in production and post-harvest handling

151. Qualitative findings on good practices show that not all practices are adopted, and that there is a difference in the practices on cooperative plots as compared to personal plots. Annex 7.9 provides further information on the adoption of the different practices.
152. Use of seeds and fertilizers has already been analyzed. Use of manure is insufficient and use of lime is extremely rare even though both are crucial in improving productivity and maintaining soil fertility. Farmers are unaware of the recommended quantities and they apply only what is available. Other practices (planting in line, respecting spacing, sufficient weeding) are relatively well respected by SHFs.
153. There is a low adoption of good practices for post-harvest handling. Farmers have little incentive to invest in good practices as there is no increased added-value for a better quality of maize (and even less for beans), seeds, and no storage which would allow farmers to benefit from higher prices.
154. Farmers are aware that drying is important – especially given the relatively frequent rainfall - but nonetheless spend little time on drying. Drying is mainly done on plastic sheets. It is never done directly on the ground, which would limit contamination from foreign matters. Farmers usually dry maize in cobs for between four days and one week. In the rainy period drying time can increase to a month. Farmers dry maize again after shelling (for about a week). This drying time is not sufficient for high end buyers (and for local processing units).
155. Shelling is done manually. After shelling farmers do not remove damaged grain, which may cause problems of contamination and of conservation of the maize. Winnowing is done but not in a way to effectively removed foreign matter.
156. When farmers are storing maize, they do not usually use pesticides because of the associated costs. Farmers seem to have a low awareness of good storage practices (no storage on the ground, sufficient aeration, no maize bag touching the wall...) though it was not possible to check what they are actually doing (there was no maize and beans stored at the time of the mission).

2.6. Evaluation question 4- What opportunities exist for male and female SHF?

157. Male and female farmers need to have new marketing opportunities if they are to make the change from the current self-consumption oriented farming with low connections to the market and low investment in quality to a quality commercial agriculture with aggregation of big volumes of products at cooperative levels. These opportunities should offset the extra effort and investment needed and should allow farmers to minimize risks and create safe and sustainable outlets and services. A better price will most likely not be enough to lead to a real change of practices.
158. To see this change, opportunities must be present and accessible to farmers (meaning that big buyers must be interested in purchasing maize and beans from cooperatives). But an enabling environment (from the government, service providers, banks...) is also essential to provide the framework for these opportunities to emerge and thrive. Lastly, needs, capacities and strategies of SHFs, both male and female need to be taken into account to ensure that they can actually respond to these opportunities. This EQ examines these elements.

Key findings and conclusions – Question 4

- LRP project has not started to implement school feeding activities. However, WFP is already implementing HGSF project in Nyaruguru and Nyamagabe districts
- In the four LRP districts, there is also a school feeding program for secondary schools, organized and financed by the government. The GoR provides 56RwF per child per day. That covers around 70% of the needs.
- Concerning WFP current HGSF, food is procured at national level (maize meal and beans), regional level (salt) and international market (vegetable oil).

2.6.1. Sub-question 4.1 How are pro-SHF and buyers' partnerships taken into account in the strategies and policies?

159. The GoR puts strong emphasis on improving the engagement of the private sector in agriculture.³⁶ The GoR encourages investment, both domestic and foreign, in the agricultural sector and is developing a conducive environment for attracting investments. However policies and strategies are not specifically targeted to promoting SHF contracts with big private buyers in Rwanda. Information on what is required to improve an environment that is pro-SHF and increases contracts between SHF and buyers is in o.

2.6.2. Sub question 4.2 Are big buyers willing to purchase maize and beans from SHFs?

Awareness by large buyers of cooperatives as business partners

160. The maize sector is dominated by a few relatively large local buyers and agro-processors (according to the association of maize millers, there are 20 millers with a processing capacity above 2000T per week). Africa Improved Food (AIF), and Minimex are the two leaders of the sectors. Other important stakeholders in the sectors are Sarura, RGCC and EAX (Annex 8.1). In parallel, there are increasing numbers of small and medium size processing units operating at district levels.

³⁶ This is the focus both of the PSTA and the Trade Policy.

161. All the maize and bean produced in Rwanda come from SHFs. Big buyers consider that the maize value chain is very promising and are very positive of the government efforts to increase productivity and production. There are some issues affecting the maize value chain that are common to SHFs and big buyers and on which value chain dialogue could be built. Price volatility and climatic hazards are the most important ones.
162. Quality of maize produced in Rwanda is considered good in comparison with other countries. However, production is very low compared to neighboring countries. Some maize buyers from Uganda and Kenya who come to Rwanda, mix Rwandan maize with maize produced in their own country and export it back to Rwanda. Buyers report that it is difficult for them to obtain the quality of maize that they are looking for (most of the maize they purchase from farmers is grade 3). Selloing maize on the Rwandese market is not difficult as the demand is very high and consumption of maize is increasing. According to Minimex, Rwanda is still a net importer of maize. For beans, there is no regional dynamic so far. Bean produced in Rwanda is a mix of different varieties, and regional buyers look for a uniform (single bean type) production.
163. Buyers already have good awareness of cooperatives. They see forward delivery contracts as potentially growing because these are profitable both for farmers (who have a guaranteed market which encourages them to invest in quality) and for firms (which can access aggregated volumes of products, hence reducing transaction costs).³⁷

Existence of buyers purchasing maize beans from cooperatives

164. There is no overview list of the current big buyers in the maize and bean sector. Buyers who were met during the baseline are all purchasing from cooperatives, regardless of having been previously included in the FTMA project.

Volumes of food procured by WFP from pro-SHF buyers and percentage of food from the platform going to buyers other than WFP

165. LRP's activities have not yet started so the volume of food procured by WFP from proSHF buyers is zero T (and zero percent of the food from the platform is going to other buyers.) However, these activities are not new for WFP so results from previous programs can provide useful insights for baseline values.
166. For season A 2016-2017, 4300T of maize have been aggregated by over 70 cooperatives under the FTMA program. The volume of maize contracted was 4900T, implying that most contracts were fulfilled by cooperatives. Contracts were signed with RGCC (46 contracts), Prodev (19 contracts) and Sarura (three contracts). For season A 2015-2016, the volume contracted was 9085T and the volume delivered 2560 T³⁸. This shows that the quantity aggregated has increased and that contracts have been respected. It also suggests better selection of the cooperatives to engage in the contract process to avoid defaulting. Results from the last season are lower: 827T were procured from cooperatives in FTMA in 2017.

³⁷ All companies mentioned that transaction costs affect their activities.

³⁸ Data are different according to different documents and info provided by WFP (see for example the FTMA april to june 2017 update)

2.6.3. Sub question 4.3 - Are producers able to respond to demand from big buyers?

Cooperatives' quality standards management

167. Cooperative need to control and monitor the following aspects to ensure quality produce: humidity levels (the acceptable rate for EAC standards is 13.5 percent), presence of foreign matters, broken grains, presence of mold, damages from insects or other animals (rats), uniform color, absence of bad smell. Cooperatives must also regularly inspect their drying space and their warehouse to control insect infestation and to check for water leakages in the warehouse.
168. Awareness on quality and quality monitoring is low at cooperative level. One cooperative sold maize to AIF in the last season and checked the moisture level which was found to be 16 percent (for a cooperative that is already well organized and has a drying space). Cooperatives are aware of the existence of certain quality product exist (such as minimax flour) but they consider that quality is linked to the quality of the processing. They also believe that local processing units mix their maize with low quality maize from Kenya (which is true) or with cassava and sorghum flour.
169. Cooperatives do not grade the maize they receive from members and they only control that the maize has been harvested at maturity and that it is dry enough. They do not have specific monitoring system. Cooperative requirements are even less demanding for beans (these are only checked for dryness). This basic control is done visually and they also check how hard the grain is to evaluate if drying is sufficient. Cooperatives do not usually reject any production from members. Local buyers do not offer a higher price for good quality maize, but when they purchase maize that is not cleaned and not dried enough, they do a second cleaning and drying at the processing unit level before processing maize into flour.

Numbers of contracts signed between cooperatives and buyers and volumes of products purchased by big buyers

170. Only Coamanya Gishubi sold 120 T of maize to AIF in season A 2017. No contract was signed because the buyer had enough funds available to purchase all the production at once. So far, contracts are signed only when a buyer has seen some production and want to make sure the product will not be sold elsewhere. Only Duterimbere cooperative signed a contract with a Korean animal feed processor (this was not a forward delivery contract) and only five cooperatives are actually aware that there are big buyers ready to purchase maize.

Current situation in terms of contracts' defaulting and adaptation of contracts conditions to the needs and constraints of buyers and SHFs (in terms of schedules, transport, time of payment, quality and price)

171. As only one of the LRP cooperatives has signed a contract with a buyer it was impossible to assess contract defaulting for these cooperatives. However, big buyers have experience working with cooperatives and they consider that defaulting is an issue. Buyers report that defaulting has reduced over the last years (with sensitization made by government and development partners). Minimex, for example, now has a defaulting rate of about 40 to 50 percent which represents a considerable improvement as they used to have a 90% defaulting rate.

172. None of the buyers provide advance payments or finance inputs (which would then be repaid after harvest). Buyers consider it too risky as farmers may take the advance and sell to another buyer.

173. Overall, stronger enforcement of contracts is needed. Some cooperatives sign contracts with several buyers and then decide after harvest where they are going to sell. So far, contracts are not seen as binding arrangement by farmers (the same applies to some smaller companies). Annex 9.2 provides more information on the constraints on contracting.

2.7. Evaluation question 5- How does the procurement, delivery, and distribution of the modality for school feeding which is promoted through LRP compare – in terms of cost-effectiveness and timeliness - to the alternative modalities of food procurement?

Key findings and conclusions – Question 5

- LRP project has not started to implement school feeding activities. However, WFP is already implementing HGSF project in Nyaruguru and Nyamagabe districts.
- In the four LRP districts, there is a government funded school feeding program for secondary schools. The GoR provides 56RwF (0.07 USD) per child per day. This covers around 70% of the needs.
- WFPs current HGSF programme procures food at national level (maize meal and beans), regional level (salt) and on the international market (vegetable oil).

2.7.1.Sub-question 5.1.Information on the price of school meals

174. Eight schools were visited for the purpose of the baseline (two per LRP targeted district). One of the schools has only a primary SF programme supported by WFP (Mugombwa Primary in Nyamagabe District), three schools have primary and secondary SF programmes supported by WFP and the GoR respectively, in conjunction with parents (St. Nicholas Cyanika in Nyamagabe District, G.S. Kibangu and G.S. Kiyonza in Nyaruguru District). The four remaining schools (Kabusanza and G.S. Karama in Huye and Rwamiko and G.S. Nyagahuru II in Gisagara) have the SF programme only at secondary level with covered by the GoR in conjunction with parents' contributions.

175. At primary level the school meals commodities are purchased by WFP from national traders (maize meals and beans), regional market (salt) and international market (vegetable oil) and delivered to the schools. The secondary level, uses the government funding to purchase school meals from local traders who comply with the conditions of the formal public tendering process. The purchasing price fluctuates depending on prevailing market conditions. The local traders buy food either from local processing units (for maize meals), from local SHF (either directly or through cooperatives) or from national and regional market depending on the availability of products. For secondary schools, the contribution from the government is of 56 RwF/child/day (0.07 USD) and this cover about 70% of the needs (the rest being normally covered by parents). Therefore, the price of a school meal can be estimated about 80 RwF/child/day (0.10 USD).

2.7.2. Sub-question 5.2- Procurement, distribution and delivery time of different food procurement modalities, and situation with respect to pipeline breaks

176. This sub-question will be covered during the end-line. Meanwhile, from the field interviews, the WFP supported SF programme (primary schools) is facing some challenges such as accessibility to schools, especially during the rainy seasons, and the delays of donor funds which affect the delivery of food. To prevent the pipeline breaks food is delivered before stocks run out.

For the secondary programme, funding from parents and the government is not sufficient and meets about 70% of the needs. This is because the parental contribution may fall short of what is expected (i.e. when parents cannot pay) and the government contribution may be delayed. The shortfall is met with produce from the school garden, and other strategies such as reducing portion sizes and feeding only those children whose parents have contributed (others go home or do not eat). In schools where there is also a WFP school meals targeting primary pupils, food sharing between target beneficiaries (primary) and non-target beneficiaries (secondary and pre-primary) is frequent.

177. The WFP commodity rations (also used by the GoR in secondary SF) are as follows: MML (120g/person/day), Beans (30g/person/day), salt (3g/person/day), and vegetable oil (15 g/person/day). Vegetables are mainly harvested from the school garden, brought locally, or are provided to schools free of charge by parents as their contribution. Feeding days are usually 22 days in a month, 180 per year. The costs of firewood, water, and other inputs varies from school to school depending on the capacity of the school and parents.

2.8. Evaluation question 6- How does the LRP project affect male and female SHF?

Key findings and conclusions – Question 6

- SHFs cropping choices are mainly driven by households food needs. Another important element of strategy is minimizing risks (climatic hazards, pests...).
- Crops that contribute the most to farmer income are maize, coffee and Irish potatoes. Bean is not seen as a source of income.
- Farmers are limiting production risks through mix-cropping practices and use of crops that are considered as famine crops (cassava and sweet potatoes)
- Income generating crops are gaining importance (mainly maize). Beans are also a high priority crop for farmers.
- With the current production practices maize and beans production a not profitable. For both crops, it is currently less economically interesting for a farmer to work one day in his maize or bean farm than to sell his workforce.
- Providing there is no climatic hazards or pest attacks, both crops can be profitable if producers apply good practices, adequate level of fertilizers, and use improved seeds.
- Sustainability of the cropping system is an issue. It is not possible to apply the recommended level of manure and to generate profits. On the long run, that will reduce soil fertility.

178. In order to increase the volume of food procured locally, the marketable surplus of each individual farmer needs to increase. This way, more maize and beans will be sold to buyers who will in turn supply WFP and other clients (including schools). The impact of this increase should lead to a better income for farmers. It is therefore essential to have information on the current income of farmers. Due to time constraints, it was not possible to conduct a full analysis of farmers' income. However, the qualitative data collection, allows insight into the key factors influencing farmers income and to measure the net margin of maize and beans. Indicators and results for qualitative analysis of income are in Annex 8.2 and they are completed with quantitative analysis of the volumes and values sales of maize and beans, compared to the volume and values of sales of other important crops.

2.8.1. Sub question 6.1. Elements influencing male and female SHFs 'income

Quantitative findings

Volumes and value of maize and beans sales by SHF, disaggregated by gender.

Table 21: Volumes of sales of maize and bean (season A and B) quantitative data collection (in kg)

	N	Minimum	Maximum	Mean	Std. Deviation
Sales of beans (season A)	813	0	3075	41.47	164.593
Sales of beans (season B)	813	0	171000	234.07	5996.857
Sales of maize (season A)	769	0	3000	94.53	257.741
Sales of maize (season B)	769	0	240000	440.93	8756.651

179. On average, SHF earned 285.9 RwF /kg (0.34 USD/kg) from season A maize sales compared to 275.9 RwF /kg (0.33 USD/kg) from sales of season B harvests. For beans, the SHF's earned an average of 528.6 RwF /kg (0.63 USD/kg) from season A sales compared to 578.9 RwF /kg (0.69 USD/kg) from season B sales. Buyers with contracts offered higher prices per kg compared to other buyers while middlemen offered the lower price (av. price of maize; buyers with contract F 399Rw/kg (0.48 USD/kg), cooperatives 391 RwF /kg (0.47 USD/kg); middlemen 357 RwF /kg (0.43 USD/kg), large buyers without contract 357 RwF /kg (0.43 USD/kg) and individuals 385 RwF /kg (0.46 USD/kg)). The place of sale of maize and beans did not have a significant effect on the price of sale of maize and beans.

180. Contribution of maize and beans to SHFs income :

- Crop farming is the main source of income for more than nine out of 10 SHF households.
- Beans (68.7%), sweet potatoes (31.3%) and maize (34.2%) are the three top crops for SHF's consumption.
- Maize (37.7%), beans (26.2%) and others (25.8%) are the three main crops that provides SHF's with more money.

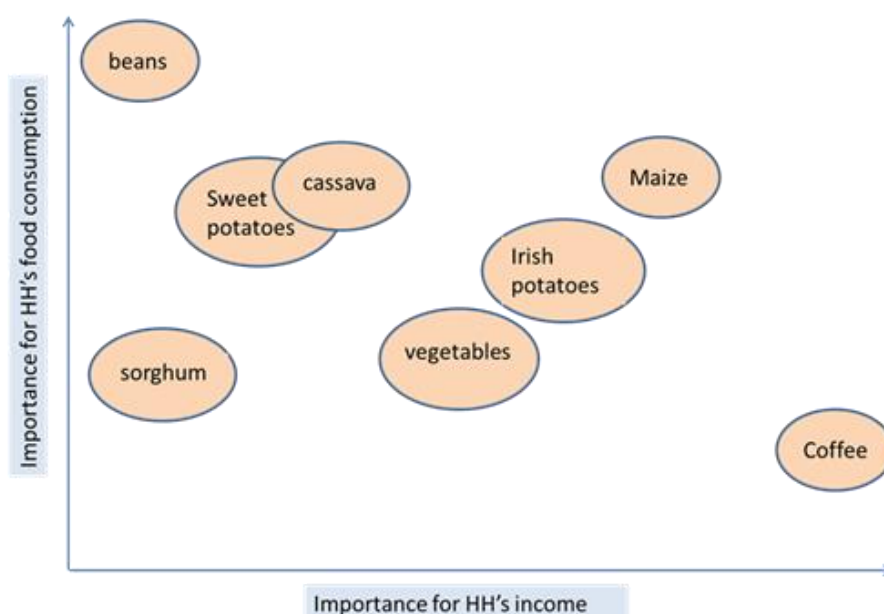
Table 22: Contribution of maize and beans to SHFs income (quantitative data collection)

			Gender		Total
			Female	Male	
Income contribution	30% to 60%	Count	153	206	359
		%	39.9%	45.5%	42.9%
	Less than 30%	Count	93	62	155
		%	24.3%	13.7%	18.5%
	More than 60%	Count	137	185	322
		%	35.8%	40.8%	38.5%
Total	Count		383	453	836
	%		100.0%	100.0%	100.0%

SHF farmers cropping and activity systems

181. SHFs cropping choices are mainly driven by household food needs. Most produce is either consumed by the family or sold to purchase other food products (mainly beans). The crops that contribute the most to farmer income are maize, coffee and Irish potatoes. Crops are labor intensive, mechanization is mostly non-existent. Use of inputs is very limited (except for cooperative plots), most farmers use what they have kept from the previous season or purchase from neighbors. Yields and production are low due to low soil fertility (and acidic soils in some areas), high erosion, climatic hazards (drought and floods), inadequate crop rotation and pests and disease.

Figure 11. Positioning of crops in terms of their importance for consumption and for income (based on responses from the qualitative data collection)



182. Similar crops are grown in the four districts (although with different levels of relative importance) (see Annex 8.1). Detailed information on the different crops grown by SHFs in the targeted districts is in Annex 9.2
183. Avoiding risk is another important factor that determines SHFS cropping choices. by investing in mixed cropping (so that if there is a problem with one crop, the farmer can still rely on the other ones) and relying on tubers that can be kept on the ground and harvested gradually. Income-generating crops have started to gain importance because they can contribute to their food security (purchasing food) and because they give producers the opportunity to sell large volumes of products in one go (hence the possibility to invest in products for the family). The figure below shows for each of the crops what their relative importance is in terms of contributing to income and to the consumption of the family. This confirms the double interest of maize (important for both income and consumption).

Profitability of maize and beans for SHF (analysis of net margins)

184. The results of the economic calculation are in Annex 9.3. The calculations show that with the current practices and in marshland conditions the net margin per plot is similar for both crops. In the current situation profitability is low, in terms of net margin per man day. This makes it less economically interesting for a farmer to work one day on his farm than to sell his workforce as casual labor.³⁹ The system works because SHFs do not measure the work they invest in their farm. What matters at the end of the season is to feed their household and if possible to have a surplus to cover other needs.

³⁹ As noted earlier in the report the price of casual labour is 700 RwF (0.83 USD) per day on the marshland and 1000RwF (1.19 USD) on the hillsides.

185. The results are based on the price at harvest time. Yet, the price fluctuates a lot during the season (Price volatility was particularly high in 2017: it varied from 300 to 400 RwF⁴⁰ and up to 450 RwF per kilo for maize). It was not possible to assess the storage costs and the post-harvest losses as cooperatives met were not storing maize, but there is probably a real potential here, providing storage is made in good conditions.

186. Looking at these results, it is clear that for mono-cropping plots, it is interesting for farmers to invest in quality inputs (improved seeds, recommended doses of fertilizers) even if this is an expensive investment. The level of inputs has a favorable impact on production and the benefit level. For mono-cropping plots, if farmers do not invest sufficiently in inputs then their profit will be lower than they would have had when producing in a mixed-cropping system, and farmers will not be able to purchase the same quantity of food with the extra income. Therefore, mono-cropping is only interesting if farmers use a high level of inputs.

187. These calculations also shed light on the limits of the current system in terms of maintaining soil fertility. Even if farmers were to apply the recommended level of manure to make sure that they maintain the fertility of their soil (10 T/hectares), they will not be able to make any profit even under the most favorable conditions. The same applies for lime application. The current application of manure (and no lime) is enough to give them a good production for a few years, but there is a high risk that the soil fertility declines very fast, especially as beans are not systematically included in farmers crops rotation.

