



COOPERATION >



# SENEGAL

CREDIT PILOT DEEP DIVE STUDY

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# Abbreviations and Acronyms

<b>CPDD</b>	Credit Pilot Deep Dive
<b>FGD</b>	Focus Group Discussions
<b>FHH</b>	Female-Headed Households
<b>HFIAS</b>	Household Food Insecurity Access Scale
<b>MAHFP</b>	Months of Adequate Household Food Provisioning
<b>MFI</b>	Micro-Finance Institution
<b>MHH</b>	Male-Headed Households
<b>NPS</b>	Net Promoter Score
<b>PO</b>	Producer Organization
<b>PPI</b>	Progress out of Poverty Index
<b>SACCO</b>	Savings and Credit Cooperative
<b>STARS</b>	Strengthening African Rural Smallholders
<b>TLU</b>	Tropical Livestock Unit
<b>VSLA</b>	Village Savings and Loans Association

## ICCO Cooperation and STARS

The Strengthening African Rural Smallholders (STARS) program is implemented by ICCO Cooperation and ICCO Terrafina Microfinance in partnership with Mastercard Foundation; targeting 210,000 rural farmers in Rwanda, Ethiopia, Burkina Faso and Senegal. STARS is addressing challenges that smallholder farmers face such as limited skills, lack of credit, minimal access to markets, and limited access to appropriate financial products. In Senegal, the aim of the STARS program is “food security and better income” for 39,500 smallholder farmers and their households. The program uses a sustainable approach to empower smallholders to get better agricultural skills, and access to suitable financial services so they can create means to better take care of their families, be self-reliant and impact others in their communities.



# Executive Summary

Many smallholder farmers struggle to access financial services and lack opportunities to improve their agricultural activities. The STARS program aims to facilitate access to financial markets and agricultural services in both structured and unstructured value chains, as well as improve access for subsistence farmers. Recognizing that smallholder farmers comprise a diverse group with differences in attitudes and capacities to access and use credit products, this credit pilot deep dive (CPDD) investigates differences in the uptake and impact of newly developed agricultural credit products on smallholder farmers in Senegal. The aim is to provide the STARS program, as well as the participating MFIs, with a valuable opportunity to enhance their understanding of the client base: their needs, capacities, attitudes, strengths, weaknesses, barriers and catalysts.

More specifically, this CPDD study targeted two newly developed loan products: agri-solidarity lending in the Louga and Kebémér areas, and warrantage (warehouse receipt lending) in the Tambacounda area. In agri-solidarity lending, the main crops that were funded as part of the pilot were peanut, cowpea and millet. In warrantage, the main crops stored for receiving credit were millet, sorghum and maize. This study used a mixed quantitative and qualitative approach based on a household survey triangulated with focus group discussions (FGDs). The participating farmers have been categorized in groups, namely farmers who have applied for and were approved for loans, those who did not apply for loans, and for the agri-solidarity loans additionally those who applied for and were rejected for loans.

Farmers in the agri-solidarity target group (Kébémér) appear to have a better food security situation in general than the farmers in the warrantage target group (Tambacounda), although many farmers still experience shortages during the lean season. In the warrantage target group, a small share of the households experiences shortages almost throughout the year, while in the peak month of the lean season almost half of the farmers reported shortages. It is important to highlight that the data were collected in Kébémér at the end of October and at the beginning of November 2017, which is just after the lean season. In Tambacounda, the data collection was done in May/June 2018, which is at the beginning of the lean season.

Around 68% of all the surveyed farmers have at some point taken out an interest-bearing loan. 54% of the farmers having previously accessed credit in the agri-solidarity target group would certainly recommend it to others, while this is 21% for the warrantage target group.

The findings of this study suggest that:

- Farmers are particularly attracted to credit packages that have flexible conditions and lack cumbersome procedures, when the loan disbursements are done timely and at the village level, and when there is proximity to the credit institution.
- It is important for farmers that they can access the right amount of credit that matches their needs.
- In contrast, farmers may be unwilling or reluctant to access credit due to untimely disbursement, cumbersome administrative procedures and due to the difficulty of understanding documents, due to a lack of confidentiality in procedures, for fear of the risk of defaulting, and due to a lack of post-harvest equipment for processing (limiting profitability).
- Additional barriers causing disinterest among farmers are: learning about negative experiences from others, distance between the village and the credit institution causing additional costs, a risk of theft, unwillingness to form groups and having to discuss financial aspects with people they do not know well, and risks related to the future of agriculture in the area due to climate change, soil erosion and inadequate water supply.

Furthermore, particular challenges affect women and youth:

- Women struggle to access credit due to a lack of a sufficiently large parcel of land.
- Women expressed a desire to diversify their activities to horticulture, fattening of livestock, grain processing and retail.
- Youth would like to return to their villages and invest in horticulture as well as in sheep and poultry farming but they lack the financial means.
- Youth expressed during the FGDs that access to loans could help in reducing illegal migration but they are often facing problems to access credit due to high unemployment rates and a lack of guarantees.

The potential areas of improvement of MFI loans that were recognized by the farmers include:

- Promotion of transparency and awareness regarding the procedure of applying for credit.
- Provision of variable sizes and durations of loans, and an increase in the presence of MFIs in the villages in order to reduce the travel time and costs of the farmers to branch offices far away.

Additionally, FGDs revealed that it is critical:

- To disburse the loans in a timely manner and to tailor loan periods more closely to cultural and climate timetables.
- To promote tailored credit for equipment, especially related to post-harvest processing and wells equipped with solar pumps.
- To provide technical support in agri-production and training in combating wind and water erosion next to financial services by partnering with existing service providers.
- To build relationships and involve local authorities and to promote capacity building activities within group lending.

# Introduction

In November 2017 and in May/June 2018 ICCO Cooperation conducted a small-scale study in Senegal into the adoption of two newly developed loan products: agri-solidarity lending and warrantage inventory credit. These loan products were among a few new credit products being piloted by MFIs, which offered an opportunity for a parallel study to be attached to them.

The purpose of this Credit Pilot Deep Dive Study (CPDD) is to understand how differences in adoption and impact of new agricultural credit products correlate with differences in farmer characteristics. This could create a possibility to adapt product features to match the needs of farmers. It is expected that the study can provide the STARS program, as well as the participating MFIs, a valuable opportunity to enhance their understanding of the client base: their needs, capacities, attitudes, strengths, weaknesses, barriers and catalysts.

## STUDY DESCRIPTION

This CPDD study focused on two loan products: agri-solidarity lending and warrantage in two separate areas. Agri-solidarity lending in the Louga and Kébémér area through the Mutuelle d'Épargne et de Crédit Fadec Njambur (MEC FADEC), and warrantage in the Tambacounda area through UIMCEC (Figure 1). The STARS program focuses on improving financial services (and in time also non-financial services) for these smallholder farmers by supporting MFIs to develop appropriate agri-financial services for individuals and groups of smallholders.

The research aims to investigate four key questions:

1. What are the demographics of the smallholder farmers in the credit pilot?
2. What is the current state of farming in terms of productivity, use of products and services, access to markets, and access to finance?
3. What guides a farmer's decision-making in taking a loan and how do credit products differ in their advantages and disadvantages to farmers?
4. What are the baseline values for impact indicators on wealth and food security used in the STARS program?