2.9. Evaluation question 7- How and to what extent do producers market food products that meet quality standards and are nutritious and culturally accepted.

188. At baseline level, the evaluation looked at the current quality of the maize and beans products and their characteristic in terms of nutritive value and cultural acceptance. At end line level, the evaluation will examine if SHF use their (improved) income to improve their food supply in quantity and/or in quality.

Key findings and conclusions – Question 7

- The majority of the food that SHFs consume comes from their own production or is purchased locally.
- Quality is not considered an important issue for farmers and awareness of quality standards is very low.
- SHFs do not have a preference for specific maize varieties, but they prefer eating traditional varieties of beans.
- Maize is now regularly consumed by SHF, which was not the case five years ago.
- It will be very difficult for farmers to aggregate and sell big quantities of beans, as they consider it as a key crop to keep for family consumption.

⁴⁰ From 0.36 to 0.48 USD and 0.54 USD for maize

2.9.1. Sub-question 7.1 - Overall quality of maize and bean products consumed by SHF?

Quantitative findings

189. The quantitative survey focused on the quality of what SHFS are consuming and on the quality of maize and bean.
- Beans (68.7%), sweet potatoes (31.3%) and maize (34.2%) constitute the three main crops consumed by the SHF households (See Annex 10).
 - If households do not sell maize and beans, 17.2% of SHF households would completely cover their maize households needs while 12.1% of households would completely cover their beans household needs.
 - SHF prefer maize and beans harvested at a good time (61.2%), graded (43.4%), cleaned after harvesting (53.2%), not damaged during threshing and shelling (46.3%) and properly stored 44.1%.
 - Knowledge of good agricultural practices and the educational level of the SHF's did not have an effect on the characteristic of maize and beans preferred by the SHF households.

Table 23: Quality preference for maize and beans consumed by SHFs (quantitative data collection)

		Responses		Percent of Cases
		N	Percent	
characteristics of maize and beans	Without stones	756	20.2%	90.4%
	Without smell	246	6.6%	29.4%
	Without insects	562	15.0%	67.2%
	Very white maize	17	.5%	2.0%
	Specific color of beans	686	18.3%	82.1%
	Specific variety of maize/beans	463	12.4%	55.4%
	Well dried maize/beans	698	18.7%	83.5%
	Others	312	8.3%	37.3%
Total		3740	100.0%	447.4%

Qualitative analysis

190. Most of the food that SHF consume is food that they produce. They purchase mainly beans and some maize, but it is also locally produced.
191. Awareness of quality standards is very low at farmers' level. As one farmer mentioned "we eat what is available, we do not care about quality". SHF do not have specific quality criteria for maize, other than the color (they prefer maize when it is white). Other factors mentioned in FGDs are the dryness and the cleanliness. However, these criteria are mainly important for buyers who will purchase the produce and do not play a role in farmers' decisions to purchase for own consumption.⁴¹ There is no preference for specific maize varieties.⁴²

⁴¹ In some cases, farmers even consume maize damaged by insects. In the case of Iciyerekezo, where maize that was stored was attacked by insects, the production was shared among members because they could not sell it anymore.

192. For beans, there is no quality preference. SHFs prefer local bean varieties because they are used to them and know how to prepare them. Only one improved variety is appreciated, it is the iron-enriched one. Farmers are convinced it is better for their health.

2.9.2. Sub-question 7.2 - Evidence that SHF are consuming and marketing food products that meet quality standards and are nutritious and culturally acceptable

193. In all the FGDs, farmers explained that the production of maize and beans was not sufficient to cover the needs of their households. They also explained that the production of maize could sometimes cover all the family needs, but that this was not the case for the production of beans. The hunger gap period is between September and December, when all the production from the previous B season is consumed.
194. The consumption pattern of SHFs has changed considerably in recent years. Five years ago, maize was barely consumed - it is now one of the important crops. SHFs are eating different types of maize products. Farmers consume mainly locally milled flour and they are satisfied with the quality of the flour. The only issue mentioned is that sometimes maize is mixed with cassava or sorghum flour, which reduces the quality. LRP farmers mentioned that they were eating maize flour at least three times a week and were not experiencing difficulties in finding flour (the price ranges from 500 to 700 RwF/kg (from 0.6 USD/kg to 0.83 USD/kg)). Beans remain the main crop - “the meat for the poor” - and it is consumed at every meal.

Information on the current situation of schools concerning nutritious and cultural acceptability of food products

195. The daily nutritious cooked meals consisting of maize meal, vegetable oil, beans and salt is provided at school canteens supported by WFP. In addition, vegetables (mainly from school gardens or from in-kind parental contributions) are added to the school meals.

2.10. Evaluation question 8 - What is the level of participation of men and women? Are women well represented, including in leadership positions?

196. This section reviews the place and role of women and men in the maize and bean value chains and in cooperative life (including in decision making and management structures). It also examines the project’s strategic choices.
197. At end-line the evaluation will look at the disaggregated impacts of the intervention on women and whether the overall impact of the intervention differs between men and women.

⁴² Farmers explained that eating maize is something recent, so they do not have preference for the local ones (the local maize was traditionally used for grilling or to prepare alcohol).

Key findings and conclusions – Question 8

- Equal numbers of men and women are members of the LRP cooperatives. On average, 53.2% of LRP cooperative members are women.
- Decisions about membership of a cooperative are made at household level. Participation of a woman in a cooperative is not necessarily a sign of empowerment, as men sometimes send their wives to participate when they perceive cooperatives as not being important.
- Women play a limited role in the decision-making structures of the cooperatives. Factors limiting participation of women in committees are lack of time, insufficient reading and writing capacities, and economic difficulties.
- Both men and women are working on the cooperative plot. However, crop intensification can lead to an increased workload for women, because they do more work in agriculture in general and are also in charge of household chores.
- The commercial exploitation of maize and beans increases the risk of exclusion of women from their traditional activities (handling of food crops).

Place and roles of men and women in the maize and beans value chain

198. Cooperative members seem to have been sensitized on gender issues and discussions with farmers (FGDs) showed that both men and women are working on cooperative plots. Usually, husband and wife work together. However, some activities are more men-oriented (land preparation) and other more women-oriented (planting, weeding, carrying products home), especially in their personal hill plots. Harvesting is done jointly. Women are solely in charge of caring for the children cooking and cleaning the house.

Women participation in cooperatives

199. Overall there is a balanced number of men and women in the cooperatives. On average, 53.2 percent of LRP cooperatives are female and this varies from 39.6 percent (CCM Muganza) to 67.5 percent (Abemerihigo).
200. Some women participate in cooperative's activities because they are the head of the family. In most cases, each household decides who is going to be a member of the cooperative. It is not possible for both husband and wife to be a member, as only one member is admitted per household (this was confirmed by all cooperatives met for FGDs). FGD also highlight that participation of a woman in a cooperative is not necessarily a sign of empowerment. In some cases, it is more a confirmation of the low interest that farmers have in their cooperatives as men send their wives to attend meetings and to participate in cooperative activity because they consider these activities unimportant (unlike farm activities). Both women and men participate in meetings at the beginning of the season when the main decisions on cropping practices and strategy are taken. According to women met, they also participate in the decision making.

Place of women in leadership position in LRP cooperatives

201. In spite of their important participation in agricultural and cooperative activities women still play a limited role in the decision-making structures of the cooperatives. During the interviews with cooperative leaders, there was an equal participation from men and women in the discussion. However, only one cooperative

had a female president (Icyerekezo) and women are in minority in the executive and supervision committees. Nine cooperatives have three women among the eight committee members (including executive and supervision committees). One cooperative has only two women and the remaining six cooperatives have four women among members of the committee. None of the cooperatives have more women than men in a leadership positions.

202. A positive element of women's involvement in cooperative decision making structures is that because women are considered trustworthy and honest, they often participate in the surveillance committee. They are also quite often in the treasury for the cooperatives (in charge of fund management).

2.11. Evaluation question 9- Is there emerging evidence that the cooperatives have capacity to create linkages with schools

Key findings and conclusions – Question 9

- None of the cooperative have experience of selling maize and beans to schools. Similarly, no school is purchasing directly from cooperatives.
- Primary schools do not have a budget for school feeding. Only secondary schools can purchase directly from cooperatives (without WFP support).
- Schools generally do not trust cooperatives to deliver quality products.
- Main constraints for the development of direct linkages with schools relate to challenges that the cooperatives have in aggregating large volumes of maize and beans, difficulty in providing a regular supply (no storage), low management capacities, and challenges in meeting the tender criteria.
- For maize, there cannot be direct linkages because maize must be processed first. However, using local processing units could make it possible to develop these direct linkages.

2.11.1. Sub-question 9.1 What evidence is there of a business relationship between cooperatives and schools?

203. None of the cooperatives met in the context of the baseline has experience of selling maize and beans to schools. Interviews with cooperatives highlight that they do not consider schools as potential buyers for their products. Some of the cooperatives do not have schools around them that have a school feeding program. Cooperatives are also not aware of the specific requirements for supplying food to schools.

2.11.2. Sub-question 9.2 - Are there cooperatives delivering food in schools in the targeted districts?

204. Cooperatives are not directly delivering food to schools in the targeted districts. However, through local processors, schools are purchasing part of their maize locally. There is a recent trend of installation of small processing units at district levels. These processing units link cooperatives to schools. This model is not promoted by LRP because these enterprises' quality practices do not comply with WFP quality standards and would require a high level of investments before they can produce sufficient quality products. However, this type of actor represents an interesting outlet for the maize produced by cooperatives. They also represent an

interesting opportunity for increasing local delivery to schools. These processing units face the same challenges as the high end buyers including: difficulties in getting a sufficient volume of maize (they procure maize from cooperatives when it is available but often resort to purchasing Ugandan maize in Kigali); issues with quality of the maize supplied (dryness and cleanliness); high transportation costs; and underutilization of their processing capacity. The processing units sometimes offer contracts to cooperatives (but only for big transactions) but do not engage in forward delivery contracts (which they consider too risky). They offer contracts only on the production they have seen directly.

2.11.3. Sub-question 9.3 - Do school purchase agriculture products from cooperatives?

205. Schools do not purchase agriculture products from cooperatives. Primary schools do not have a budget for school feeding. Only secondary schools could potentially purchase food products from SHFs but do not currently do so for the reasons specified above.

2.12. Discussion

2.12.1. Differences in findings between quantitative and qualitative findings

206. Most of findings from the quantitative survey and the qualitative data collection are similar. However, differences exist in a few cases:
- Payment of dividends (the quantitative survey mentioned that members receive dividends but cooperative leaders unanimously stated in interviews that no dividends are distributed.
 - Payment of dues (few cooperatives have a system of dues in place according to qualitative data collection. This is a contradiction from the quantitative survey)

Some of these differences may be explained by how the survey was understood by enumerators and/or SHFs. For example, concerning the dues, there may be confusion between dues and shares. These elements will be specific point of attention for the end line survey.

2.12.2. Risks of mono-cropping and intensification of cropping systems

207. The model promoted by the LRP based on Crop Intensification Program (CIP) raises questions on the priority given to only a few crops and on the choice of mono-cropping (versus association of crops). In a context where land is fragmented and access to inputs difficult, raising productivity through intensification makes sense. But, in terms of biodiversity, the importance of crops and diversification of varieties as a way to control pests and diseases is completely left aside. Introducing one or two varieties over a large block of lands is putting SHFs at risks in case of pest attack or climatic hazard. This localization of crops is imposed to SHFs at the cost of other crucial crops for food security (sweet potatoes, sorghum, cassava...). Some of this traditional local production which is considered as not productive enough is disappearing to be replaced by exogenous crops. This may lead to a severe loss of agriculture diversity. As a result, there is a decrease of local product availability which may lead to increase in transport of goods, degradation of nutritious quality of vegetables and tuber, higher post-harvest losses and increase in price of locally produced food (MILZ, 2010). Also, this may bear risks on the overall sustainability of the system. Soil fertility is a serious issue in the area targeted given that it is difficult

for SHFs to apply adequate amounts of fertilizers and manure to ensure that fertility is maintained.

2.12.3. Discussions on cooperative, services and self-financing of cooperatives

208. Very few producers' organizations in Africa have succeeded in providing economic services to their members without support from partners or without stable contracts with buyers. Cooperatives working in maize and beans value chain in Rwanda face difficulties in developing economic services because of a number of intrinsic characteristics of the domestic staple food value chain: high variability of production due to climatic hazards; low predictability of the supply; low volumes sold by a cooperative (which limits the potential interest of commission on sales as a viable financial resource for a cooperative); competition with local buyers who purchase maize directly on farmers plots. The other way for a cooperative to develop services is through credit, but as previously discussed only a minority of cooperatives have applied for credit and with questionable results. It is therefore essential to have reasonable expectations of what can be achieved over two years. It is very unlikely that LRP cooperatives are able to function in a fully autonomous and business oriented way by the end of the programme.

2.12.4. Discussion of the appropriate model to link cooperatives and schools

209. Big buyers represent an interesting opportunity for SHFs and cooperatives, but they remain a niche market for cooperatives. Given the objective of increasing direct linkages between schools and cooperatives, other types of markets could be considered as opportunities for cooperatives and SHFs. The majority of the maize produced is sold to local buyers and small to medium level processors. These have the advantages of being closer to the cooperatives and at the same time closer to the schools (which purchase their food for school feeding on the local market). For LRP cooperatives, if the main objective is to supply maize for the WFP HGSF program, then of course links with high end buyers that are supplying WFP should be encouraged. But if the main objective is the sustainable development of business linkages for cooperatives then these types of buyers (the local buyers and medium level processors) should not be discarded. Exploring this option has several interests in line with what LRP wants to achieve:

- Processing units are already familiar with the government school system, so there is a limited entry cost for them and they can act as aggregators for cooperatives that have relatively small volumes of products to sell.
- They do not have very demanding quality requirements (in line with schools requirements), which can facilitate business linkages with cooperatives. The quality they need is a compromise between high quality products that are needed for high end buyers and low quality products that are traded locally. They can also become entry point for awareness on quality.
- They are interested in purchasing locally and consider that the quality of maize produced by cooperatives is far better than maize produced in Uganda. Transport costs are also reduced as they are closer to cooperatives than to the market in Kigali (but the price of maize is higher locally). Therefore with productivity and aggregation increase, cooperative could be competitive clients for these units. That could results in an increased local procurement for schools.

2.12.5. Discussion on the impact of the increased share of maize on SHFs diet

210. Lack of economic access to diverse and nutritional food is undoubtedly the major cause of malnutrition in Sub-Saharan Africa. Imbalanced diet also contributes to labor productivity losses, reduced educational attendance, and income. Farmers engaged in the production and marketing of staple food items may ultimately improve household income but will not necessarily achieve a proportionate reduction in malnutrition. However, the question of the impact of crop diversification and income increase on the nutritional status continues to be researched (and has sometimes shown divergent results). Some sources mention for example that improving small farmers access to market seems to be a more effective strategy in improving nutrition than promoting diversification on subsistence farm. Other studies found that agricultural production diversification is positively associated with household dietary diversity. So far there is no clear answer emerging so it is difficult to establish whether the current trend of increasing maize production for the market (will have a positive effect on nutrition status or if it may reduce food diversity for SHF. This should be a point of attention for LRP.

3. Conclusions and Recommendations

211. Based on the findings presented in the previous section, an overall assessment that responds to the evaluation questions is provided below. This is followed by six recommendations focused on ensuring that LRP will achieve sustainable results and impacts.

3.1. Overall Assessment/Conclusions

212. The design of the project is relevant. The project targets some of the most important constraints that SHFs face in developing agriculture activities in a profitable way (access to inputs, credit, capacity building and development of marketing are the most important ones). LRP design is aligned with the policies and strategies of the GoR and with the interventions of development partners. Particularly LRP is fully aligned with the strong drive from the GoR to promote farmers' cooperatives, commercial cultivation of maize, and global intensification of agriculture.
213. Male and female SHFs behavior is driven by the need to secure household food consumption, the lack of funds to invest in production, and a focus on minimizing production risks (climatic hazards or pest's attacks for example). Farmers' exposure to good production practices is relatively good, mainly through extension support provided by the GoR. The main limiting factor is the cost of fertilizers and manure. Knowledge and use of good practices for post-harvest handling are far more limited. SHF have low capacity for economic analysis of their practices and choices. Exposure to market information is very low and is not an important factor in explaining their choices. Access to credit is limited: farmers have a good knowledge of credit conditions and there are institutions providing credit (SACCO), but farmers are not confident in credit and the conditions can sometimes make access to loans difficult.
214. Agriculture is the main source of income for SHFs, but their connection with the market is low and most of what they produce is consumed or sold locally to purchase other food products. Farmers usually have a plot in the cooperative land (marshland) where they do mono-cropping and one or several plots on the hillsides

where they do mixed cropping. Yields are low because of soil fertility problems, inadequate use of inputs, climatic hazards and pest attacks. Under the current cultivation conditions, both maize and beans cultivation are not profitable.

215. Consumption habits have changed in the last five years. Consumption of maize has increased. With the introduction of maize cultivation, LRP farmers are now eating maize flour several times per week. They have limited quality requirements (color and dryness). Beans are consumed every day and stored by farmers. They are only sold if the household is in urgent need of cash.
216. Equal numbers of male and female SHF are members of cooperative (although with variation between cooperatives) but this does not reflect in the decision making structures (which are male dominated). Factors limiting the participation of SHF are time and capacity (given limited skills in literacy, book keeping and leadership).
217. LRP cooperatives have widely ranging levels of capacities. This evaluation examined cooperative capacity from the perspective of ability 'to be', 'to do', 'to relate' and 'to perform' and finds that:
- Cooperative ability 'to be' is relatively good, though ownership and existence of a common vision remain low.
 - Abilities of cooperatives 'to do' is limited, especially as relates to management tools.
 - In terms of the ability 'to relate' cooperatives are already connected to a network of partners but they tend to be reactive rather than pro-active, i.e. the focus is on grabbing opportunities rather than strategically defining their needs and building partnership to solve their problems or to develop new opportunities.
 - Cooperatives ability 'to perform' is low. Aggregation of products is limited and the majority of cooperatives does not have a business mind set. Cooperatives do not know whether they are making profit.
218. The current framework is relatively conducive to the development of partnership and contracts between buyers and SHFs though there is no specific strategy. Big buyers are already purchasing maize from SHF and they have specific arrangements for cooperatives but it only represents a small part of their procurement. Cooperatives have a low level of awareness of these buyers and their requirements and do not yet have capacity to implement and monitor this type of contracts. Issues affecting the development of these partnerships between buyers and farmers are low product aggregation, poor quality of maize and beans produce, and the lack of contract enforcement (hence a high defaulting rate).
219. An important objective of LRP is to support the development of local procurement for school feeding programmes. So far, there are two school feeding programmes in the targeted districts. For primary schools, school feeding is supported by WFP and food is procured on the national, regional and international market. For secondary schools, school feeding is financed by the GoR and schools purchase food locally but not directly from farmers or cooperatives. There is no direct linkage between schools and cooperatives, cooperatives do not supply schools. However, they do supply to local processing units that are selling maize flour to schools (secondary schools). For primary schools, apart from WFP supported schools, there is no budget for school feeding.

3.2. Recommendations

220. Based on the findings and conclusions of this evaluation, the recommendations of the evaluation team are outlined below. These are in order of priority but they are in many ways complementary and should be considered collectively.
221. **Recommendation 1:** Strengthen the LRP project's focus on SHF with specific attention to economic profitability for SHF of the practices that are to promote production and to strengthen post-harvest practice. This applies to production practices, for which farmers should be trained on farm budgeting in order to see the impact of a practice on their income or food supply. But it applies even more to post-harvest handling practices. Investing in quality has a cost for farmers (more work, drying material, shelling material...) and this cost should be reflected in the price they get. WFP should do detailed cost estimation and sensitize big buyers on the price. Priority should go to marketing and linkages with the market: secured sales condition can encourage SHF to invest in quality.
222. **Recommendation 2:** Consider extending the current approach to training to a more comprehensive capacity building approach, to maximize the appropriation of practices. For the LRP this would imply promoting close support by extension services and visits to work with cooperatives to develop their capacities. The priority topics could differ from one cooperative to another and should be identified in a participatory way (though that will require finding an appropriate balance with operational constraints of organising capacity building activities).
223. **Recommendation 3:** WFP should consider working from an approach where cooperatives are encouraged to take responsibility to invest in their own development and should systematically make a financial contribution to any equipment or infrastructure that is provided. Similarly, the first priority should be to look at the existing market based solutions⁴³ before providing direct support.
224. **Recommendation 4:** Monitor and develop inclusiveness of cooperatives. As mentioned in the report, some of the poorest farmers may be excluded from cooperatives. This factor should be analysed and strategies formulated to improve inclusion of poor farmers. There should also be attention to monitoring this throughout the project. Similarly, attention should be paid to gender inclusion in cooperatives. WFP should go further than monitoring the number of women included in cooperatives and in cooperative management structures. The specific place and roles of women in the maize and bean value chain, but also in the global production system should be analysed. Specific capacity building activities of women are recommended to increase their involvement in decision making (book keeping and leadership for example). WFP could help building bridges with other development partners working on literacy to improve women's reading and writing capacities. Lastly, attention should be paid to the organisation of the activities to ensure these do not contribute to an overload of women's work.
225. **Recommendation 5:** With the objective of developing business linkages with cooperatives and sustainable linkages between schools and cooperatives for the school feeding program, WFP should explore the option of developing linkages between cooperatives and local processing units. So far, it is likely that their quality

⁴³ Market based solutions being solutions for key inputs such as credit, agricultural inputs, and storage that are locally available.

standards are not at the level of WFP's ones, but they are already providing secondary schools and they are closer to cooperatives. Possibilities to develop contracts between these processing units and cooperative should be explored. This would require building the capacities of the processing units.