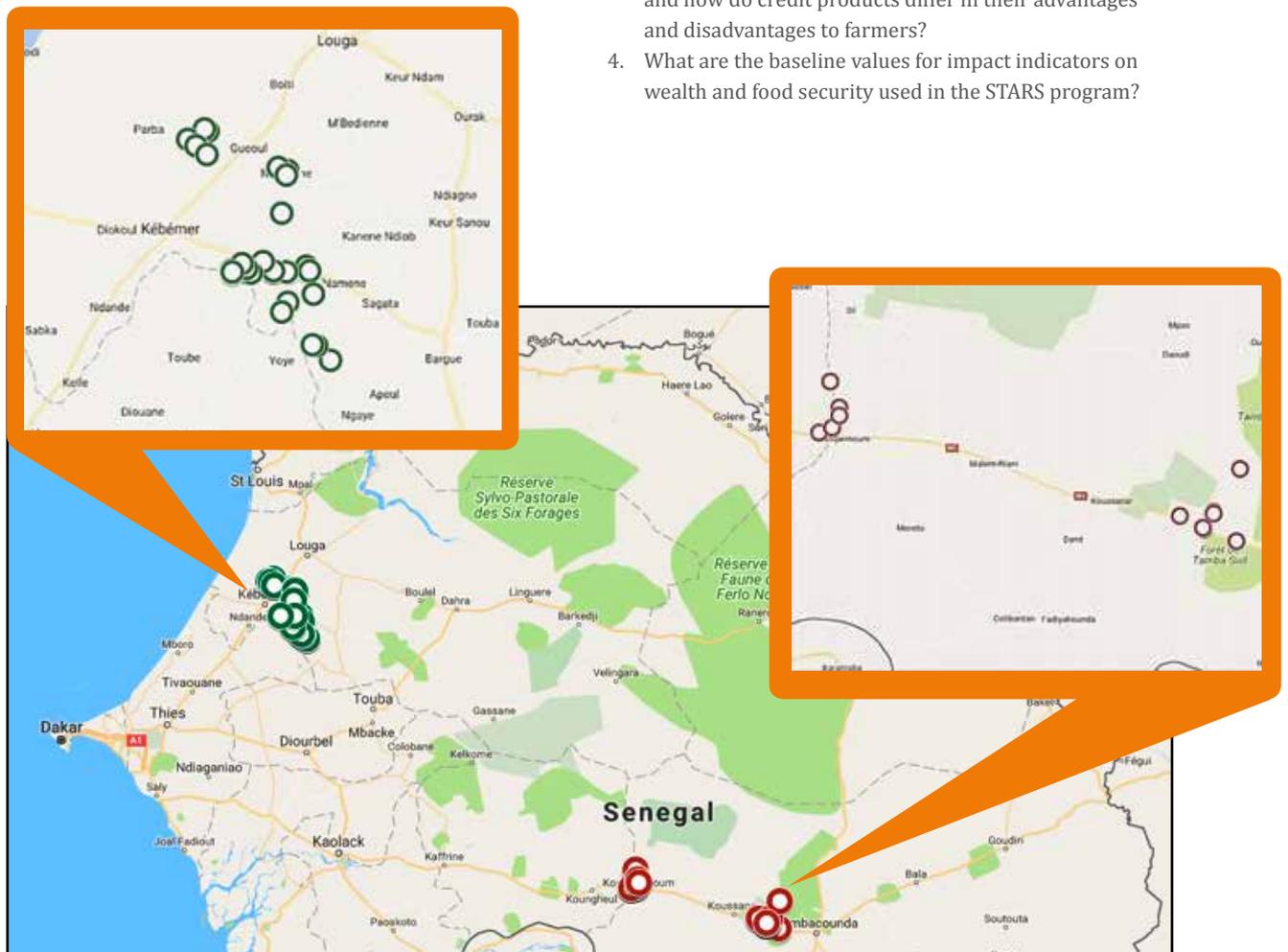


Figure 1. Data collection sites – Kébémér area (green) and Tambacounda area (red).

The CPDD study used a mixed quantitative and qualitative approach based on a household survey triangulated with focus group discussions (FGDs). For the quantitative part of the CPDD study, a questionnaire was administered to 100 farmers being part of the target group for agri-solidarity lending and to another 100 individual farmers being part of the target group for the warrantage credit system.

The agri-solidarity lending is a form of a group-based loan, in which the members of a small group co-guarantee the repayment of the loan, which substitutes the need for collateral. Hence in practice, the payment is done collectively, but if one group member fails to pay, the other members of the group will need to pay for his or her part. The group is generally a small producer organization, which is directly in contact with the MFI. Agri-solidarity lending is a common method within the microfinance sector in general, but the French-speaking countries in Africa have so far not used this innovation extensively. The main crops that were funded as part of the agri-solidarity lending in this pilot were peanut, cowpea and millet. According to the MFI involved, the interest rate for the agri-solidarity loan in this pilot is 1,8% per month. Moreover, the amount of credit is planned to increase per credit cycle (if needed) from €76 to €152 per member up to €762 per member in the 3rd and last cycle. The duration of the credit is at a maximum 12 months.

The warrantage system (warehouse receipt lending) is an inventory credit scheme that provides the means for smallholder farmers in rural settings to obtain a loan against their non-perishable agricultural produce at harvest time in order to avoid selling the crop when prices are low<sup>1</sup>. The crops are stored in a warehouse, which allows the farmers to sell the product when the prices are higher. With the product being securely locked in the warehouse, the farmers can get a loan from an MFI that they can use, for instance, for their income generating activities or prepare for the following season by buying inputs and in other ways increase their crop productivity in the future. The system involves three actors: the financial institution, the farmer and the party who is responsible for running the warehouse (the PO in this case). When the farmer stores his or her crops in the warehouse, the PO evaluates the quantity and quality of the products and gives the farmer a receipt indicating the quantity and quality of the stored produce. The main crops stored as part of this warrantage pilot were millet, sorghum and maize. Based on the receipt, the financial institution will decide on the loan amount that is supplied to the farmer. According to the MFI, the amount of credit ranges from €13 to €763 and the annual interest rate is 15% with a loan duration from 8 to 10 months. From the MFIs perspective, this system ensures that the risk is limited since they will receive their share when the product is sold from the warehouse.

<sup>1</sup> Tabo, R., Bationo, A., Sawadogo-Kabore, S., Hassane, O., Amadou, B., Siebou, P., ... & Koala, S. (2008). Institutional innovation: the potential of the warrantage system to underpin the green revolution in Africa. *Increasing the productivity and sustainability of rainfed cropping systems of poor smallholder farmers*, 279.

The main goal of this study was to compare the two credit products. Therefore, this report focuses mainly on the comparison of the target groups of these two products. However, an analysis was also run by further subdividing the farmers of these two products into three subgroups. The three farmer subgroups were 'Applied and approved', 'Applied but rejected' and 'Did not apply' (Table 1). However, regarding the warrantage loan product, the producers who applied for credit but were rejected, were not part of the sampling because the MFI could approve all the farmers who applied. Accordingly, when comparing these farmer groups, this report focuses on differences between the farmers who applied and received credit, and those who did not apply for credit. However, it is important to note that the agri-solidarity lending sample (Kébémér area) does include 15 farmers that applied for credit but were rejected (see Table 1).

Table 1. Survey sample sizes for the different farmer subgroups.

Group	Agri-solidarity target group	Warrantage target group	Grand Total
Applied and approved	70	50	120
Applied but rejected	15	0	15
Did not apply	15	50	65
<b>Total sample size</b>	<b>100</b>	<b>100</b>	<b>200</b>

Out of the 200 surveyed farmers, only 7 (3,5%) were female-headed households (FHHs) and 72 (36%) youths not older than 35 (Table 2). Out of these 7 FHHs, 4 applied and were approved for credit while 3 did not apply. 63% (45) of the youth applied and were approved for credit, while 10% (7) applied but were refused for credit and 28% (20) did not apply. Due to these small numbers and the purposive sampling approach, results are not representative of smallholder farmers in general. Selection of farmers into the credit pilot, to which this study was attached, was also purposive.

Table 2. Survey sample sizes for FHH and youth.

Group	Agri-solidarity target group	Warrantage target group	Grand Total
FHH	2	5	7
Youth	46	26	72

For the qualitative part of the study, focus group discussions (FGDs) were conducted. In Kébémér, a total of six FGDs were conducted with 8 participants in each discussion, and in Tambacounda, a total of 4 FGDs were performed with, on average, 10 participants in each discussion.