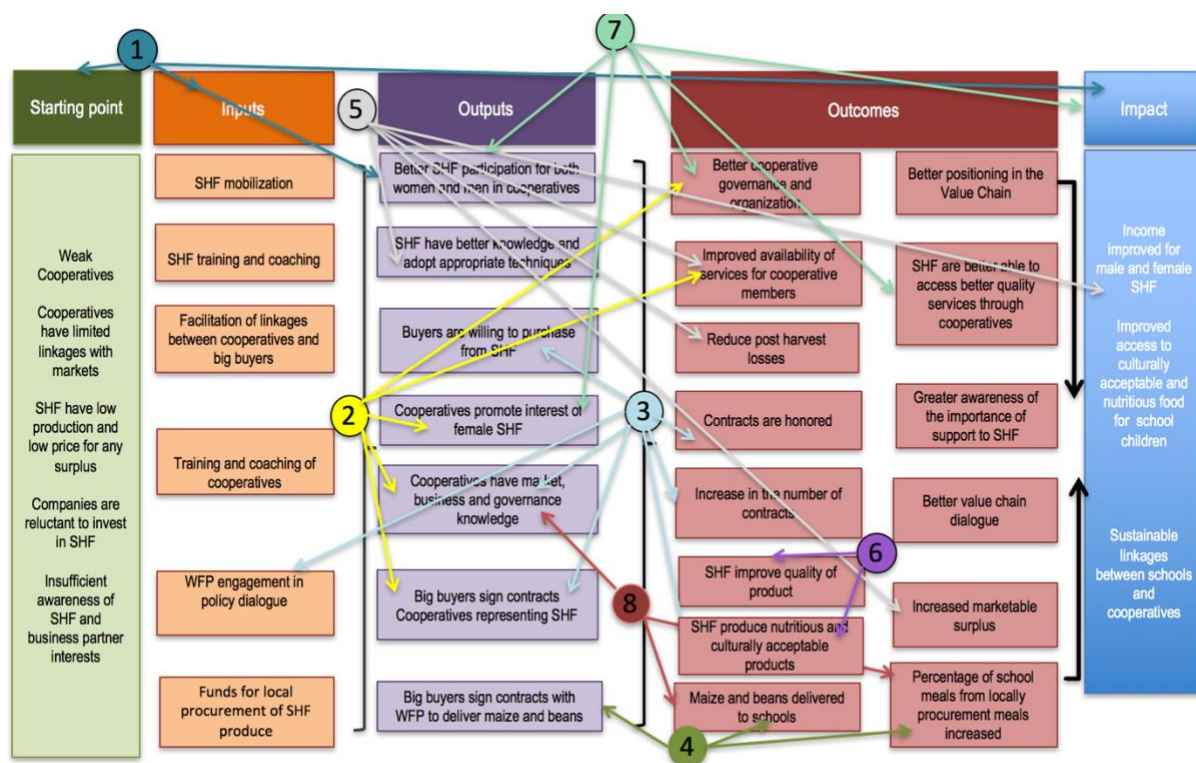
226. **Recommendation 6:** Promote sustainable agriculture through lobbying and partnership. This can be done by including modules on soil conservation, agro-ecology, integrated pest management and fertility management in LRP activities. To make sure that the recommended practices have a positive effect, WFP could link with research institutions working on these topics (to be identified). Specific attention should be paid to availability and access to manure and lime, and to investigating solutions to support farmers in accessing these.

Annexes

Annex 1. LRP Project activities and targets

Planned project activities	Target
Activity 1: Purchase commodities from SHF	
Purchase of beans and maize from SHF in Rwanda or other regional markets (e.g. Tanzania or Uganda)	418 metric tons of maize and 225 metric tons of beans
Activity 2: Build capacity of SHF	
Train in procurement of raw materials, processing, business management and marketing	4 cooperatives
Facilitate trading and marketing relationships between milling cooperatives, factories and 16 other cooperatives for raw materials	16 cooperatives
Train cooperatives on post-harvest handling and storage, warehouse management, organizational governance, agricultural markets, business planning, microfinance, and techniques for increasing production, etc.	16 cooperatives
Coach cooperatives on business plan implementation	16 cooperatives
Supply medium sized storage facilities and provide training and technical field support	1000 SHF
Activity 3: Connect farmers to the patient procurement platform	
Promote market access for SHF through facilitation of forward delivery contracts between private sector off-takers and farmers' organizations	No target
Activity 4: Connect SHF to new markets	
Promote pro-smallholder procurement and widen market for SHF by purchasing maize meal and beans through buyers such as MINIMEX (miller), EAX, SARURA and RGCC	No target
Collaborate with superintendent agencies for food inspection and quality testing	No target
Activity 5: Collaborate with the government of Rwanda	
Advocate through agricultural sector working group to advance SHF integration and to advance markets for SHF and institutional procurement	No target
Draft a strategy for sustainable market access for SHF and to increase procurement by national traders and institutional suppliers	One strategy

Annex 2. Detailed Theory of Change for the LRP Project



Note: Circled numbers in the diagram refer to the underlying assumptions in the ToC which can be found below

Annex 3. Evaluation Matrix

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
Relevance						
1-To what extent was the design of the intervention: relevant to wider context; aligned with the needs of the most vulnerable groups; cognizant of the needs of male and female beneficiaries; and in line with priorities of the government and WFP partners?	1.1-To what extent is LRP's location, priorities and beneficiary selection in line with the needs of the most vulnerable groups?	Integration of beneficiaries characteristics, activities and needs in the design and activities of LRP Integration of specificities of districts and agro-ecological regions in LRP's design and activities Attention to the different needs and situation of male and female beneficiaries	LRP project related documents (reports, studies...) SHF, cooperatives and other value chain actors Background documents on the context of agriculture in the concerned districts	Document review (needs assessment reports, LRP documents and background project design documents, reports of beneficiaries engagement meetings) FGD with cooperatives and SHF	Descriptive and inferential analysis of survey data. Triangulation of documents and results from FGD and key informant interview	Very little project related documentation available Documentation from other projects and policy documents have been collected WFP to provide additional documentation when available. Information from stakeholders will be collected in the field Quality of the information largely depends on whether WFP has document presenting their strategy in terms of project design
	1.2-To what extent does the LRP project contribute to the government's objectives?	Alignment of the approach and expected results with government's objectives and legislative framework Evidence that the LRP intervention has made a specific contribution to the implementation of the GoR objectives	LRP project related planning and implementation documents (reports, studies...) Policy documents Documents of other partners implementing similar initiatives Institutional stakeholders (MINAGRI, MINEDUC, MINALOC, MINEACOM) at national and district level	Document review (LRP documents, policies and strategies documents from the government, project design document, Ministry of agriculture strategic plan) KII with institutional stakeholders (national and district)	Triangulation of documents and key informant interview Contribution analysis	Documentation from other projects and policy documents have been collected Further documents on the LRP planning and implementation to be provided to the evaluation team by WFP Information from stakeholders will be collected in the field Quality of policy documents is expected to be good
	1.3-What is the level of complementarity with	Evidence of complementarity of LRP's approach with other	LRP project related documents (reports,	Document review (LRP project design documents	Descriptive and inferential analysis of	Information from stakeholders will

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
	other development interventions targeting the same regions, including with WFPs own interventions?	development projects at the design stage Evidence that LRP's approach does not duplicate the work by other actors Level of implication of partners in the design and implementation of LRP	studies...) Documents from other projects, partners and donors Institutional stakeholders (MINAGRI, MINEDUC, MINALOC, MINEACOM) at national and district level, with other development actors, and with WFP	and documents from other projects and donors, coordination meetings reports of development projects) KII with institutional stakeholders (national and district) including with a view to establish what has changed in the overall context over time and to what extent this can be attributed to the LRPs interventions	survey data. Triangulation of documents and results from key informant interview Mapping of interventions in the LRP area for complementarity Contribution analysis	be collected in the field Information on interventions by other partners to be collected by the team with support from WFP Further documents on the LRP planning and implementation to provided to the evaluation team by WFP, in particular on foreseen complementarity with other actors Quality of the information largely depends on whether WFP and other development interventions have document presenting their strategy in terms of project design
	1.4-Does the logic of intervention promote sustainability?	Existence of a clear strategy for sustainability and exit strategy Approach and activities of LRP based on market related solutions (better business linkages between chain actors and cooperatives in order to improve access to services and market opportunities for SHF) Awareness at government level (both national and district level) of SHF and pro-SHF buyers	LRP project related documents (reports, studies...) SHF, cooperatives and other value chain actors, with other development actors, and with WFP Institutional stakeholders (MINAGRI, MINEDUC, MINALOC, MINEACOM) at national and district level	Document review (LRP projects documents and progress reports, project design document, report on engagement meetings with government officials) KII with cooperative and value chain actors, other development actors, WFP and government FGD with SHF and cooperatives	Triangulation of documents and results from FGD and key informant interview	Currently there is no project document that provides a complete overview of the sustainability or exit strategy. Information from stakeholders will be collected in the field Further documents on the LRP planning and implementation to provided to the evaluation team by WFP, in particular on sustainability/exit strategy Quality of the information depends on whether WFP have document presenting their intervention strategy (for the market based solutions) and on their exit strategy. For government, quality of the data collected will depend on institutional stakeholder knowledge of the different policies and strategies.

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
Effectiveness						
2-What are the effects of the project on the cooperatives ability “to be”, “to organize”, “to relate”, and “to do”	2.1-Are cooperative better organized?	Evidence that cooperative have a common vision. Evidence that number of meetings of cooperative members and of cooperative leaders has increased Evidence of increased knowledge of leaders’ roles by cooperative members Existence of up to date records at cooperative level and regular utilization of accounting systems Increased number of collective operations registered by cooperative (purchase of inputs or services, sales, access to credit) Increased number of members paying their dues/improved timeliness of payment by members	Cooperative records and interviews WFP implementing partners records and interviews Reports from the relevant government ministries in charge cooperatives Progress Reports from WFP and implementing partners WFP baseline and monitoring data on the LRP cooperatives	Cooperatives checklist/review of LRP cooperative baseline data FGD with cooperative members KII with cooperative management, implementing partners, and WFP Review of documentation on cooperatives and from implementing partners	Triangulation of primary & secondary data sources. Thematic analysis of qualitative data Descriptive and inferential analysis of survey data.	Information from stakeholders will be collected in the field WFP also collects information on the cooperatives which will provide a sense of progress against specific indicators. Documents from WFP and its implementing partners will be provided to the evaluation team Quality of the data collected will depend on whether cooperatives record are existing and updated.
	2.2-Are cooperatives developing partnerships?	Number of partnerships with banks, service providers, institutions and other cooperatives	Cooperative records and interviews WFP baseline and monitoring data on the LRP cooperatives Cooperatives partners (MFI, service providers, institutions) Documentations and Progress reports from cooperatives Progress Reports from WFP and implementing partners	Cooperatives checklist KII with cooperative management, implementing partners, and WFP Review of cooperative documentation	Descriptive & inferential analysis of survey data. Triangulation of qualitative and quantitative data Triangulation of primary & secondary data sources. Thematic analysis of qualitative data	It is assumed that cooperatives keep reasonably good records of membership, contracts, etc. This needs to be verified. Information from stakeholders will be collected in the field Documents from WFP and its implementing partners will be provided to the evaluation team Quality of the information from WFP and implementing partners is assumed to be good. Quality of data at cooperatives level depends on the quality of the records. KII should provide good quality data on partnerships.

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
	2.3- Are the cooperatives becoming more economically dynamic?	Cooperatives plan their business activities at the beginning of the season and make an assessment of their result at the end Cooperatives have better skills on credit and loans management Evidence that the cooperative net margins have improved Volumes of products sold through the cooperatives increased	Cooperative records and interviews WFP baseline and monitoring data on the LRP cooperatives Other value chain actor interviews WFP implementing partners interviews and documentation Progress Reports from WFP and implementing partners	Cooperatives checklist KII with cooperatives and value chain actors Cooperative records	Descriptive & inferential analysis of survey data. Triangulation of qualitative and quantitative data Triangulation of primary & secondary data sources. Thematic analysis of qualitative data	Information from stakeholders will be collected in the field Documents from WFP and its implementing partners will be provided to the evaluation team WFP is collecting information on loans at cooperatives levels. Data on business skills and planning at cooperative is expected to be of medium quality as it requires cooperatives to have already sufficient business awareness to talk about it. Quality of data on volumes and net margin of cooperatives depends on the quality of the records at cooperatives levels (it will be difficult to have accurate information during interviews)
	2.4-Do activities of the cooperative benefit to their members?	Evidence that cooperatives regularly distribute dividends to their members Evidence that cooperatives offer more effective and timely services in one or more of these fields: access to inputs, access to finance, marketing, access to information, extension, storage or processing There is a self-financing mechanism for cooperative activities	Cooperative records WFP baseline and monitoring data on the LRP cooperatives Other value chain actors SHF who are members of the cooperative Cooperatives partners (MFI, service providers, institutions) WFP implementing partners	FGD with SHF KII with cooperative leadership and partners, value chain actors and WFP implementing partners On site observation (cooperative documents)	Triangulation of qualitative and quantitative data Triangulation of primary & secondary data sources. Descriptive & inferential analysis of survey data. Thematic analysis of qualitative data	Information from stakeholders will be collected in the field It is assumed that cooperatives keep reasonably good records of their support to SHF. This needs to be verified. Documentation from WFP implementing partners to be made available by WFP to the team Quality of the data will depend on whether cooperatives have up to date records. It is expected that the quality of these data will be poor to medium.

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
3 - How does the LRP programme affect male and female SHF capacity and behaviour?	3.1 - Has SHF knowledge of options and alternatives improved? Are the benefits equal for male and female farmers?	Cooperatives are more regularly seeking information on markets (options, price, markets...) SHF demonstrate improved knowledge on production practices Cooperatives demonstrate improved knowledge on post-harvest handling SHF have regular extension services adapted to their needs from LRP implementing partners and from the government		SHF survey Cooperatives checklist/review of LRP cooperative baseline data FGD with SHF. Reports reviews from WFP and implementing partners of LRP	Triangulation of information between sources Thematic analysis of quantitative data. Descriptive and inferential analysis of survey data.	Information from stakeholders will be collected on the field Documents and data from WFP will be provided to the evaluation team Quality of the data is expected to be medium (there is no records at farmers level or cooperative levels on how they seek information or on the adoption of good practices. Triangulation will be a key element to insure quality of the analysis.
	3.2-Have SHF choices around short term productive assets, marketing, good practices changed? Are the benefits equal for male and female farmers?	Increased/improved investment by SHF in short term productive assets for maize & beans (seeds, tools, inputs and casual labour) Increase in the area cultivated in maize and beans Evidence of improved/increase in access by SHF to credit Evidence that SHF adopt improved practices in production and post-harvest handling	SHF Cooperatives Implementation partners Cooperatives partners (MFI, service providers, institutions) Documentation and reports from WFP including WFP baseline and monitoring data on the LRP cooperatives	SHF survey Cooperatives checklist KII with sample of SHF. KII with WFP staff, government representatives, cooperatives leads Reports reviews from WFP and implementing partners of LRP	Descriptive and inferential analysis of survey data. Triangulation of information between sources Thematic analysis of quantitative data.	Information from stakeholders will be collected on the field Documents and data from WFP and implementing partners will be provided to the evaluation team Information on access to credit should have a good quality as it is monitored by WFP. Quality of data on short term productive assets and on area cultivated, as well as adoption of good practices is expected to be medium.
4-Has the LRP contributed to creating new opportunities for male and female SHF?	4.1-Has LRP contributed to the design and adoption of a pro-SHF and buyers partnership strategy? Does the strategy benefit both male and female SHF?	Existence of a strategy at government level to support development of business partnership between cooperatives and pro-SHF buyers Evidence of LRP contribution to the design and adoption of a pro-SHF and buyers partnership strategy	Cooperative KII Institutional stakeholders (MINAGRI, MINEDUC, MINALOC, MINEACOM) at national and district level Pro-SHF buyers WFP	KII with government officials, WFP staff, cooperatives and other stakeholders Review of Reports from WFP Reports from the relevant government ministries in charge of cooperatives	Triangulation of primary & secondary data	Information from stakeholders will be collected on the field Documents and data from WFP will be provided to the evaluation team (WFP and FTMA) Quality is expected to be medium.

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
	4.2 - Are big buyers increasingly willing to purchase maize and beans from SHF??	Evidence of increased awareness by large buyers of cooperatives as business partners Evidence that the number of buyers purchasing maize and beans from cooperatives has increased Volume of food procured by WFP from pro-SHF buyers Percentage of food from the platform going to buyers other than WFP	Cooperatives interviews and records WFP baseline and monitoring data on the LRP cooperatives Pro-SHF buyer interviews and records Progress Reports from WFP and implementing partners	Cooperatives checklist KII with cooperatives leaders, buyers, WFP staff, other stakeholders Review of Reports from WFP and implementing partners	Descriptive and inferential analysis of survey data. Triangulation of documents and results from key informant interview Thematic analysis of qualitative data	Information from stakeholders will be collected on the field Documents and data from WFP will be provided to the evaluation team (WFP and implementing partners) Quality of the data is expected to good (it is assumed that large buyers have records) if buyers are ready to openly discuss these issues. Quality of data collected by WFP on food procurement on the volume of sales at platform level is expected to be very good.
	4.3 - Are producers able respond to this increased demand?	Cooperatives have an effective system to manage quality standards Number of contracts signed between cooperatives and buyers Volumes of products from cooperatives purchased by big buyers Evidence of reduction in the number and percentage of contract's defaulting Contracts 'conditions in terms of schedule, transport, time of payments quality and price are adapted to needs and constraints of buyers and SHF	Cooperatives Documentations and Progress reports from cooperatives WFP Pro-SHF buyers Progress Reports from WFP and implementing partners	KII with cooperatives leaders, pro-SHF buyers and WFP staff FGD with SHF Review of Reports from WFP and implementing partners Review of contracts Cooperative and buyers' records	Triangulation of documents and results from key informant interview Thematic analysis of qualitative data	Information from stakeholders will be collected on the field Documents and data from WFP will be provided to the evaluation team (WFP and implementing partners) Quality of the data collected is expected to be medium to good depending on the records kept at cooperative levels. There may be a lack of transparency from cooperatives and buyers on contracts and contract's defaulting which would affect quality of data.