# 01 Client and farm characteristics



## DEMOGRAPHICS

The survey participants of the target groups of the two credit products differ in some demographic aspects. The average age of the farmers for the agri-solidarity target group is 38 years, while this is 46 years for the warrantage target group. Similarly, the average household size is slightly lower for the agri-solidarity target group (13 persons) than for the warrantage target group (16 persons). The average share of dependents in the household is similar for both of the target groups (0,6 for the agri-solidarity target group and 0,7 for warrantage target group) indicating that for both of the groups more than half depend on other members of the household for their livelihood.

### THE NDIEUL SYSTEM

These average household sizes might seem large, but in Senegal approximately 25% of men live in polygamous marriages and 50% of the Senegalese women<sup>2</sup>. Additionally, there is a high gross birth rate (37,2‰<sup>3</sup>). Furthermore, the household is defined as “a group of people, related or not, who live in the same compound, eat their daily meal together, and recognize the authority of a single person called the household head”<sup>4</sup>. This concept of family compound is called “ndieul” in Wolof. The compound refers physically to a group of buildings that are in some cases enclosed by a fence or a wall. Traditionally, a family compound includes a head of the household who lives in the same compound with his married children and sometimes also together with his married brothers<sup>5</sup>. The men living in the family compound might have one or multiple wives since polygamous marriages are an important social characteristic in Senegal. Polygamous families traditionally live together in family compounds<sup>6</sup> but on whole in Senegal, 31% of polygamous men have also non-cohabiting wives<sup>7</sup>.

The farmers of the two product target groups report also quite different levels of education (Figure 2). The largest share of farmers for both target groups has no schooling (83% for the agri-solidarity target group and 53% for the warrantage target group). Of the remaining farmers who received (some) schooling, in the agri-solidarity target

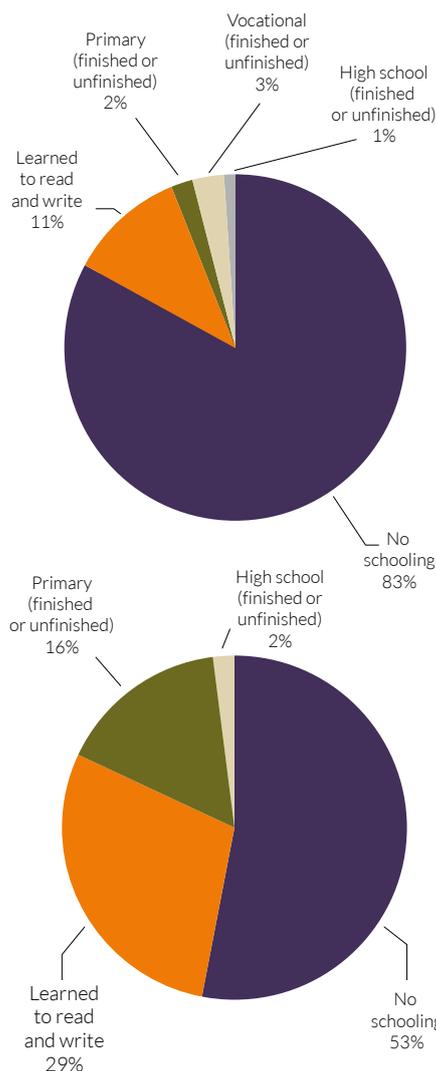


Figure 2. Highest level of education in the household for agri-solidarity target group (n= 100) (upper) and for the warrantage target group (n= 100) (lower).

group, 11% learned to read, and only a very small share reached primary education (2%), vocational education (3%) or high school (1%) in this group. In the warrantage target group, 29% of farmers learned to read and 16% have primary education, while 2% reached high school.

<sup>2</sup> Cudeville, E., Guénard, C., & Robilliard, A. S. (2017). *Polygamy and female labour supply in Senegal* (No. 127). World Institute for Development Economic Research (UNU-WIDER).

<sup>3</sup> Agence Nationale de la Statistique et de la Démographie. (2014). *Recensement général de la population et de l'habitat, de l'agriculture et de l'élevage*.