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
Efficiency						
5- How does the procurement, delivery, and distribution of the modality for school feeding which is promoted through LRP compare - in terms of cost-effectiveness and timeliness - to the alternative modalities of food procurement?	5.1 Has the LRP brought about reduced prices of school meals?	Comparison of the price of school meals in the two main HGSMP modalities (local procurement and imported food)	National and local representatives of MINEDUC WFP records on food procurement, distribution, and delivery costs for both modalities WFP reports to USDA and to McGovern Dole MINEDUC reporting if available	Documentation and WFP data base analysis for information about cost of procurement, handling and delivery.	Triangulation of information between the different data collection methods and sources Thematic analysis of qualitative data	Most of the data is judged to be available from WFP records Quality is expected to be very good.
	5.2-Has the LRP resulted in improved procurement, distribution and delivery time, and enhanced efficiency compared with other food procurement modalities?	Timeliness for procurement, distribution and delivery of food under the two modalities Cost for procurement, distribution and delivery of food under the two modalities	National and local representatives of MINEDUC WFP records on food procurement and delivery timelines Data and information from schools in the two modalities WFP reports to USDA and to McGovern Dole MINEDUC reporting if available	Documentation and data base analysis for information related to procurement, handling and delivery. KII with school heads, SMP officials from MINEDUC and other relevant stakeholders Interviews with WFP staff, in particular staff involved in procurement and management of food modalities	Triangulation of information between the different data collection methods and sources Thematic analysis of qualitative data	Most of the data is judged to be available from WFP records Quality is expected to be very good
	5.3-How often does LRP face pipeline breaks compared with other food procurement modalities?	Frequency and duration of pipeline breaks under the two modalities Number of school feeding days under the two modalities	WFP records on pipeline management WFP records on number of days of school feeding per year WFP reports to USDA and to McGovern Dole MINEDUC reporting	Documentation review (monitoring reports, reports to the donor) WFP data base analysis	Triangulation of information between the different data collection methods and sources Thematic analysis of qualitative data	Most of the data is judged to be available from WFP records Quality is expected to be very good

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
Impact						
6-How does the LRP programme affect male and female SHF income?	6.1-Has male and female SHF income improved?	Volumes and value of maize and beans sales by SHF, disaggregated by gender Volumes of sales of the main crops grown by smallholder farmers in the southern districts (wheat, rice, cassava and Irish potatoes...), disaggregated by gender Net margin/ha and net margin/man day from maize and bean production, disaggregated by gender Maize and beans significant source of income for SHF	SHF Cooperative Implementation partners Cooperatives partners (MFI, service providers, institutions) Documentation and reports from WFP, including WFP baseline and monitoring data on the LRP cooperatives	SHF survey Cooperatives checklist KII with a sample of SHF. KII with WFP staff, government representatives, cooperatives leads Reports reviews from WFP and implementing partners of LRP	Triangulation of information between the different data collection methods and sources. Thematic analysis of quantitative data. Descriptive and inferential analysis of survey data.	Information from stakeholders will be collected on the field Documents and data from WFP and implementing partners will be provided to the evaluation team Quality of the data is expected to be medium (SHF do not usually keep records and there is often different tools used to measure volumes)
7- How and to what extent does the LRP programme contribute to producers marketing food products that meets quality standards and is nutritious, and is culturally acceptable? (impact)	7.1-Has the overall quality of maize and bean products consumed by SHF improved?	Evidence of improved quality of maize and beans products utilized by SHF supported by LRP	SHF Cooperatives Big buyers Implementation partners WFP baseline and monitoring data on the LRP cooperatives	SHF survey Cooperatives FGD with cooperatives, big buyers & partners	Descriptive and inferential analysis of survey data. Triangulation of information	Information from stakeholders will be collected on the field Quality of the information is expected to be medium
	7.2-Is there evidence that SHF are consuming and marketing food products that meets quality standards and are nutritious and culturally acceptable?	SHF keep a part of their quality production for consumption Evidence from schools confirms that SHF produce is considered nutritious and culturally acceptable	SHF Cooperatives Big buyers Implementation partners WFP baseline and monitoring data on the LRP cooperatives Parents and children in schools	SHF survey KII & FGD w/ cooperatives, buyers & implementing. Partners School interviews (end-line)	Descriptive and inferential analysis of survey data. Triangulation of information between sources	Information from stakeholders will be collected on the field Quality of the information is expected to be medium to good

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
8-What is the level of participation of men and women? Are women well represented, including in leadership positions? What are the disaggregated impacts on women Has the LRP programme affected male and female SHF differently?	8.1-How has the participation of men and women evolved in cooperative decision making structures?	Evidence that the number of women in leadership position in cooperatives has increased	SHF Cooperatives (leadership and documentation) WFP and their implementation partners WFP baseline and monitoring data on the LRP cooperatives	Cooperatives checklist Review of cooperatives documentation FGD with SHF and cooperative leaders Review of reports (WFP & implementing partners of LRP)	Triangulation of information between the different data collection methods and sources Thematic qualitative data analysis	Information from stakeholders will be collected on the field Documents and data from WFP will be provided to the evaluation team Assuming that cooperatives keep records of their members, quality of data is expected to be very good.
	8.2- Has the percentage of female SHF who are members of cooperatives increased over time?	Evidence that the relative proportion of male and female beneficiaries has increased in favour of women	SHF Cooperatives (leadership and documentation) WFP and their implementation partners WFP baseline and monitoring data on the LRP cooperatives	Cooperatives checklist Review of cooperatives documentation Review of reports from WFP and implementing partners of LRP	Triangulation of information between the different data collection methods and sources Thematic qualitative data analysis	Information from stakeholders will be collected on the field Assuming that cooperatives keep records of their members, quality of data is expected to be very good.
Sustainability						
9-Is there emerging evidence that the cooperatives have capacity to create linkages with schools?	9.1- Has LRP contributed to develop business relationship between cooperatives and schools	Evidence that mutual awareness of school and cooperatives as business partners has increased (i.e. school know they can purchase food at cooperatives level and cooperatives know they can sell to school)	Cooperatives (leaders and documents) Schools (school head and documents)	KII with school leads FGD with cooperative leaders Documents review of cooperatives records	Triangulation of information between the different data collection methods and sources Descriptive analysis of cooperative checklist	Information from stakeholders will be collected on the field Quality of the data is expected to be good
	9.2- Are there cooperatives delivering food to schools (primary/secondary) in the targeted districts?	Evidence of increased sales from cooperatives to schools	Cooperatives (documents) WFP baseline and monitoring data on the LRP cooperatives	Cooperatives checklist Documents review of cooperatives records	Triangulation of information between the different data collection methods and sources Descriptive analysis of cooperative checklist	Information from stakeholders will be collected on the field Quality of the data depends on whether cooperatives have up to date records on their sales and clients

Evaluation question	Sub-Question	Indicator	Main sources of information	Method for data collection	Method for data analysis	Quality of available data
	9.3- Do school (primary/secondary) purchase agriculture products from cooperatives?	Existence of a budget for school to purchase foods Evidence of direct purchases to cooperatives from schools	Cooperatives (leaders and documents) Schools (school head and documents) WFP baseline and monitoring data on the LRP cooperatives	KII with school leads FGD with cooperative leaders Cooperatives checklist Documents review of cooperatives records	Triangulation of information between the different data collection methods and sources Descriptive analysis of cooperative checklist	Information from stakeholders will be collected on the field Quality of the data is expected to be good assuming schools have records of their purchase

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Annex 5. Annexes related to EQ1

Annex 5.1 Main issues affecting agriculture in the four targeted districts

In Huye, 85% of the population depends on agriculture. 1365 hectares of marshland have been developed as well as about 500 hectares of terraces. The district experiences inadequate rain water Management, that later causes soil erosion to the farmers. The main challenges affecting agriculture are low productivity (limited use of improved inputs, mechanisation...), lack of post-harvest handling and storage services, weak organisation within value chains and low processing of agriculture products. Farmers have a limited access to finance and limited skills in loan management. Involvement of the private sector in agriculture is very low. Household poverty in the district is still high and there is a high prevalence of malnutrition mainly among children and women. According to the District Development Plan (2013-2018), In agriculture the emphasis will be put in increasing irrigated areas, consolidated land, mechanization, the use of improved seeds and fertilizers as well as post-harvest management.

According to Nyagururu DDP (2013-2018), the district is among the districts with higher percentage of population identified as poor. Agriculture is the main activity (81% of the population). Maize is grown on 4700 hectares and beans on 30 000 hectares. Nyaruguru district is characterised by a high proportion of acidic soil (low fertility). The net attendance rate in primary school in Nyaruguru district is 87%, it is below the national average of 91.7%. At district level, priority is in infrastructure (road development) and improvement of the quality of soil by facilitating access to mineral and organic manure. Terraces construction is also a priority. Economic growth and poverty reduction will be addressed through the mainstream of agriculture especially by increasing its production and productivity. This will be achieved by high involvement of people, both men and women and by using modern techniques and inputs. The capacity of farmers will be built through the enforcement of model cooperatives and sensitization of famers. Access to finance will be enhanced by sensitization and promotion of a saving policy thus increasing people's financial inclusion.

Agriculture sector occupies over 86% of the Gisagara's workforce. The overwhelming majority of cultivation is done at the subsistence level, and as result the District is confronted to low production and high rate of poverty. Beans, rice, banana, maize, cassava and coffee, are the most cultivated crops. Gisagara district's priorities are to increase consolidated land use scale and to develop agro-processing units for agricultural products. Gisagara District has a comparative advantage to other District due to its cultivation of rice where by 40% of the population are involved in rice production or processing. Agriculture is still subsistent which engenders low production and/or productivity. Access to finance in Gisagara District is still very low. For agriculture, priority is on the promotion of agriculture modernization. More emphasis will be put on increasing consolidated land use scale, intensifying the use of selected seeds and fertilizers, initiating agricultural mechanization, developing irrigation, promoting agro processing industries as well as post harvesting facilities.

Nyamagabe District soils are generally acidic. This generally implies very poor soils considerably degraded by erosion. Land fragmentation and agricultural over-exploitation linked to lack of fallow land and poor agricultural practices due to lack of inputs has led to acute impoverishment of available land. The majority of the population of Nyamagabe District live on agriculture. They produce the following crops by order of importance: beans, Irish potatoes; sweet potatoes, wheat, bananas, sorghum, cassava, passion fruits, peas, maize and soya. Nyamagabe District is among the

parts of the country with large proportion of its population living below the poverty line and constantly facing food insecurity. Poverty among farmers has hampered the capacity of families to invest in the improvement of their land capital and scattered housing system makes land development very difficult. The priority in terms of agriculture development are in strengthening of soil protection and conservation, promotion of the use of inputs, professionalization of the agriculture sector, processing and promotion of cooperatives.

Policies and laws relative to LRP's field of intervention

Government Program (2010-2017): The overall goal is to shift from poor country to a middle income country. The government program promotes modern farming to increase quality and quantity of the production as well as storage and processing. Cooperatives formation and post-harvest storage will be encouraged. Farmers will be encouraged to grow crops with comparative advantages and suitable to their farming areas and lands. The Government program is implemented around 4 pillars: good governance, justice, economic development and social well-being. The overall goal is to shift from poor country to a middle income country. Agriculture development is covered in pillar 3. The government program promotes modern farming to increase quality and quantity of the production as well as storage and processing. Land use consolidation will be promoted and the acreage under consolidation will be increased from 18% to 70%. Soil erosion control will also be promoted. The program will put efforts on raising use of improved seeds and fertilizers (from 14kg/ha to 45 kg/ha), mechanised farming and irrigation. At least, 70% of farmers will be encouraged to form cooperatives and post-harvest storage will be enhanced so that the stored production increases from 10 000T to 200 000T.

Economic Development and Poverty Reduction Strategy 2 (2013-2018).

Economic Development and Poverty Reduction Strategies of Rwanda aims at increasing economic growth by investing in and modernizing agriculture. EDPRS particularly targets to improve the agricultural productivity and increase the profitability of small farm holds. EDPRS intends to encourage increased participation of the private sector in transfer of technology to farmers. It insists that the government will assist the private sector by improving the investment climate. EDPRS intends to encourage surplus production of farm produces by subsidizing the acquisition of key inputs by farmers. To improve the quality of production, EDPRS aspires for significant improvements in quality and standards.

Vision 2020: The VISION seeks to fundamentally transform Rwanda into a middle-income country by the year 2020. This will require achieving annual per capita income of US\$ 900 (US\$ 290 today), a poverty rate of 30% and an average life expectancy of 55 years. The vision aims to replace subsistence farming by a fully monetized, commercial agricultural sector by 2020. Gender will be integrated as a cross-cutting issue in all development policies and strategies. Contrary to conventional wisdom, the most important issue retarding Rwanda's agricultural development is not land size, but low productivity associated with traditional peasant-based subsistence farming. Agricultural policy orientation will have to be overhauled, promoting intensification so as to increase productivity and achieve growth rates of 4.5 % to 5% per year. The vision aims to replace subsistence farming by a fully monetized, commercial agricultural sector by 2020. Main areas envisaged are: institutional and legal reforms to ensure security of land ownership, development of a market in land assets, investment in rural infrastructures, use of high yielding varieties and intensive input use, especially fertilisers, promotion of agro-based manufacturing, environmental measures to halt the decline in soil fertility, rural financing schemes and markets. In order to achieve gender equality and equity, Rwanda will continuously update and adapt its laws on gender.

The Crop Intensification Program: Crop Intensification Program (CIP) is a flagship program implemented by the Ministry of Agriculture and Animal Resources to attain the goal of increasing agricultural productivity. CIP aims to accomplish this goal by significantly increasing the production of food crops across the country. CIP currently undertakes a multi-pronged approach that includes facilitation of inputs (improved seeds and fertilizers), consolidation of land use, provision of extension services, and improvement of post-harvest handling and storage mechanisms. Started in September 2007, the CIP program focuses on six priority crops namely maize, wheat, rice, Irish potato, beans and cassava.

- Distribution of improved inputs
- Land consolidation
- Proximity extension services
- Post Harvest Handling and Storage (PHHS)

PSTA III:

The primary goals of PSTA III are: To transform Rwandan agriculture from a subsistence sector to a market-oriented, value creating sector, to grow as rapidly as possible, both in relation to production and commercialisation, in order to increase rural incomes and reduce poverty. The key pillars for rapid sector growth are: Land, irrigation, inputs and infrastructure, soft skills and farmer capacity, value chains and markets, private Sector. Investing in high-value crops while also exploiting the opportunities offered by staple crops is key for the future, facilitating both domestic food security and higher rural incomes. In the short term, continued rapid food production increases will ensure further reductions in rural poverty and malnutrition. In the medium term, the goal is to move Rwandan agriculture from a largely subsistence sector to a more knowledge-intensive, market-oriented sector, sustaining growth and adding value to products. The key pillars for rapid sector growth are: Land, irrigation, inputs and infrastructure, soft skills and farmer capacity, value chains and markets, private Sector.

National policy and promotion of cooperatives: The Government of Rwanda views cooperatives as a potential vehicle through which the cooperatives members could create employment and expand access to income-generating activities, develop their business potential, through education and training; increase savings and investment, and improve social well-being with special emphasis on gender equality, housing, education, health care and community development. A cooperative society may be defined as: “An autonomous association of persons united voluntarily to meet their common economic, social and cultural aspirations through a jointly-owned and democratically-controlled enterprise”. The Government is convinced that cooperatives among other social benefits would contribute to the achievement of Vision 2020. The general objective of the National Policy is to facilitate all round development of the cooperatives in the country in order to make a significant contribution to the national economy, particularly in areas which require people’s participation and community efforts. Through this policy the Government will create a National Cooperative Agency (RCA). Its specific objectives are to increase the numbers of Cooperatives formed countrywide, to ensure good quality of the cooperatives through training, education, information and research so that members attain the ability to perform their cooperative business in an autonomous way, to build a strong cooperative movement which will be able to serve its members efficiently, will contribute significantly to poverty alleviation as well as to social integration and will fully participate to the economic and social development of the country.

National Post-Harvest Staple Crop Strategy: It is a policy framework that will assist with strengthening the harvesting, post-harvest handling, trade, storage, and marketing within staple crop value chains in Rwanda, in an effort to improve markets and linkages for farmers, and reduce

post-harvest losses. The National Post-Harvest Strategy will support farmers capture income potential from increased productivity and competitiveness resulting from complimentary investments, including CIP. This requires engagement across ministries, institutions, agencies and stakeholders along the supply chain resulting in a “win-win” for producers, trade, industry and processing, and consumers. Commercial perspectives and market facilitation are critical for regionally competitive staples value chains. The government should provide the enabling environment for private sector development and operation, supportive of competition and market efficiency; investment in public infrastructure including roads to reduce costs in reaching markets; and provide a predictable and transparent policy and regulatory framework.

The National Gender Policy: The policy highlights principal guidelines on which sectoral policies and programmes will base to integrate gender issues in their respective social, cultural, economic and political planning and programming. The overall goal of the National Gender Policy is to promote gender equality and equity in Rwanda through a clearly defined process for mainstreaming gender needs and concerns across all sectors of development. The Policy defines the institutional framework and mechanisms within which gender equality and equity policies and programmes will be designed, implemented, monitored and evaluated, and coordinated. It will thus guide the integration of a gender perspective into all sectors and institutions.

Annex 5.2 Interventions from development partners in the targeted areas

Organisation	Key information on their intervention in the targeted areas
RDO (Rwanda Development Organisation)	Local NGO active in Rwanda for 20 years in agriculture, health, environment and capacity building sectors. Support to SHF to increase production and productivity Value chain approach in maize, bean and soy sector Support to development of post-harvest handling Already WFP partner for FTMA
RSSP (Rural Sector Support Programme)	The Rural Sector Support Program (RSSP) is MINAGRI's flagship vehicle for marshland development. The World Bank finances this program through a three-phase adaptable program loan. The objective is agriculture production increases and marshland development, as well as terraces development. Key activities are promotion of sustainable land management practices, rehabilitation and development of marshland irrigated areas, economic infrastructure development, provision of multi-level capacity, strengthening farmers organizations, value chain development
World Vision	World Vision started its operations in 1994, with the aim of responding to the humanitarian crisis caused by the Genocide. In 2000, World Vision Rwanda mission switched from relief to long-term development World vision is currently working in the 4 targeted districts. World vision works in education, health and agriculture. Main support in agriculture consists in inputs provision, capacity building, and processing unit building. Cooperatives are their entry point. World vision has already partnered with WFP for HGSF programme.
KOIKA	Koika is working in three main sectors: education (technical and vocational training), ICT, Agriculture and rural development. In Nyaruguru, KOIKA is implementing the Nyaruguru integrated rural development project (5 million USD). The program covers marshland development, erosion control, terraces building, support to farmers to become seeds multipliers for Irish potatoes and maize. KOIKA is currently building a maize milling factory in Kibeho sector. In Nyamagabe, KOIKA is collaborating with WFP for the zero-hunger project.

Apart from partners that are directly working with LRP's beneficiaries, other partners are intervening in the targeted district in fields of intervention related to LRP's:

- Trocaire: Trócaire has been working in Rwanda since 1994. Trócaire has supported more than 30 local partners over the past 23 years. Trócaire currently works in 7 districts (including Nyamagabe and Nyaruguru). It currently focuses on three areas: resources' rights (including land and water), women's empowerment and humanitarian programme. Trocaire is working on value chain development, access to microfinance, climate resilience through water harvesting technologies, citizen's participation and capacity building.
- ICCO-Terrafina: ICCO Terrafina Microfinance is mainly involved in development of agricultural microfinance initiatives, and linking microfinance with value chains. Its programme in Rwanda support inclusive entrepreneurial initiatives
- Caritas: It works in Nyamagame, Gisgara and Huye districts. Amongst different programs, it works in promoting economical and agricultural development and supports over 2000 poor farmers. The programme goal is to reinforce the coherence between agriculture, economical activities and social protection to break out of poverty.
- Duhamic-Adri: It's a local NGO that works (or has recently worked) in the 4 targeted districts. Amongst many activities supported by several international donors (Trocaire, USAID...), it implements projects in agriculture (support to maize and bean production, saving and credit groups, entrepreneurship...).

Annex 6. Annexes on EQ2

Annex 6.1 Detailed assessment of cooperatives capacities

Figure 12. Abemerihigo

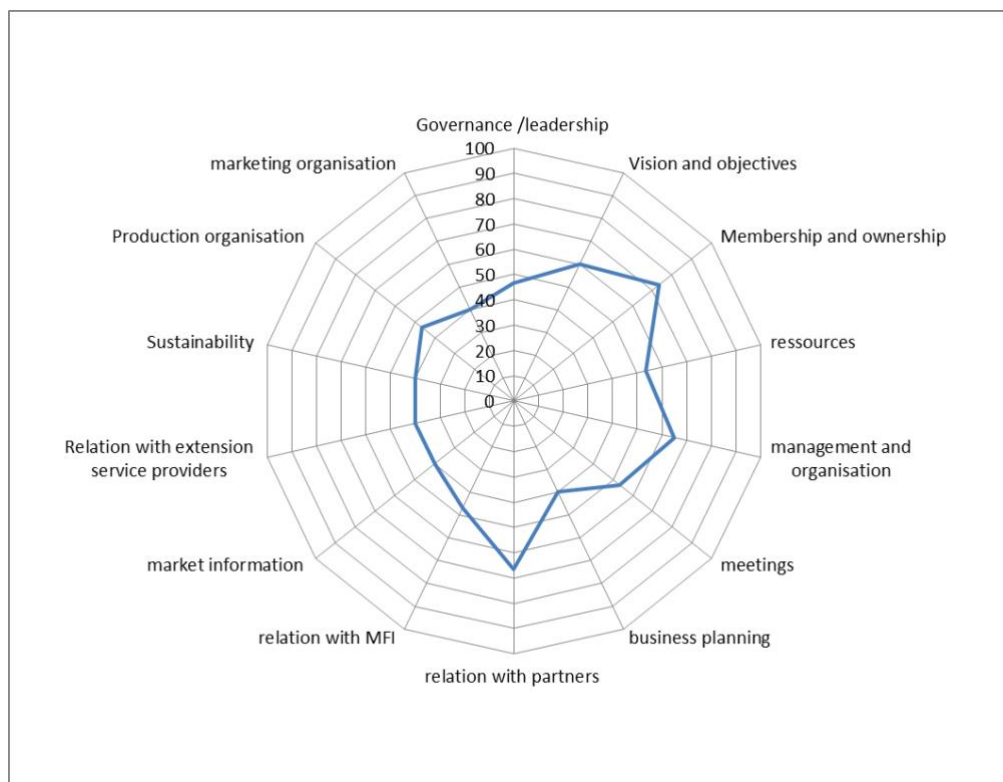


Figure 13. Abibumbye



Figure 14. Coamanya Gishubi

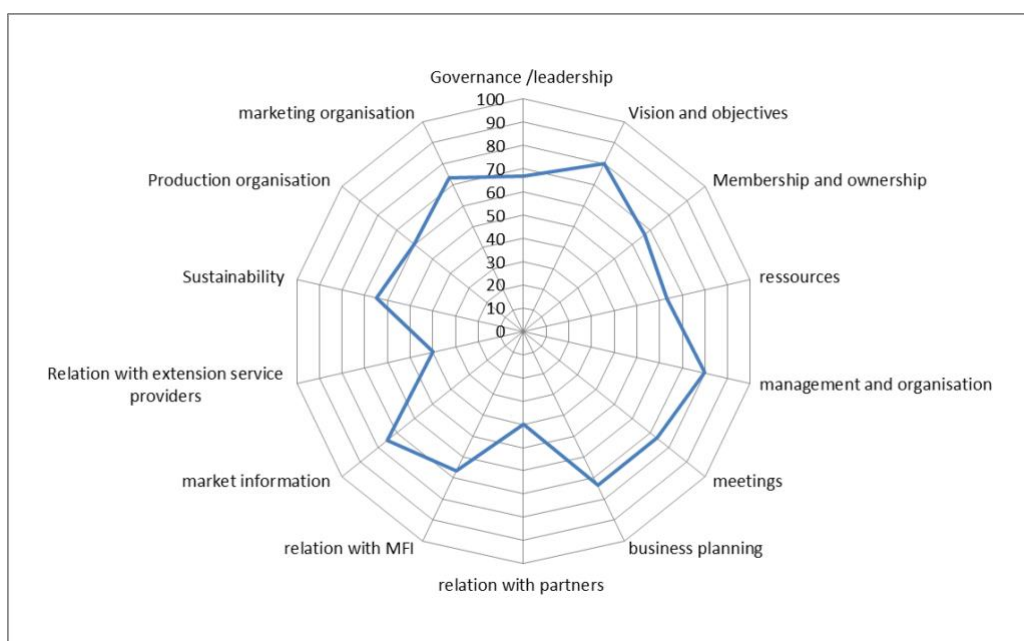


Figure 15. CCM Muganza

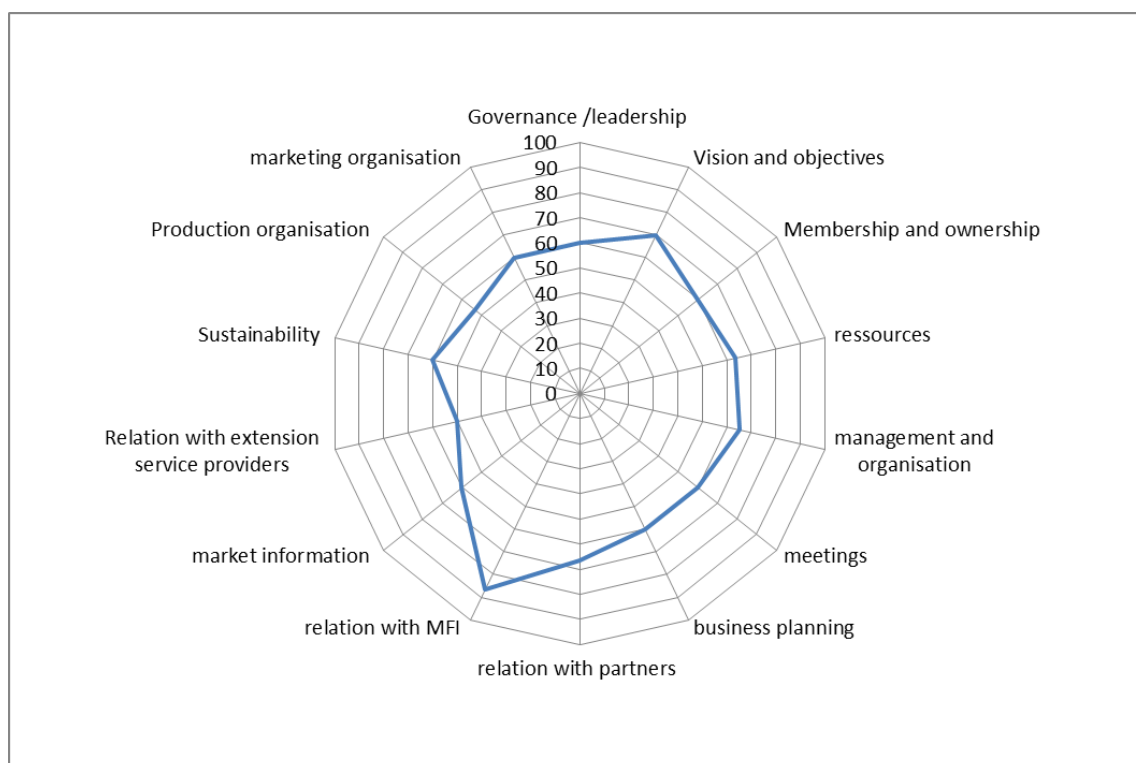


Figure 16. Kaiimu

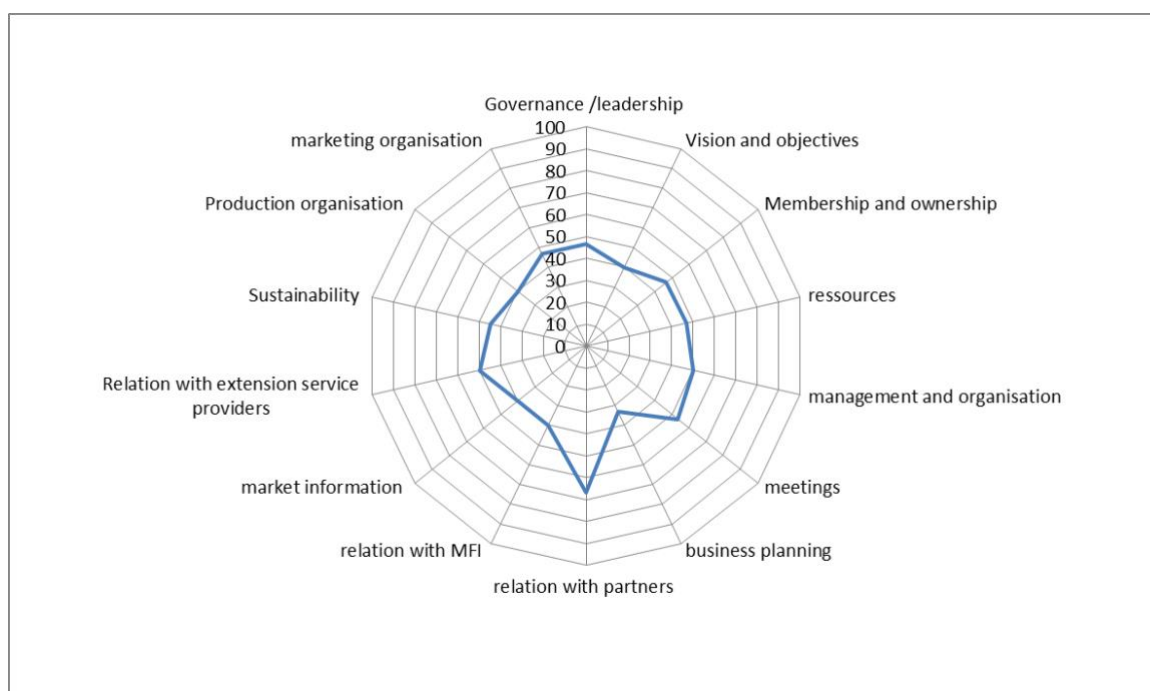


Figure 17. Kobarwo

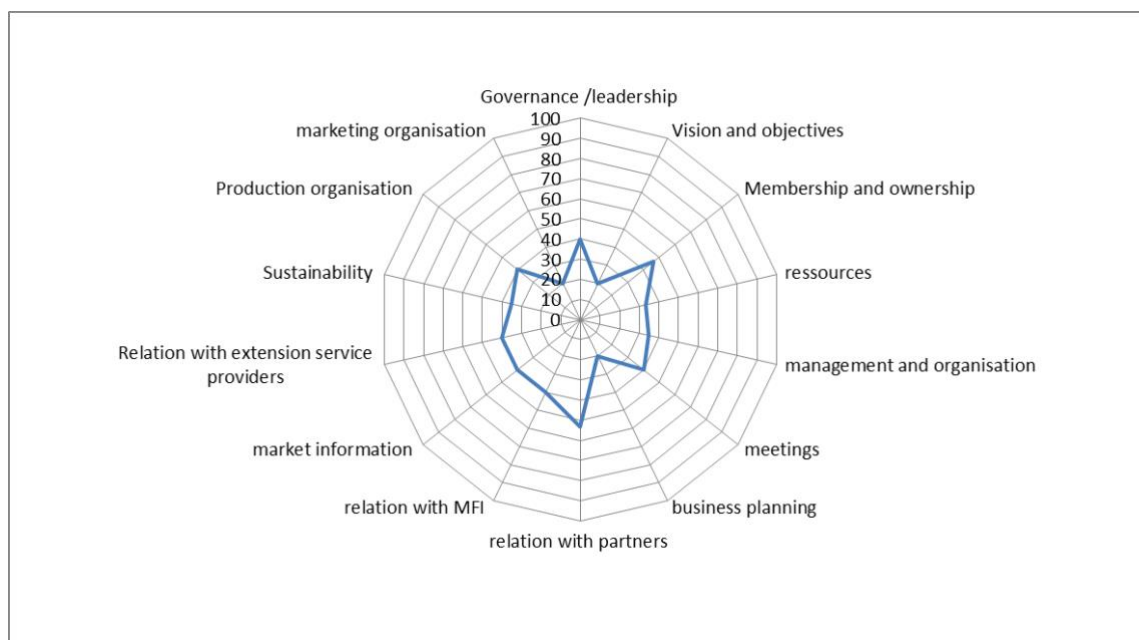


Figure 18. Koaimu

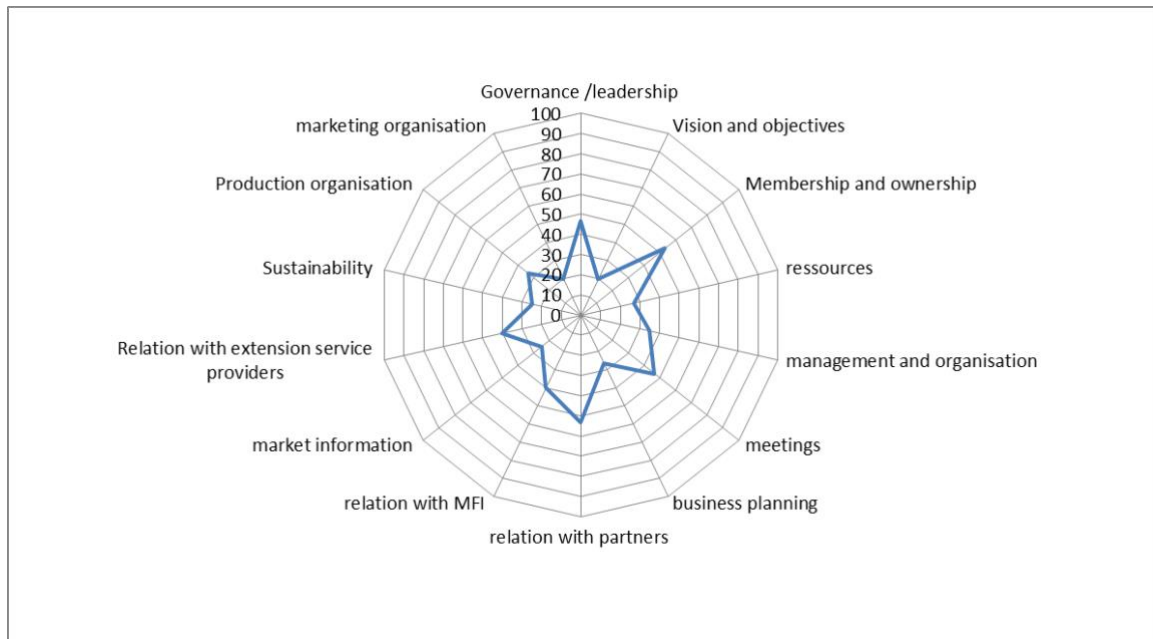


Figure 19. Kopianya

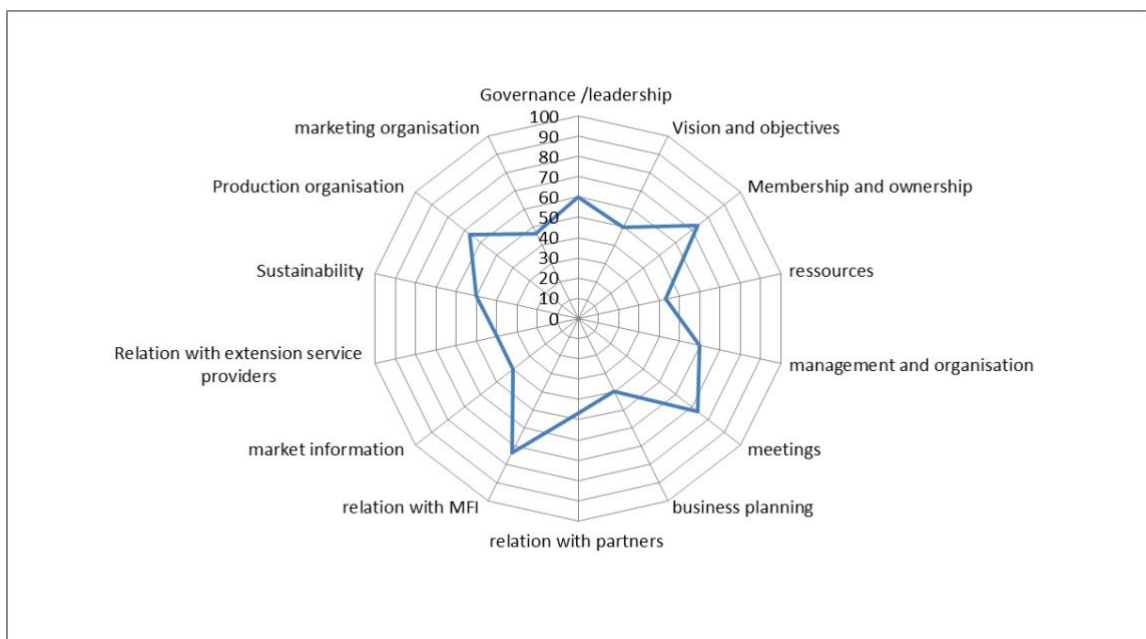


Figure 20. Koabiwa



Figure 21. Duterimbere



Annex 6.2 Basic information on cooperatives

Cooperatives selected for the LRP program are relatively young. The oldest one started its activities around 87 but for most of them the formation is more recent (around 2010). Formation of LRP's cooperatives occurred in a context of cooperatives development all over the country. Several experiences in different regions of the world show that it took strong cooperatives between 15 and 20 years to build their capacities in order to have a good command of economic and financial tools and to become real economics stakeholders⁴⁴. In that sense, we can still consider the LRP cooperatives as emerging cooperative. .

Cooperatives are one of the entry points for inputs provision and for equipped marshland and terraces exploitation. Therefore there was a strong incitation from the government to form cooperatives. It appears clearly when looking at the creation process of the cooperatives met for FDG/KII: Out of the 11 cooperatives, nine mentioned that they were created either following sensitization from the agronomist after land development or to access to inputs from the government. This drive from the government is linked with the development of marshlands and terraces. When the government invests in marshland development and equipment the land remains the property of the government. It is assigned to farmers through their cooperatives.

A majority of the cooperatives are organized around marshland exploitation (nine cooperatives only use marshland plots). Working on a marshland is easier for a cooperative as all farmers' plots are grouped in the same area. That facilitates inputs provision, extension service, control of practices and production. There are different land exploitation models: A few cooperatives are working collectively on the same land on an assigned day (either all the cooperative work together or there is an organization per group) but more often, exploitation of the land is individual. There are also different models: some cooperatives assign a specific day per week to work on the "cooperative plot"⁴⁵, other work whenever they want except at harvest time and for other there is no specific organization.

The number of members of the 16 LRP cooperatives varies from 50 to 826⁴⁶. Three cooperatives have less than 100 members, six have between 100 and 300 members and 7 have more than 300 members. Similarly, the area exploited by cooperative varies from two, five to 200 hectares with an average per cooperative of 62, six hectares. There are advantages and constraints related to the size of cooperative. When a cooperative is small, it can keep straight forward relations between the committee and members, which facilitate ownership and control of the organization by its members (hence a better governance). It is also easier to communicate with members and to have a shared vision of where the cooperative wants to go and on the

⁴⁴ Reference : les organisations de producteurs en Afrique de l'Ouest et du Centre : attentes fortes, dures réalités-FARM, 2013

⁴⁵ We'll use the term cooperative plot to mention the plot that the cooperative assign to an individual member and cooperative land to mention land exploited collectively by members.

⁴⁶ For the 11 cooperatives included in qualitative data collection, the figures are the ones mentioned by cooperative leaders. For the other 5, they come from information collected by WFP.

strategy to reach the objectives. It is also easier for a small cooperative to control production and marketing practices (use of inputs, extension, and respect of the aggregation rules) and to manage activities and finance. But a small cooperative means a low level of resources which hampers its capacity to provide services to members in an efficient way, to invest in infrastructures or equipment, to access credit (collaterals and guarantees) and to bear the cost of a technical team (accountant, agronomist...).

If a cooperative is too small it will be difficult to gather enough products to interest high ends buyers and the costs of a quality management system will be too expensive. Lastly, when a cooperative is small it only represents a small number of SHF and it cannot have a strong negotiation power. That will hamper the development of a pro-SHF value chain dialogue.

The figures collected vary depending on the source of information. There are inconsistencies between data collected by WFP during the selection process and data collected by the evaluation team. For example, Kaiimu leaders mentioned that there were 430 members whilst data from WFP show 540. Membership dynamic varies from one cooperative to another. Some are actively including more members, other do not show a real membership dynamic. The table below shows the main reasons affecting SHF's interest in cooperatives.

Table 24 :Farmers' interest in cooperatives:

Factors limiting interest of SHFs in cooperatives	Incentive for SHFs to join cooperatives
Strong habit of individual work and individual farm management	Results from other cooperatives
Mono-cropping is considered too risky	Political drive
Management issues in cooperatives	Equipment of the marshland : cooperative to access land
Loss of production (drought, floods) in cooperative plot	Accessing new market and sell dry maize

Table 25 : Date of creation of LRP cooperatives

Beginning of activities before 2010	Beginning of activities between 2011 and 2014	Beginning of activities after 2015
Abishyizhzehamwe Urwonhja	Kobarwo	Duterimbere
Kobabomango	Kopianya	Kaiimu
Koabiwa	Koaiimu	
Abishyizhzehamwe Ngera	Coamanya Gishubi	
Abemerimihigo	Coamagi	
Abimbumbye	Kopiki	
CCM Muganza	Icyerekezo	

Table 26: Type of land exploited by 11 cooperatives of the qualitative data collection

Type of land exploited by the cooperative	Cooperatives
Marshland only	Kobarwo, Duterimbere, Coamanya Gishubi, CCM Muganza, Icyerekezo, Abemerihigo, Abibumbye Koabiwa (they also have a land on hillside)
Equipped terraces only	Koaimu, Kaimu
Marshland and equipped terrace terraces	Kopianya

Table 27: Basic information on cooperative (qualitative data collection and WFP data)

Cooperative name	Number of members	Number of female members	Number of leaders	Number of women leaders	Type of land	Type of exploitation of the land	Area cultivated as a cooperative (hectares)
Kobarwo	317	149	8	3	Marshland	Individual	40
Koaimu	155	67	8	4	Terraces	Individual	100
Kopianya	50	28	8	3	Marsland and terrace	Collective on marshland and individual on terraces	2,5
koabiwa	147	95	8	3	Marsland	Individual	9
Duterimbere	765	425	8	3	Marshland	Collective (per group)	76
Icyerekezo	263	147	8	3	Marshland	Individual	30
Abemeriihigo	539	364	8	3	Marshland	Individual	62
Abibumbye	826	384	8	3	Marsland	Individual	92
Coamanya Gishubi	463	210	8	4	Marshland	Individual	80
CCM Muganza	217	86	8	3	Marsland	Collective (on 2,5 ha) and individual	25

Cooperative name	Number of members	Number of female members	Number of leaders	Number of women leaders	Type of land	Type of exploitation of the land	Area cultivated as a cooperative (hectares)
Kaiimu	430	220	8	3	Terraces	Individual	170
Abishyizhzehamwe Urwonhjya	649	337	8	4			49
Kobabomango	75	35	8	4	Marsland and terrace		52
Abishyizhzehamwe Ngera	67	43	7	2			5
Coamagi	300	187	8	4			200
Kopiki	176	93					10

Annex 6.3 Cooperatives' common vision

There is a gap about the level of information about cooperative organization and activities between members of the cooperative and members of the committee.

In all cases cooperatives were created with a top-down approach and the challenge for all the cooperatives is to develop links with members. All the cooperatives are organized in groups of 15-20 farmers and usually in geographical zones, but they are not “official entities” of the cooperatives. Membership in cooperatives is individual. These groups are either “Twigire Muhunzi groups” or “tontines” (savings and credit groups). The links between these groups and the committee are not very strong. There is a gap about the level of information about cooperative organization and activities between members of the cooperative and members of the committee.

None of the cooperatives interviewed have clearly defined their vision, objectives and strategy, and none of them have a strategy document. Some committees are able to envisage what their cooperative will look like in the future and to define what they want to achieve (though not in a quantified way) and how they can reach their objectives (see table below). But some cooperatives have no idea of what they want to achieve, at best they can identify some needs (or some support they want).

Table 28: cooperatives capacity to define a common vision and a strategy to reach its objectives (qualitative data collection)

No defined common vision and strategy	Identification of some needs but no strategy	Existence of a common vision and strategy
Kobarwo	Kaiimu	Coamanya Gishubi
Kopianya	Koabiwa	CCM Muganza
Duterimbere	Icyerekezo	Koaimu
Abibumbye		Abemerehiigo

When they can mention some objectives (see figure below), and even more for elements of strategies, they remain vague (no figure, no time line). Objectives cover improving production (through recruitment of new members, exploitation of more lands and increase in productivity), improving post-harvest handling (mainly acquiring infrastructures to dry maize or increasing the size of their drying space⁴⁷), investing in marketing (purchasing maize from members to be able to collect bigger quantities, finding big buyers) and strengthening their capacities (though only through hiring staff or acquiring offices, no cooperatives mentioned training or capacity building as an objective or a strategy). Elements of strategies were even less defined by cooperatives: improving the relation with members (through sensitization, dividends, mobilization of shares), improving production (for example using more inputs), and developing marketing strategies (starting collective sales and increasing commission on sales), and accessing credit.

⁴⁷ Storing maize was only mentioned once, it is not seen as a priority for cooperatives

Table 29 : Cooperatives' documents requirement

Documents about the cooperative	Documents about the activities	Financial statements
Registry of members	Cash book	Profit/loss account
Registry of shares	Sales day book	Balance sheet
Assets register	Purchase day book	Statement of change
Minutes book	Stock control sheet	Statement of cash flow
Inventory register	Stock register	
Wages book	Member personal account	
	Cash receipt journal	

Table 30: LRP's capacity in book keeping (qualitative data collection)

Low capacity for book keeping	Medium capacity for book keeping
Abimbumbye	Duterimbere
Abemerimihigo	Koaiimu
Kobarwo	Icyerekezo
Kaiimu	Coamanya Gishubi
	Kopianya
	Koabiwa
	CCM Muganza

Annex 6.5 Cooperatives 'experiences of collective operations

Table 31: Cooperatives' exposure to collective operations

Cooperative	Type of collective operation implemented	Exposure/experience of collective operations
Kobarwo	Supply of inputs Organization of the work	low
Koaimu	Organization of the work	Very low
Kopianya	Supply of inputs Collective sales Collective work on cooperative plot Organization of the work	medium
Koabiwa	Collective work on cooperative plot Supply of inputs	Medium
Duterimbere	Organization of the work Supply of inputs Collective sales	Medium
Icyerekezo	Organization of the work Collective sales	good
Abemerehiigo	Organization of the work Collective work on cooperative plot Collective sales	medium
Abibumbye	Organization of the work Collective sales	Very low
Coamanya Gishubi	Organization of the work Supply of inputs Collective sales Credit	Good
CCM Muganza	Organization of the work Supply of inputs Collective sales credit	good
Kaiimu	Organization of the work Collective sales	medium

For some cooperatives, collective operations are already quite common (Icyerekezo, Coamanya Gishubi and CCM Muganza) whilst for other it is marginal (Abibumbye, Koaimu and Kobarwo). All the cooperatives implement a more or less defined organization of the

activities of the members. It can be just a global planning of the season with a period for planting and harvesting, or some specific days allocated to working on the cooperative plot. Other types of collective operations remain limited, especially collective sales. Aggregation of products from member is very difficult and the quantity of product sold by cooperative is often very limited. Collective purchase of inputs for members (paid cash or on credit) is very appreciated by members, but it requires cooperative to have enough funds to purchase them, or to get credit, which limit the ability of cooperatives to start this operation.

Annex 6.6 cooperatives' resource

Table 32: Level of payment of shares by members (qualitative data collection)

Below 50% members have started to pay	Between 50 and 100% members have started to pay shares	100% members have paid shares
Koaimu Abibumbye	Kobarwo Duterimbere Icyerekezo Abemeriihigo Comanya Gishubi CCM Muganza Kaiimu	Kopianya Koabiwa

Table 33: Cooperatives' sources of funds (qualitative data collection)

Shares	Dues	Commission On Sales (Inputs Or Maize)
Kobarwo Koaimu Kopianya Koabiwa Duterimbere Icyerekezo Abemeriihigo Abibumbye Coamanya Gishubi CCM Muganza Kaiimu	Duterimbere Icyerekezo Abemeriihigo Abibumbye CCM Muganza Kaiimu	Kopianya Icyerekezo Coamanya Gishubi CCM Muganza Kaiimu

Annex 6.7 LRP cooperatives partners

Cooperative	Partnership With Service Provider	Partnership With Banks	Partnership With Government	Partnership With Development Actor	Partnership With Other Cooperatives
Abibumbye	Each member purchase on its own at Tubura or at agrodealers	Bank account at SACCO	For cooperative creation, organization of the cropping season and inputs supply	Partner with World vision (for training on production techniques)	No link with other cooperative
Kobarwo	They purchase inputs from APTC	Only for bank account (SACCO)	For cooperative creation and organization of inputs provision Regular visit of the sector agronomist but no extension service provided Training on cooperative management by RCA	Koika for equipment of the marshland, provision of seeds and training on production (maize, irish potatoes and onions)	No link with other cooperative
Koaimu	No partnership but sensitization of members to purchase with agro-dealers and Tubura for inputs provision	SACCO for bank account	For cooperative creation, organization of the cropping season and inputs supply Regular visits from sector agronomist	RSSP (provision of agronomist and manager), development of terraces, extension service, provision of an operational fund RDO for training on production	No link with other cooperatives

Cooperative	Partnership With Service Provider	Partnership With Banks	Partnership With Government	Partnership With Development Actor	Partnership With Other Cooperatives
				WFP for training on production and post-harvest handling	
Kopianya	Relation with APTC (maize seeds) and Tubura (Other inputs) to purchase inputs	Bank account and loan from SACCO	Support from the district (supply of a warehouse and support for their court process), regular visit from sector agronomist. No extension services but there are model farmers in the cooperative	PAGOR for introduction of maize, sensitization on cooperative and equipment of terrace (nothing recent)	No partnership with other cooperatives
Koabiwa	With agrodealers to purchase inputs, with support from the sector agronomist	SACCO only for bank account	For cooperative creation, and inputs provision No model farmer, no extension service	Partnership with world vision: rehabilitation of their drying facility, provision of small equipment (sprayer) and pesticide, training on production for irish potatoes	No relation with other cooperatives
Duterimbere	With agrodealer for inputs purchase	Only for bank account	For cooperative creation, organization of the cropping season and inputs provision. The	KOIKA for equipment of the marshland, provision of an operational funds including	They will be associated with two other cooperatives

Cooperative	Partnership With Service Provider	Partnership With Banks	Partnership With Government	Partnership With Development Actor	Partnership With Other Cooperatives
			CEDO is also regularly participating in their meetings no extension service (no model farmers)	purchase of seeds The KOIKA agronomist also provide extension service Koika is currently building a processing unit in another cooperative that they will be able to use	supported by KOIKA for management of a processing unit, but do not know the modalities yet
Icierekezo	No relation between cooperative and agrodealers, members purchase on their own (aither with agrodealers or with Tubura)	Bank account at SACCO	For cooperative creation, organization of the cropping season and inputs provision.	Project from Belgium (partnership with a Belgium town) : for technical training and study trip	No relation with other cooperatives
Abemerihigo	They used to purchase directly from agrodealers, but now members do it on their own	Bank account at SACCO, Banque populaire and another one related with UNICOOPAGI	For cooperative creation, organization of the cropping season and inputs provision. There are model farmers in the cooperative	PDAG, World vision for production, cooperative management, and post-harvest handling	They are part of UNICOOPAGI

Cooperative	Partnership With Service Provider	Partnership With Banks	Partnership With Government	Partnership With Development Actor	Partnership With Other Cooperatives
Coamanya Gishubi	They purchase inputs with agrodealers	Bank account and credit at SACCO	For cooperative creation, organization of the cropping season and inputs provision.	No partner, no training	They know other cooperatives but do not have partnership with them
CCM Muganza	Purchase of inputs at ATPC	Credit with Duterimbere	For cooperative creation, organization of the cropping season and inputs provision. There are model farmers They have been trained by RAB on seed multiplication	Agroconsult in the past for sensitization and marshland equipment. Partnership with USAID (post harvest and production, finance management and credit)	No partnership with other cooperatives but they know some and consult them for price
Kaiimu	No direct relation but they sensitize members	Bank account at SACCO	For cooperative creation, organization of the cropping season and inputs provision. There are model farmers Regular visit from sector agronomist Cellule is supporting them with an office	RSSP has provided an agronomist and a manager, training on production, integrated pest management, post harvest handling	No partnership with other cooperative

Annex 6.8 Decentralization and organization of the agriculture services

Decentralization reforms of 2006 created six levels:

- National level
- Province level (six provinces and the city of Kigali)
- District level (30 districts)
- Sector level (416 sectors)
- Cell level (2150 cells)
- Village level

Local administration is characterized by a mechanism of upward accountability through performance contracts that tie administrative careers and local level policies to the government agenda. Sector and cell agronomists, acting in coordination with the sector Executive Secretary and the district agronomist oversee the reception and implementation of national policies by farmers. Second, the administrative division also structure political and social life⁴⁸⁴⁹.

Before decentralization, the Ministry for Agriculture (MINAGRI) was directly responsible for delivering extension services to farmers through agricultural extension workers at the sector (Monagris), district and provincial level⁵⁰. These workers were directly accountable to the Ministry. Following the decentralization and administrative reform of 2004-2005 (the new DIP), delivery of extension services was put under direct responsibility of the decentralized entities. The reporting system is from sector to district, from district to province and from province to the Ministry of Local Government. In the new context of decentralized extension, the main functions of the Ministry for Agriculture and Animal Resources (MINAGRI) are as follows: (i) coordination and planning of agricultural development programs, (ii) agricultural sector information function, (iii) monitoring and evaluation function, (iv) regulation and control function, (v) resources mobilization function.

MINAGRI works closely with other government institutions (national boards and ministries), NGOs and development partners. Key among these institutions includes the Rwanda Agricultural Board (RAB), the National Agricultural Export Development Board (NAEB), Ministry of Finance and Economic Planning (MINECOFIN), Ministry of Justice (MINIJUST) and the Institute of Policy Analysis and Research (IPAR).

⁴⁹ Ref : Rule and rupture : State formation through the production of property and citizenship, Lund, Eilenberg, 2017

⁵⁰ Ref : Agriculture policy and institutional framework for transformation of agriculture, economic development and poverty reduction in Rwanda, IPAR, 2012

Their main responsibilities are:

RAB : Implementing the national policy of agriculture and animal husbandry and contributing to identification of policy in agriculture, animal husbandry, agricultural and animal husbandry research and technology.

MINALOC : Ensure good governance in all local administration levels including agricultural governance at local level, playing an intermediary role in channeling public funds for development projects, overseeing various local communities agricultural development related programmes.

MINECOFIN: Coordinates the national budgeting, planning and financing framework, including agricultural services sector, resource mobilization and coordination of development partners, overseeing allocation of budgets to different ministries, the Ministry of Agriculture and Animal Resources inclusive.

Land National Centre: Land administration and management both at the national and decentralized level and support the local level in the sector of land.

Districts: The basic political administrative units.

Department of Agriculture: oversees monitors and provides technical backstopping to agricultural production activities at district and cell levels, coordinate the public and private sector partnership in agricultural programs mainly for quality control purposes.

Annex 6.9 Cooperatives' partnership

Public institutions:

The main contact in the administration for cooperatives is the sector agronomist. All the cooperatives mentioned that they are regularly working with him. The sector agronomist has several responsibilities:

- Coordination the extension system: Extension is based on a system of “model farmers”, who are volunteers’ farmers in charge of organizing and training farmers. Each model farmers implements a demonstration plot and he provides training to farmers organized in groups of about 20 farmers (one model farmer monitors five to 10 groups). Model farmers are trained on extension techniques, production, pest control and marketing)
- Organizing inputs supply: the sector agronomist is in charge of putting together information concerning the required amounts of inputs, linking farmers to agrodealers and report to district level for subsidies calculations.
- Collecting and reporting statistic on production

Unlike in many countries, the government services are actually present in the cooperative environment. Cooperatives consider them as their first partner. The sector agronomists (and to a lesser extent the district agronomists) are committed, know the cooperatives and are supporting them. Cooperatives are seen as an efficient way to organize farmers and to make sure that the directives from the government are followed-up. They are the entry point to build other partnerships, as it is very often the sector agronomist that link cooperatives to buyers, inputs providers and development partners.

Financial partners

All the cooperatives met have bank accounts and are rather familiar with formal banking systems (including credit services). It is rather impressive considering that in 2008, only 21% of Rwanda's bankable population was accessing formal financial services and 52% were completely financially excluded⁵¹. Microfinance sector in Rwanda is relatively recent; it started to emerge after the 94 genocide.

All cooperatives met (except one that did not give details) have a bank account at SACCO (Saving and Credit Cooperative, see text box below). SACCOs are member-based cooperatives that have been created following launch by the government of the National Savings Mobilization Strategy (2009). Two cooperatives also have another account in a MFI (Banque populaire and Duterimbere).

Through the interviews done with commercial banks during the mission it clearly appears that agriculture is not a priority for them and that it represents a very small part of their portfolio (though they could not give specific information). Those banks are mainly located in the main towns (Huye, but also district level town like Kibeho in Nyaruguru district). SACCOs are favored by cooperative because of their proximity and because they are considered as closer to farmers.

The minimum capital requirement for SACCOs is relatively low, which makes share capital more affordable for Rwanda's low-income population. The minimum capital for SACCOs in Rwanda is 5 million Rwandan Francs (RwF) (USD 7,353), while the minimum capital for an MFI constituted as a limited liability company is RwF 300 million (USD 441,176). SACCOs and other MFIs have made a significant contribution to financial inclusion and the growth of the financial sector in Rwanda. The number of accounts opened at MFIs rose 263% from 2007 to the end of 2013 (from 631,689 to 2,295,589), 72% of which were at SACCOs. SACCOs represented over 33% of accounts in the entire banking and microfinance sector. The increase in the number of people saving with MFIs is also reflected in an increase in the number of deposits and loans granted by MFIs. From 2007 to December 2013, the value of loans and deposits increased by 174% and 141%. Through SACCO, all Rwandese are now less than five km away from a financial institution.

⁵¹ Ref : Rwanda's financial inclusion success story : Umurenge SACCOs, Alliance for financial inclusion, 2014

One expected potential partner is clearly missing in the picture, the BDF (Business Development Fund). BDF was established in 2011 as a wholly owned subsidiary of the Development Bank of Rwanda (BRD), with the objective of assisting SMEs (including cooperatives) to access finance, particularly those without sufficient collateral to obtain credit from traditional financial institutions at reasonable rates. BDF's role was to promote alternative financing avenues at reasonable costs to help small businesses access credit by providing credit guarantees, Quasi-Equity support to start-up, managing matching grants, SACCO Refinancing, and business development advisory services. Though they are present at district level, cooperatives do not know BDF, their roles or their services. And the interviews made with BDF show that this lack of knowledge is reciprocal: they could not give information on the number of cooperatives they supported or on the type of support they provided them.

Service providers

The only service providers that have partnership with cooperative are inputs providers (Tubura, agrodealers or APTC). Through CIP, GoR has implemented a “supply-push” approach to boost use and supply of fertilizers and improved seeds all over the country. Minagri embarked on developing a market oriented fertilizer distribution system based on a network of agro-dealers. The objective is to ensure acceptable fertilizer availability and accessibility of affordable fertilizers at the proximity of the farmer in a timely manner. Minagri also promotes fertilizers and improved seeds use and provides subsidies to make inputs affordable. The importers redeem the subsidy cost of fertilizer delivered to farmers. The importers receive 60% of the subsidy cost upon provision of proof that fertilizers have been delivered to agro dealers' stores and 40% after beneficiary farmers receive the fertilizers. Needs are planned first by MINAGRI based on production targets. Then before the start of the season, each district send a list of needs based on the actual demand from farmers. The agro dealers are supervised by the sectors' executive and agronomist to ensure timely distribution.

Apart from cooperatives that work directly with APTC, cooperative do not really chose their partners, it mainly depends on the presence of the actors (and its proximity with farmers). From the interviews, there was no clear difference made by cooperative depending of the type of inputs providers, with the exception of Tubura (that is providing inputs on credit). Agrodealers and Tubura are well identified by the cooperatives and are considered as proximity partners.

Tubura is the local name for the “1 acre fund” NGO. It started operating in Rwanda in 2007 and is currently working with 200 000 SHF. There is actually two different organizations, one is actually an NGO providing training and extension service to farmers, and the other one is a private company supplying inputs to farmers (they chose this private sector model in order to facilitate their operation of import and distribution of inputs). Concerning provision of inputs on credit, they apparently do not have a specific credit scheme: there is

no interest charged and farmers can repay gradually during the season⁵². Tubura is well identified for inputs provision on credit (it was mentioned as a source of inputs for SHF by 4 cooperatives) but not for the extension service and training they offer.

APTC (Agro-Processing Trust Corporation Ltd) is a parastatal organization in charge of distribution of inputs in Rwanda since. It works with eight importers and is supplying mainly agrodealers. Some cooperatives organize directly the purchase of inputs at their level, with support from the sector agronomist.

Partnership with other cooperatives

For a cooperative, building partnership with other cooperatives is important to increase their legitimacy to represent the interest of SHF. On a shorter and more operational term, building partnership with other cooperative can enable information sharing on good practices (and economies of scales (for inputs provision or sales for example). Today cooperatives have little relations with other cooperatives. They usually know there are other cooperatives around but they do not know their activities or results. There is no dialogue between cooperatives. Only one cooperative is part of a union of cooperative, UNICOOPAGI, see text box below.

UNICOOPAGI

Unicoopagi is a second level organization of cooperatives. It is based in Nyamagabe but covers Nyamagabe, Nyaruguru and Huye districts. It was created in 1991 and gather 61 cooperatives representing 15652 members (42% women). It mainly focuses on wheat and irish potatoes but also includes maize production.

It has 5 objectives:

- Help cooperatives to find solutions for soil infertility (acidic and low fertility soils)
- Develop a network of cooperatives to facilitate capacity building
- Promote cash crop
- Support cooperative for marketing of agriculture products
- Support cooperatives to get registration

⁵² This was explained to the team during meeting with Tubura, but we could not find any document explaining their credit system.

Partnership with development actors

A lot of international and national development partners intervene in Rwanda, especially in supporting the agriculture and rural sector. Cooperative is a common entry point for development actors, as it is difficult to work with individual farmers. This high presence of development partners appears in the sample of LRP cooperatives: in the 11 cooperatives included in qualitative data collection, only one never got support from a development partners. Partners identified are cooperation agencies (KOIKA, USAID), international NGOs (Worldvision), Rwandan NGO (RDO), world bank programs implemented by ministry of agriculture (RSSP, PAGOR, PDAG).

From the discussions with cooperatives some limits of development partners can be identified:

- Interventions are too punctual, mainly based on training only: several cooperative regretted that the only support they got from development partners was one or to training. They regretted a lack of follow-up and support to actually implement what they have been trained on
- Intervention are designed by development partners without consultations with the cooperatives to define their needs
- No exit strategy defined from the beginning and insufficiently market based solution: providing fertilizers and/or improved seeds (as well as small equipment or operational funds) to cooperative may be useful to spark a new dynamic and to have quick increase in production but it is also risky as it encourages cooperative to rely on their partners instead of mobilizing their own resources and find appropriate private sector partners with whom they could develop partnerships.

Table 34 : Crop rotation in the cooperative land

Cooperative	Season a	Season b	Season c
Kobarwo	maize	Irish potatoes	fallow
Koaimu	beans	beans	Fallow
Kopianya	Maize (marshland) Irish potatoes (terraces)	Irish potatoes (marshlands) Beans (terraces)	Fallow fallow
Koabiwa	maize	Irish potatoes	fallow
Duterimbere	Maize beans	Irish potatoes Irish potatoes	fallow
Icyerekezo	Maize	Vegetable	fallow
Abemerehiigo	maize	Vegetables	fallow
Abibumbye	beans	maize	vegetables
Coamanya Gishubi	Maize fallow	Fallow maize	Vegetables Maize/beans (2 sides)
CCM Muganza	Beans	Fallow	Maize
Kaiimu	Beans Maize Soya Groundnut cassava	beans	Fallow

Assessing the production potential is a very difficult question because SHF do not usually weigh their production, do not take into account what they keep for household consumption and size of land is not precisely measured. Information gathered during qualitative data collection gives results that vary between 500kg/hectares to 1,4T/hectares for bean and 600kg/hectares to 3T/hectares for maize. It is also clear that there is a high variability in the production between one year and the following one depending on climate conditions, date when they start planting, attacks of pests... Also, the majority of the cooperatives marshlands are acidic soils, which also reduce its fertility potential. It is therefore not realistic to use the potential yields of maize and beans as a reference or a target to reach. Based on qualitative data collection and the statistics gathered by National Institute of Statistic of Rwanda, potential maize and bean production can be estimated (see table below)

Table 35: Production potential for the cooperative

Cooperative name	Potential maize production per year (higher estimation)	Potential bean production (high estimation)
Kobarwo	72	-
Koaimu	160	120
Kopianya	1,8	1,8
Koabiwa	26,2	-
Duterimbere	68,4	45,6
Icierekezo	54	-
Abemerihigo	111,6	-
Abibumbye	128,8	110,4
Coamanya Gishubi	110	30
CCM Muganza	32,5	30
Kaiimu	176	252

Annex 6.11 Factors limiting access to credit for cooperatives

There are several constraints that limit cooperatives' access to credit. The main factor explaining the situation is a mutual lack of trust. Finance institutions and cooperatives do not know each other and they have a low awareness of their respective logics, rules, needs and constraints.

Cooperatives have a low capacity to monitor and manage their loan. They struggle to keep records and to implement a proper accounting system, which increase the risk of credit defaulting or of credit being use for other purpose (or by only a few members). Microfinance institution usually have credit officer, but they cover and monitor a large number of loans and they tend to focus more on credit recovering than on training and monitoring cooperatives to properly manage their loans. As cooperative business capacities are limited, it is difficult for them to assess their real need for credit and to plan its reimbursement. Without a proper support, it is also difficult for cooperative to prepare their loan requirement file.

Interest rate and collaterals also represent a barrier for cooperative.. In some cases, cooperatives do not have the adequate collaterals. In that case, they usually use collaterals from one or several members (land title for example). Cooperatives that did not require loan are scared that they could lose their land or building is they have difficulties to repay a loan.

Credit is not well adapted to farmers' reality; they consider that loan is to be used for a single purpose (purchasing inputs) and to be repaid after harvest. But the specificity of family farming is that there is no clear separation between productive and personal needs. Farmer may need some cash to pay for inputs but then he will not be able to repay the loan just after harvest because he may have to pay for school fees or to invest in the next cropping season. There is not enough flexibility in the current credit system to suit farming HH (and cooperatives)' specific needs. Similarly, MFI only give short term loans and cooperatives do not have opportunities to access credit to finance infrastructure. And even for production loans delays can cause problems and hamper the production.

Last but not least, agricultural production is intrinsically risked. Climatic factors, pest attacks or disease may destroy the whole production of a cooperative. That is what happened to cooperatives that had a bad experience with credit. They got their loan, purchased the correct amount of inputs but at the end, they could not repay because they got a very low production. Currently there is no crop insurance system available and there is no measures that cooperative can take to reduce this risk.

Annex 6.12 Price of maize and types of buyers

Table 36: Maize selling price at harvest time for cooperatives and types of buyers

	Price of maize at harvest time	Type of buyers
Kobarwo	350	Individual sales by members
Koaimu	400	Individual sales by members
Kopianya	315	Sales in detail at the cooperative
Koabiwa	300	Sales in detail at the cooperative
Duterimbere	320	Korean animal feed company
Icierekezo	300	Processing unit
Abemerihigo	280	Local buyer
Abibumbye	300	Poultry producer
Coamanya Gishubi	270	AIF
CCM Muganza	270	Local buyers
Kaiimu (beans)	300	Individual sales by members

Annex 6.13 Quantitative analysis on EQ2.1

Table 37 - Average amount of dues by gender

Gender of household	Mean	N	Std. Deviation	Minimum	Maximum
Female	1396.94	245	1812.384	0	15000
Male	1429.86	296	1678.220	0	10000
Total	1414.95	541	1738.702	0	15000

Table 38 - Average amount of dues by cooperative age

Type of cooperative	Mean	N	Std. Deviation
Emerging	2869.80	101	2700.019
Mature	931.56	250	1090.139
Young	1277.63	190	1324.909
Total	1414.95	541	1738.702

Table 39 - Payment of dues by gender

			Gender		Total
			Female	Male	
	No	Count	138	157	295
		%	46.8%	53.2%	100.0%
	Yes	Count	245	296	541
		%	45.3%	54.7%	100.0%
Total			383	453	836
			45.8%	54.2%	100.0%

Table 40 - Payment of dues by cooperative size

			Cooperative size			Total
			Large	Medium	Small	
	No	Count	175	100	20	295
		%	59.3%	33.9%	6.8%	100.0%
	Yes	Count	363	178	0	541
		%	67.1%	32.9%	.0%	100.0%
Total			538	278	20	836
			64.4%	33.3%	2.4%	100.0%

Table 41 - Frequency of dues payment by gender

			Gender of the household respondent		Total
			Female	Male	
	Always	Count	57	97	154
		%	37.0%	63.0%	100.0%
	Never	Count	3	0	3
		%	100.0%	.0%	100.0%
	Not regular	Count	36	44	80
		%	45.0%	55.0%	100.0%
	Others	Count	1	2	3
		%	33.3%	66.7%	100.0%
	Regularly	Count	148	153	301
		%	49.2%	50.8%	100.0%
Total			245	296	541
			45.3%	54.7%	100.0%

Annex 6.14 Quantitative analysis on EQ 2.14

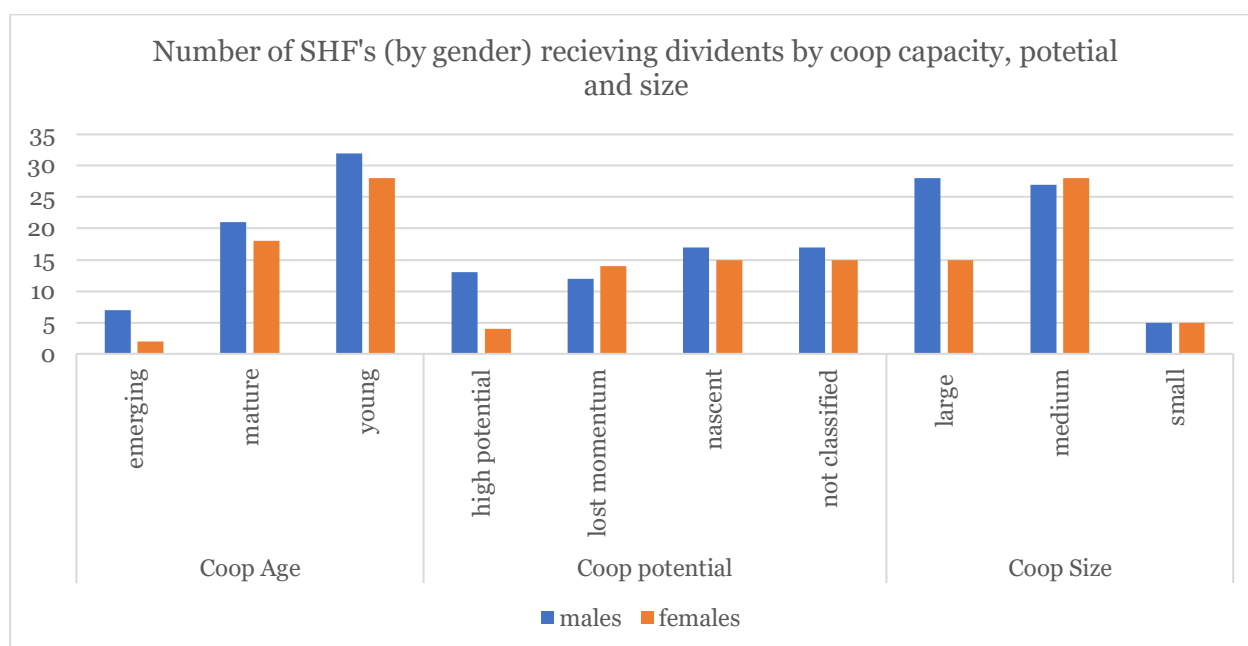


Table 42 - Mean amount of dividends received by cooperative capacity, age and size

Coop Classification	Coop Category	Gender		P value
		Males	Female	
Coop Capacity	High potential	2450.00		0.357
	Lost momentum	7083.33	10357.14	
	Nascent	11320.00	12036.36	
	Not Classified	16000.00	7400.00	
Coop Age	Emerging	7833.33	20000.00	0.862
	Mature	13093.33	8875.00	
	Young	8914.44	10160.00	
Coop Size	Large	15766.67	22000.00	0.026
	Medium	8282.11	8257.89	
	Small	6760.00	6800.00	

Evidence that cooperatives offer more effective and timely services in one or more of these fields: access to inputs, access to finance, marketing, access to information, extension, storage or processing

- Trainings (72.7%), supply of seeds (61.0%) and fertilizers (54.2%) and finding buyers (42.8%) are some of the key services offered by the cooperatives. There is no notable difference in the services offered to male and female SHF's.
- High potential cooperatives engages more in finding buyers (95.5%), while small cooperative supply more seeds to members (95.0%). The other cooperatives of different ages, capacities and sizes did not however have notable differences from the main services offered.
- Trainings (23.3%), supply of fertilizers and other agricultural inputs (22.6%) and provision of other services are the three most important services to the SHF's.

- There is no noted difference in the priority services for males and females but a noted variation in priority services for members of cooperatives of different capacities, ages and sizes.

Table 43 - Table of amount spends on seeds and fertilizer by cooperative size

Cooperative size		Amount spent on seeds	Amount spent on fertilizers
large	Mean	14537.77	13099.95
	N	519	304
	Std. Deviation	24957.478	18660.504
medium	Mean	8270.16	13346.02
	N	268	128
	Std. Deviation	17120.947	16807.418
small	Mean	2939.25	11845.25
	N	20	20
	Std. Deviation	4302.103	11180.532
Total	Mean	12168.89	13114.12
	N	807	452
	Std. Deviation	22552.830	17856.246

Table 44 - Possibility of receiving services for outside the cooperative

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	531	63.5	63.5	63.5
	Yes	305	36.5	36.5	100.0
	Total	836	100.0	100.0	

Table 45 - Cross tabulation of possibility of receiving services from outside by gender

			Gender		Total
			Female	Male	
Possibility of receiving services from outside the cooperatives	No	Count	261	270	531
		%	49.2%	50.8%	100.0%
	Yes	Count	122	183	305
		%	40.0%	60.0%	100.0%
Total		Count	383	453	836
		%	45.8%	54.2%	100.0%

Annex 6.15 Capacity of cooperative to develop self-financing mechanism for their services to members

Table 46: Cooperative self financing mechanisms

No awareness on self-financing mechanism	Low capacity to self-finance its activity	Good prospect of sustainability of the activities of the cooperative
Duterimbere Koaimu Abibumbye	Abemerihigo Kaiimu Kobarwo Kopianya Koabiwa	Iciyerekezo CCM Muganza Coamanya Gishubi

Annex 6.16 Cooperative sales and aggregation rules (qualitative data collection on 11 cooperatives)

Table 47 - Cooperative sales and aggregation rules

Cooperative name	Potential production/year	Cooperatives sales	Aggregation rules
Kobarwo	72	0	No aggregation
Koaimu	160	0	No aggregation
Kopianya	1,8	No idea	40% of the production is aggregated
Koabiwa	26,2	5T	1/3 of the production is aggregated
Duterimbere	68,4	4,5 T	Each member gives 12 kg
Icierekezo	54	135T	2/3 of the production is aggregated (but they also sell maize for individual farmers)
Abemerihigo	111,6	21,6T	No rule, small part of the production is aggregated
Abibumbye	128,8	523 kg	1 kg per member (objective, 35 kg/member)
Coamanya Gishubi	110	120 T	70% aggregation
CCM Muganza	32,5	20T	4/5 aggregation
Kaiimu (beans)	252	2,165T	30% aggregation for beans, not yet for maize

Annex 7. Annexes on EQ 3

Annex 7.1 SHFs knowledge on good practices

Respect of the technical itinerary:

Respecting technical itinerary allows a farmer to grow maize and beans in the most efficient way in a given environment (with specific agronomical conditions but also based on the needs and potentialities of producers). For both maize and beans, crucial operations to ensure a good production are adequate land preparation, timely planting, correct spacing, correct weeding and harvesting when the maize is mature. From the observations in the field (and looking at the results from quantitative survey), farmers' knowledge on this issues are good.

Use of inputs:

All the cooperatives met are aware that they need to use improved seeds and fertilizers to get a good production. Overall they have a good command of the recommended quantity of seeds and fertilizers to apply (however three cooperatives had wrong information on the quantity of fertilizer to apply) and on the specificity of maize and beans requirements. Similarly they all have adequate information on the organization of the supply system for inputs. They know that seeds and fertilizers are subsidized but they do not know the percentage of the subsidy. Their knowledge is less developed on other fertility management practices. For example, they know about manure application, but information on the required quantity is less accurate. SHFs have a very limited knowledge on lime application (that is required to improve fertility of acidic soils). Only one cooperative was aware of lime utilization.

Adequate cropping system:

The Rwandan agricultural sector is highly vulnerable to climate and weather-related risks. Research indicates that rainfall patterns are becoming more irregular and unpredictable with shorter rainy seasons negatively affecting Rwandan agriculture. Therefore, it is essential for producers to develop adequate cropping systems. There are several good practices to emphasize. Crop rotation contributes to a smarter use of nutrients. Similarly, intercropping could be considered. Other practices to consider is the use of crop residues (for maize and beans) as it reduces on farm organic waste and improve soil moisture content hence reducing soil degradation. Specific soil conservation practices could also be considered (reduced tillage for example that can decrease the level of short term production but increase soil productivity on the long run) as well as efficient soil and water management to avoid erosion and nutrient leaching. Producers' awareness on those issues is not well developed. Producers are aware of erosion issues but not of specific practices or measures to limit it. Soil conservation measures are not known by SHFs.

Annex 7.2 Quantitative data analysis on good practices (production and post-harvest practices)

Table 48 -Frequencies of good agricultural practices

		Responses		Percent of Cases
		N	Percent	
practising of good agricultural practise ^a	Practising seed selection	1	1.0%	1.4%
	Practising planting and spacing	18	17.1%	25.7%
	Practising use of fertilizers	12	11.4%	17.1%
	Practising timely harvesting	10	9.5%	14.3%
	Practicing minimization of grain infestation	25	23.8%	35.7%
	Practicing cleaning grains before storage	5	4.8%	7.1%
	Practicing avoiding of damages to grain during threshing and shelling	1	1.0%	1.4%
	Practicing good drying	11	10.5%	15.7%
	Practicing good storage practices	22	21.0%	31.4%
Total		105	100.0%	150.0%

a. Dichotomy group tabulated at value 2.

b.

Annex 7.3 Quantitative analysis on services

Table 49 - Number of cooperatives that benefitted from extension services

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	231	27.6	27.6	27.6
	Yes	605	72.4	72.4	100.0
	Total	836	100.0	100.0	

Table 50 - Number and percentage of cooperatives that received agricultural extension services by cooperative size

			Size of cooperative			Total
			large	medium	small	
	No	Count	146	79	6	231
		%	27.1%	28.4%	30.0%	27.6%
	Yes	Count	392	199	14	605
		%	72.9%	71.6%	70.0%	72.4%
Total		Count	538	278	20	836
		%	100.0%	100.0%	100.0%	100.0%

Annex 7.5 Investment in short term productive assets

Investment in land:

In the Southern province, the average land holding per household is 0,37 hectares (EICV3), 66% of the agriculture population cultivating under 0,5 hectares and 32% under 0,2 hectares. Farmers do not invest in lands because they want to develop their income, but they are struggling to get enough land to produce to cover their family needs. That appears clearly in the quantitative survey analysis of the reasons why farmers rent land. Only a small number of farmers are actually able to rent land to produce for the market.

There are two types of lands available for farmers. On the hillside, farmers usually have some lands that they have inherited, or in rare cases bought (the cost being about 10 000 RwF (11.91 USD) per are (0.1 hectare). Renting land on the hillside is very common and cost about 1000 to 1500 RwF/are/year (from 1.19 to 1.79 USD). Apparently farmers do not have difficulties to find land, the limiting factor being their ability to cover the renting cost.

Investment in tools:

Maize and beans cultivation are not mechanized and require very limited equipment (hoes, machetes and sometimes small locally made tools used for shelling maize, as well as pesticide sprayers). Regularly investing in tools is compulsory for farmers. They have to purchase hoes every year as they are getting worn out after six months to one year of utilization. The cost is about 2000-3000 RwF (2.38-3.57 USD), which corresponds to the amount given by farmers. All the households have some hoes, but sometimes, they do not have one per person working in the family land. Family members also usually help each other with some more expensive equipment (pesticide sprayers for example). Two cooperatives have some sprayers available for members.

Investment in casual labor

Hiring casual labor is resulting of the concentration of the agricultural activities over a short period of time at the planting season. This phenomenon is amplified with their participation to cooperative's activities. They have to prepare their land on the hillside (critical to ensure they have different food products to feed their family) and to prepare their plot on the cooperative land. Priority for farmers is to prepare their plot on the hillside, they consider they cannot sustain themselves only with plots on the cooperative ("you cannot eat only maize", as a farmer told the baseline team). But as the same time, they have to respect the cooperative organization of the work (most cooperative organize for all members so prepare their land at the same time). In order to prepare both plots on time, they usually hire labor (mainly on the cooperative plot). Casual laborers are mainly working on land preparation (clearing the land, preparing the soil) and they also help farmers to transport products (for example farmers use stick to plant beans, and they often ask a laborer to bring them to the plot). Hiring casual labor for harvesting is not very common: this operation is considered as a key one and farmers do it themselves to control what is done with their products and to avoid thefts.

Both men and women are working as casual labor and farmers similarly hire men and women. Labor cost is similar in all the villages visited) and there is no difference for men and women. They do not provide food to laborers. Finding laborers is not difficult as most farmers sometimes sell their labor force, and they usually find laborers amongst relatives or

in their nearby environment.

But most farmers are also working as casual labors. Actually, this is the main way for farmers to get cash when they face an unexpected expense, or when they need to purchase agriculture inputs. The same farmer can work as casual labor some times and hire casual labor another time. It will be interesting to see if they hire more casual labor through a more pronounced business orientation of their crop, but another element that will be worth looking at the evaluation stage is whether farmers are still selling their work force. That will be an element showing that better production, management and marketing practices and opportunities result in less financial constraints for farmers.

Seeds and fertilizer

All the cooperatives try and follow the recommendation from the sector agronomist concerning the quantities of seeds and beans to be used on the cooperative plots. When cooperatives are organizing inputs provision, there is a certain level of control about inputs use and members usually apply more or less the recommended quantities. However, when members purchase inputs on their own, cooperative leaders recognized that some members do not respect the standards⁵³. On their own hillside plots, farmers mentioned that is impossible to respect the standards. They all try to apply some fertilizers as they consider it is impossible to produce without fertilizers but sometimes very low quantity (about 25 to 50% of the recommended quantity).

There is a very clear difference between cooperative plot and personal hillside plots concerning the use of maize seeds. Most farmers do not plant improved seeds on their personal plot. They often mix improved seeds with traditional seeds (with a majority of traditional seeds). They know the improved seeds are better but they do not have enough funds to purchase 100% of improved seeds. Mixing some improved seeds is a way for them to improve their production in spite of meagre resources. For areas where cooperatives are acting as agrodealer, farmers consider that when a farmer is not a member of the cooperative, it is more difficult to access to improved seeds (there is a lower awareness on the importance of the seeds, and cooperatives try to serve their members first). This is coherent with the result from the quantitative survey. Even if maize is already a crop for which producers invest in improved seeds, there are still about half of the farmers that do not purchase maize seeds. It will be very interesting to see how this has changed at the endline stage. With better opportunities and skills, SHF may invest more in improved seeds for their personal plot. This would really show an improved interest in maize cultivation as a cash crop.

Several types of improved seeds have been introduced to farmers. The main one for the last A and B seasons are PAN 53 and ZM. PAN 53 is an hybrid seed imported from Kenya. The choice of varieties is made by the government depending on varieties considered as suitable for the area. An important issue with seeds availability is the delay to get the seeds. Farmers need to have their seeds early enough in the season so their crop can benefit from the rain. From the last two seasons, farmers have encountered numerous difficulties to get the seeds

⁵³ 25kg of maize seeds, 60 kg of bean seeds, 100 kg of DAP for both maize and beans and 50 kg of urea (per hectare)

on time. This element was actually recognized and regretted by the majority of the stakeholders met (including sectors and districts agronomists). Apparently the problem is linked to difficulties at the import stage.

Table 51: Cooperatives' inputs costs (qualitative data collection)

	Local maize seeds	PAN 53 seeds	ZM seeds	Local bean seeds	Improved bean seeds	DAP	urea
Duterimbere	250	300				450	360
Kobarwo		325	295			450	360
Koaimu		335		300		480	
Kopianya	270	325	295	400	500	430	360
Abibumbye	310	425					
Abemerehiigo	250			400	500	450	390
Comanya Gishubi		290		400		410	390
CCM Muganza		400				430	380

Inputs price are fluctuating from one cooperative to the other. The price is apparently not cheaper for cooperative acting as agro dealers. For those cooperatives, they all use the same formula to calculate the selling price: they add 30RwF (0.04 USD) (including about 16RwF (0.02 USD) to pay for the transport cost).

Annex 7.6 Statistic on production in the districts

Table 52: Crops cultivated area at district level (NISR, season A 2017)

	maize	Paddy rice	cassava	Sweet potatoes	Irish potatoes	Beans
Gisagara	6114	795	7306	1777	511	13463
Nyaruguru	2427	0	4216	4551	1576	3560
Huye	1359	2014	5167	1712	373	7585
Nyamagabe	3219	0	4617	7394	1125	7160

Annex 7.7 Quantitative analysis of SHFs practices

Table 53 - SHF reporting of frequency of specific good agricultural practices

		Responses		Percent of Cases
		N	Percent	
practising of good agricultural practise ^a	Practising seed selection	1	1.0%	1.4%
	Practising planting and spacing	18	17.1%	25.7%
	Practising use of fertilizers	12	11.4%	17.1%
	Practising timely harvesting	10	9.5%	14.3%
	Practicing minimization of grain infestation	25	23.8%	35.7%
	Practicing cleaning grains before storage	5	4.8%	7.1%
	Practicing avoiding of damages to grain during threshing and shelling	1	1.0%	1.4%
	Practicing good drying	11	10.5%	15.7%
	Practicing good storage practices	22	21.0%	31.4%
Total		105	100.0%	150.0%

a. Dichotomy group tabulated at value 2.

Table 54 - Good agriculture practice by gender of SHF

			Gender		Total
			Female	Male	
practising of good agricultural practice ^a	Practising seed selection	Count	0	1	1
		%	.0%	2.7%	
	Practising planting and spacing	Count	7	11	18
		%	21.2%	29.7%	
	Practising use of fertilizers	Count	7	5	12
		%	21.2%	13.5%	
	Practising timely harvesting	Count	1	9	10
		%	3.0%	24.3%	
	Practicing minimization of grain infestation	Count	12	13	25
		%	36.4%	35.1%	
	Practicing cleaning grains before storage	Count	2	3	5
		%	6.1%	8.1%	
	Practicing avoiding of damages to grain during threshing and shelling	Count	0	1	1
		%	.0%	2.7%	
	Practicing good drying	Count	4	7	11
		%	12.1%	18.9%	
	Practicing good storage practices	Count	10	12	22
		%	30.3%	32.4%	
Total		Count	33	37	70

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 2.

Annex 7.8 Quantitative analysis of SHF investments in short term assets

Seeds

Table 55 - Number of SHF investing seed purchase

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	29	3.5	3.5	3.5
	Yes	807	96.5	96.5	100.0
	Total	836	100.0	100.0	

Table 56 – Maize and beans by gender crosstabulation

			Gender		Total
			Female	Male	
Maize and beans ^a	maize	Count	316	399	715
		%	88.3%	92.8%	
	Beans	Count	197	217	414
		%	55.0%	50.5%	
Total		Count	358	430	788

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Report

Table 57 - Amount which SHF spend on seeds

Gender	Mean	N	Std. Deviation	Minimum	Maximum
Female	11345.73	369	21789.056	0	229600
Male	12862.37	438	23178.861	6	300000
Total	12168.89	807	22552.830	0	300000

Table 58 - Amount spent on seeds by gender

		Sum of Squares	df	Mean Square	F	Sig.
Amount spent on seeds by Gender	Between Groups (Combined)	4.607E8	1	4.607E8	.906	.342
	Within Groups	4.095E11	805	5.087E8		
	Total	4.100E11	806			

Table 59 - Amount spent on seeds by cooperative size

Cooperative size	Mean	N	Std. Deviation	Minimum	Maximum
Large	14537.77	519	24957.478	0	300000
Medium	8270.16	268	17120.947	6	229600
Small	2939.25	20	4302.103	700	16550
Total	12168.89	807	22552.830	0	300000

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Amount spent on seeds * 9.2acoop_size	Between Groups (Combined)	8.690E9	2	4.345E9	8.706	.000
	Within Groups	4.013E11	804	4.991E8		
	Total	4.100E11	806			

Tools

Table 60 - Percentage of male and female SHF purchasing tools

			Gender_HHH		Total
			Female	Male	
Purchase tools	No	Count	90	62	152
		%	23.5%	13.7%	18.2%
	Yes	Count	293	391	684
		%	76.5%	86.3%	81.8%
Total		Count	383	453	836
		%	100.0%	100.0%	100.0%

Table 61 - Purchasing of tools by cooperative size

			9.2acoop_size			Total
			Large	Medium	Small	
Purchase tools	No	Count	94	51	7	152
		%	17.5%	18.3%	35.0%	18.2%
	Yes	Count	444	227	13	684
		%	82.5%	81.7%	65.0%	81.8%
Total		Count	538	278	20	836
		%	100.0%	100.0%	100.0%	100.0%

Fertilizers

Table 62 - Household use fertilizer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	73	8.7	8.7	8.7
	Yes	763	91.3	91.3	100.0
	Total	836	100.0	100.0	

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Amount spent on tools *	Between Groups (Combined)	4.572E7	2	2.286E7	.928	.396
9.2acoop_size	Within Groups	1.678E10	681	2.464E7		
	Total	1.683E10	683			

Table 63 - Source of fertilizer by size of cooperative

			9.2acoop_size			Total
			Large	Medium	Small	
Source of fertilizers ^a	Government donation	Count	86	38	2	126
		% within coop_size	17.4%	15.3%	10.0%	
	Local and international NGO's	Count	52	37	0	89
		% within coop_size	10.5%	14.9%	.0%	
	Cooperatives	Count	185	85	3	273
		% within coop_size	37.4%	34.3%	15.0%	
	Donations from friends and families	Count	20	8	0	28
		% within coop_size	4.0%	3.2%	.0%	
	Purchase from agricultural dealers	Count	304	128	20	452
		% within coop_size	61.4%	51.6%	100.0%	
	Others	Count	6	8	1	15
		% within coop_size	1.2%	3.2%	5.0%	
	Borrowing from friends and family	Count	8	7	0	15
		% within coop_size	1.6%	2.8%	.0%	
Total		Count	495	248	20	763

Percentages and totals are based on respondents.

a. Dichotomy group tabulated at value 1.

Annex 7.9 Adoption of good agricultural practices

Table 64: - Level of adoption of good agricultural practices (field observation and FDGs)

	Cooperative plot	Personal plot
Land preparation	+++	+++
Timely planting	+	++
Use of improved seeds	+++	+
Use of adequate amount of fertilizers	++	+
Use of adequate amount of manure	+	+
Use of lime	+	-
Planting in line	+++	++
Adequate spacing	+++	++
Correct weeding	+++	+++
Timely harvesting	++	++

Use of manure is insufficient. The recommended quantity to apply is 10T/ hectares which correspond to 500Kg per plot of five acres. When farmers met applied manure (some are not applying anything), they apply between 15 kg to 300kg per plot. Farmers do not know the recommended quantity and they apply only what is available. This is a crucial issue to work on to improve productivity and to maintain soil fertility. Only in one cooperative some farmers mentioned that they are using compost (they have been trained on compost making). Compost is usually made of manure, green organic matter and dry matter that are kept to decompose for at least three weeks. Other practices (planting in line, respecting spacing, sufficient weeding) are already relatively well respected by SHFs. Similarly, no farmer is using lime even if it is extremely important to ensure soil fertility on acidic soil. Timely planting is sometime an issue, because farmers have to deal with their personal and cooperative plots.

Annex 8. Annexes on EQ4

Annex 8.1 Short presentation of pro-SHF buyers working in Rwanda met during qualitative data collection

EAX

EAX (East Africa Exchange) is a regional commodity exchange offering commodity trade services in Rwanda and East Africa Community (EAC) common markets (173 million consumers) in key staples food crops such as Maize, Beans and Soya. EAX is implementing a warehouse electronic system that enables SHF to sell their product at a better price. After harvest, maize is stored and farmers receive a, electronic receipt that they can use as guarantee at the bank to receive a loan. This way, farmers can wait for the price to increase before selling their produce

EAX has two warehouses, one in Gisagara and one in Nyanza. They are acting as intermediaries between sellers and buyers, and they are not purchasing the product themselves. They have developed a platform allowing buyers to see what is available and to propose a price to the seller.

For 2017-2018, they plan to collect 15 000T and for 2018-2019, 30 000T. So far their storage capacity is 19800 T but they are planning to invest in a 10 000T store in Kigali. Depending on market dynamics, they also purchase maize from other countries (Malawi, Zambia and Uganda). They have a network of cooperatives they have sensitized and they register cooperative that are working with them (254 cooperatives registered but they do not all provide maize).

For maize, their main clients are AIF (60%), Minimex (30% Minagri for the strategic reserve and the local market. For beans they sell on the local markets (some of the beans sold on the local market goes to WFP)

PRODEV-MINIMEX

Minimex has started operating in 2007 and prodev was established in 2012. PRODEV and MINIMEX are sister companies. PRODEV is in charge of sourcing maize and MINIMEX is processing. MINIMEX is producing maize flour, fortified maize flour, maize grit (sold to Braliwa to produce beer) and maize bran. They are building an animal feed processing unit that will value the maize bran produced.

The volume of maize processed is between 28 000 and 30 000 T per year. Their capacity is 45 000T. The feed plant will have a capacity of 60 000T per year (50% of it will be maize). They will have to increase volumes procured up to 75 000T. They purchase grade 1 maize for human consumption and grade 2 and 3 for animal feed.

They have a storage capacity of 15 000T.

They are increasingly procuring maize from cooperatives. In 2013, volumes procured from cooperative represented 7% of the total volume, it is now about 30%. They offer farmers a

floor price (higher than the minimum price from the GoR) and they cover transport costs. They also purchase from Zambia, mainly because maize from Zambia has lower aflatoxin level than in Rwanda (Uganda has very high level of Aflatoxin, about four times more than what is found in Rwanda). 30% of their production is exported to DRC. Their other clients are the armed force (5000T), WFP, some schools

SARURA

SARURA Company was created in 2012. It acts as an intermediary between farmers and buyers. They also develop a post-harvest training service for cooperatives. They have collection centres. They collect between 1000 and 2500T per season.

Annex 8.2 Key issues to develop arrangements between cooperatives and big buyers for maize and bean procurement

In order to develop this kind of arrangements some issues need to be looked at:

- Buyers' ability to develop a network of cooperatives remains limited. Identifying, assessing and engaging cooperatives require time and a specific expertise.
- Buyers consider that for cooperatives to become reliable business partners there is an acute need for capacity building.
- In order to engage with a cooperative, buyers need to have some guarantee that they can get sufficient volumes. For Minimex, it is interesting to sign a contract with a cooperative if it can provide at least 10T of maize.
- According to all the buyers met, post-harvest handling done by SHFs and cooperatives is not sufficient to have good quality maize.
- Main quality problems concern moisture level, percentage of broken grains, presence of foreign matter, contamination with aflatoxin (the maize produced by SHF is about 25 µg/kg when the norm is 10 µg/kg) and insects 'attacks. When mold is detected the maize is systematically rejected.

Annex 9. Evaluation question 6

Annex 9.1 Production of the main crops grown in the four targeted districts

Table 65 - Production of the main crops in the targeted districts (season A 2017), NISR

	Sorghum	Rice	Cassava	Sweet potatoes	Irish potatoes	Maize	Bean
Gisagara	155T	1909T	16221T	6648T	1296T	7427T	10029T
Nuaruguru	0T	0T	10449T	55900T	10446T	3562T	2824T
Huye	0T	6634T	18331T	5087T	706T	1388T	4058T
Nyamagabe	22T	0	7354T	70945T	4863T	4212T	4966T

As the table above show, there is a high diversity of situation from one district to another. However, these figures only cover season A 2017. The disaggregated data per districts were not available for other season or for the whole year. First thing to notice is that bean production is surprisingly low compared to other crops. This figure is difficult to explain and is not in line with the data on yield and on areas cultivated. This table shows that the main crops grown by farmers are sweet potatoes, cassava and irish potatoes. Maize is not yet representing high production, but considering it is a relatively new crop (only a few maize were planted in mixed farms) and is only gaining importance on equipped marshland, the result is not surprising.

Annex 9.2 Characteristics of the main crops grown in the four targeted districts

Bean is the most importance subsistence crop for SHFs. It is often refers to as the meat of the poor. Farmers grow bean both in A and B season. SHFs grow two types of beans: common beans and climbing beans (mainly in the marshlands). RAB has introduced several varieties that are high in iron contents. These varieties were releases to farmers from 2010, in exchange for their traditional seeds. Improved seeds have also been introduced. The main difference with maize is that it is possible for farmers to keep the seeds for the following season (as they are not hybrids). Farmers do not usually purchase improved beans seeds.

Sweet potatoes: SHFs consider sweet potato as a crop which can contribute to food security and sustain their livelihood. One of the main interest of sweet potatoes for farmers in the possibility to keep potatoes in the ground before harvest (and then harvest it gradually when need occur). Farmers consider sweet potatoes as a major crop in case of famine (and according to them period of famines happen every year). Before marshland equipment, farmers were planting sweet potatoes on the hillside for season A and on the marshland for season B. Sweet potatoes is not one of the priority crop for the CIP so its cultivation is not encouraged and is forbidden in the developed marshlands. Some farmers explained that when a farmer planted sweet potatoes anyway he was at risk to see its production destroyed and to lose his access to marshland. This is a big issue for farmers that consider sweet potatoes are an essential crop for their food security.

Vegetables: Vegetable is a crop that is grown on a very small scale. Its production cycle is

very short. It's a very labor intensive crop and requires irrigation. As they are often grown in season C, sales of vegetable can provide an interesting source of funds to prepare season A (that is the main agriculture season).

Coffee: coffee is the main cash crop for LRP farmers, even if only a minority of them possesses coffee plantations. All farmers that have coffee plantation consider that it is their main source of income (in Abemerihigo cooperative, they explained that about 70% of their income comes from coffee). Rwanda has good growing conditions for Arabica coffee and it is engaged in production of quality coffee since 1998. Coffee farmers cooperatives are more advanced than maize cooperatives, they have a more developed organization of collective activities (around coffee washing stations for example) and collective sales. Income from coffee is treated as unique by farmers since it is generated in a short period due to the seasonal aspect in coffee harvesting and can be obtained as a lump sum.

Cassava: cassava is another very important crop for farmers but the production of cassava has drastically declined in the last decade due to mainly diseases, pests and lack of disease resistant varieties. Biggest phytosanitary problems include the Cassava Mosaic Disease and the Cassava Brown streak disease. Cassava is planted at the same time than maize and/or beans and is left on the plot after harvest of the short-cycle crop. As for sweet potatoes, cassava is interesting because tubers are kept in the ground and harvested when needed.

Irish potatoes: Similarly to maize, Irish potatoes is seen by farmers as a source of income and an important source of food for the family. It is one of the priority crop of GoR and as such, Irish potatoes cultivation is authorized (in monoculture) in the marshlands. Some of LRP cooperative are actually cultivating it in a rotation with maize. Production per hectare remains low and there is room for improvement (varieties, practices). Some cooperatives have been trained into seed multiplication but it is not frequent and accessing good varieties remain an issue because of their costs. Irish potato farmers face many challenges including low quality seed, pests and diseases which lead to low productivity and limited expansion of the crop. Post-harvest management is also a crucial issue as Irish potatoes are more perishable than maize and beans grains for example.

Annex 9.3 Economic calculations

Three indicators concerning net margin will be used:

- Net margin of maize and bean production without taking into consideration the cost of family labor: this indicator reflect the activity system of SHF and is a way to have information on the real profit that a farmer can make on a given piece of land
- Net margin of maize and bean production per man day: this indicator enables us to understand the value of investing a day of work in maize and bean production, in comparison with other opportunities (for example with the cost of casual labor)
- Net margin of maize and bean production with a monetary value given to family labor: this indicator reflect the economic interest of maize and bean cultivation.

Table 66 - Current and potential profitability of bean cultivation in the marshland for SHF, calculation from qualitative data collection

	Cropping system	Production	Net margin/plot (without labour)	Net margin/manday	Net margin/ha (including family labour cost)
Current situation with use of inputs	5 kg of fertilizer/plot (DAP) No purchase of seeds	1.2T/ha	14 950RwF (17.80 USD)	623RwF (0.74 USD)	-37000RwF (-44.06 USD)
Current situation low input use	1 kg or fertilizer/plot (DAP) No purchase of seeds	800 kg	8 750 RwF (10.42 USD)	380RwF (0.45 USD)	-147000 RwF (-175.03 USD)
Potential situation with inputs and good practices	5 kg of fertilizes (DAP) 20 kg of manure Use of improved seeds	2T	25 150 RwF (29.95 USD)	898 RwF (1.07 USD)	111 000 RwF (132.17 USD)

Table 67 - Current and potential profitability of maize cultivation in the marshland for SHF

	Cropping system	Production	Net margin/plot (without labour)	Net margin/manday	Net margin/ha (including family labour cost)
Current situation with average inputs use	1.25 kg of improved seeds 2.5 kg of urea 5 kg of DAP 20 kg of manure	2T	15 069RwF (17.94 USD)	793 RwF (0.94 USD)	35 375 RwF (42.12 USD)
Current situation with improved seeds but low fertilizers	1.25 kg of improved seeds 1 kg of urea 2.5 kg of DAP No manure	1.2T	8779 RwF (10.45 USD)	549 RwF (0.65 USD°)	-48420 RwF (-57.65 USD)
Current situation with local seeds and low inputs	1.25 kg of local seeds 1 kg of urea 2.5 kg of DAP No manure	0.8T	3 742 RwF (4.46 USD)	234 RwF (0.28 USD)	-149 160 RwF (-177.60 USD)
Potential situation with inputs and good practices	1.25 kg of improved seeds 2.5 kg of urea 5 kg of DAP 150 kg manure	4T	19 069 RwF (22.71 USD)	1192 RwF (1.42 USD)	157 380 RwF (187.39 USD)

Annex 10. Evaluation question 7 (quantitative analysis)

Table 68 - Characteristics of maize and beans

		Responses		Percent of Cases
		N	Percent	
characteristics of maize and beans ^a	Without stones	756	20.2%	90.4%
	Without smell	246	6.6%	29.4%
	Without insects	562	15.0%	67.2%
	Very white maize	17	.5%	2.0%
	Specific color of beans	686	18.3%	82.1%
	Specific variety of maize/beans	463	12.4%	55.4%
	Well dried maize/beans	698	18.7%	83.5%
	Others	312	8.3%	37.3%
Total		3740	100.0%	447.4%

a. Dichotomy group tabulated at value 1.

Table 69 - Contribution of crops to household

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bananas	4	.5	.5	.5
	Beans	574	68.7	68.7	69.1
	Cassava	6	.7	.7	69.9
	Coffee	4	.5	.5	70.3
	Ground nuts	1	.1	.1	70.5
	Irish potatoes	10	1.2	1.2	71.7
	Maize	116	13.9	13.9	85.5
	Others	3	.4	.4	85.9
	Peas	1	.1	.1	86.0
	Rice	16	1.9	1.9	87.9
	Sorghum	5	.6	.6	88.5
	Sweet potatoes	92	11.0	11.0	99.5
	Vegetables	4	.5	.5	100.0
	Total	836	100.0	100.0	

Consumption of maize and bean

SHF's reported to reserve an average of 322kgs (av. 251.9 kgs in season A and 140.4 kgs in season B) of maize and 247kgs (av. 176.6 kgs in season A and 140.9kgs in season B) of beans every planting season for household consumption. The amount of maize and beans kept by the household for consumption in season A was significantly higher than in season B but there was no significant difference in the average amount of maize (males 461.2kgs, females 205.3kgs; $p=0.465$) and beans (males 345.7kgs, females 128.3kgs; $p=.0410$) kept by male and female headed households. In general, 44.8% (41.6% in season A and 42.9% in season B) of the total maize harvest and 61.2% (57.3% in season A and 59.2% in season B) of the total beans harvest was reserved for household consumption. Though the amount of maize and beans reserves was higher in season A compared to season B, the proportions reserved

for consumption during the two seasons was not significantly different. There was also no noted difference in the amount of maize and beans reserves for household consumption among members of cooperatives of different sizes, ages and capacities. Only 17.2% (females 20.7%, males 14.3%) of the SHF households would be able to completely cover their household maize needs and 12.1% (females 13.8%, males 10.6%) of their beans needs from the own production if maize and beans were not sold by the households.

List of Acronyms

AGRA	Alliance for a Green Revolution in Africa
AIF	AFRICA Improved Food
APTC	Agro-processing Trust Corporation
ASWG	Agriculture Sector Working Group
BDF	Business Development Fund
BRD	Development Bank of Rwanda
CIP	Crop Intensification Programme
CFSVA	Comprehensive Food Security and Vulnerability Analysis
DDP	District Development Plan
DRC	Democratic Republic of Congo
EAX	East Africa Exchange
EDPRS	Economic Development Poverty Reduction Strategy
EICV	Integrated Household Living Condition Survey
EU	European Union
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FTMA	Farmer To Market Alliance
GA	General Assembly
GoR	Government of Rwanda
Ha	Hectare
HGSF	Home Grown School Feeding
IFAD	International Fund for Agriculture Development
ICT	Information and Communication Technology
IPM	Integrated Pest Management
IPM	Integrated Pest Management
Kg	Kilogram
KII	Key Informant Interview
LRP	Local and Regional Procurement
MFI	Microfinance Institution
MINAGRI	Ministry of Agriculture and Animal Resources
MINECOFIN	Ministry of Economy and finance
MINECOM	Ministry of Commerce
MINEDUC	Ministry of Education

MIS	Market Information System
NGO	Non-Governmental Organisation
NISR	National Institute for Statistic of Rwanda
OEV	Office of Evaluation
P4P	Purchase for Progress
PDAG	Projet de Développement Agricole dans le region de Gikongoro
PSTA	Strategic Plan for the Transformation of Agriculture in Rwanda
RAB	Rwanda Agriculture Board
RCA	Rwanda Cooperative Agency
RDO	Rwanda Development Organisation
RGCC	Rwanda Grains and Cereals Corporation
RSSP	Rural Sector Support Project
RwF	Rwandese Franc
T	Ton
SACCO	Saving and Credit Cooperatives
SHF	Small Holder Farmer
SME	Small and Medium Entreprise
SOP	Standard Operating Procedure
SWG	Sector Working Group
TOR	Terms of Reference
UNDP	United Nation Development Program
USDA	United Stated Department of Agriculture
WFP	World Food Programme

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