<sup>4</sup> Randall, S., Coast, E., Antoine, P., Compaore, N., Dial, F. B., Fanghanel, A., ... & Wandera, S. O. (2015). UN census “Households” and local interpretations in Africa since independence. *Sage Open*, 5(2), 2158244015589353.

<sup>5</sup> Bosc, P. M., Sourisseau, J. M., Bonnal, P., Gasselin, P., Valette, E., & Bélières, J. F. (2014). *Diversité des agricultures familiales: exister, se transformer, devenir*. Editions Quae.

<sup>6</sup> Gning, S. B. (2011, December). La polygamie: ménage unique, pluriel ou complexe. In *6th African Population Conference, Ouagadougou* (pp. 5-9).

<sup>7</sup> De Vreyer, P., & Lambert, S. (2016). *Intra-household Inequalities and Poverty in Senegal*, Paris School of Economics.

According to the survey, more than one-fifth (23%) of the farmers reports that they received agricultural skills training at some point in their life. However, the current data do not provide insights into the type of agricultural training that the farmers have received. When comparing the farmers of the two product target groups, a clear difference emerges; 32% of farmers in the warrantage target group and only 14% of farmers in the agri-solidarity target group received agricultural training. In general, the content of the agricultural training given by NGOs in the country cover, for instance, good agricultural practices regarding sowing, transplanting, using fertilizers, crop protection and harvesting. Almost two-thirds (63%) of the farmers having received agricultural training have also received credit, which is approximately the same for the farmers that did not apply for credit (30%). Moreover, all farmers report having accessed these training for free, since none of them indicated to have paid to receive training in agricultural skills. Similarly, 25% of all farmers have received financial skills training. Again, a clear contrast emerges; over two times more farmers in the agri-solidarity target group (34%) have received financial skills training than farmers in the warrantage target group (16%). Similarly, the majority (68%) of the farmers having received financial training have applied for and received agricultural credit, while a slightly smaller share (28%) did not apply for credit. Only one farmer reports having paid to receive financial training.

**DEMOGRAPHICS - FEMALE-HEADED HOUSEHOLDS**

The average age of the female heads of household is higher (49 years) than the average age of the male heads of households (42 years). All the female heads in this study are widowed or divorced/separated. The family size in FHHs is approximately the same as for the other households (14 persons) and the average share of dependents in the household is 0,6, which is the same as for MHHs. When comparing the share of FHHs having received training in farming skills to the share of MHHs, the share is almost double for the FHHs (43% compared to 22% for MHHs). The share of farmers having received financial training is larger for MHHs than for FHHs (14% for FHHs compared to 25% for MHHs). However, it is important to take into consideration the small sample size of only seven female heads when analysing the results, so the findings regarding this group cannot be regarded as representative.

**DEMOGRAPHICS - YOUTH**

The average age in the youth group is 27,3 years. Almost all of them are married (85%) and a small number remains single (13%, the remainder being widowed or divorced), and the average household size is approximately 14. The average share of dependents in the household is 0,6, which is the same as for the whole survey sample. Only 11% has

received agricultural skills training, while 28% has received financial skills training.

**AGRICULTURAL PRODUCTION**

Agricultural production was investigated by asking the farmers to compare the size of their harvest during the most recent season to the two previous seasons and to identify the main reason for any observed differences. Overall, the largest share of the farmers reported improved harvests (71%), while this was 23% for reduced harvests. However, the share of farmers indicating increased harvest differs between the target groups of the two products; 81% of farmers in the agri-solidarity target group reported a better harvest while this was 61% for farmers in the warrantage target group. Of all the farmers that reported that their harvest had increased 73% were in the ‘applied and approved’ group, 67% in the ‘applied and not approved’ group, and 49% in the ‘did not apply’ group. For the farmers that reported a decrease in their harvest these numbers are ‘applied and approved’ (23%), ‘applied and not approved’ (10%) and ‘did not apply’ (49%).

Farmers were asked to give reasons for the increase or decrease, of their harvest in the most recent season compared to the two previous seasons. Examining the reasons cited for improved harvests (Figure 3), farmers in the agri-solidarity target group (Kébémér) were most likely

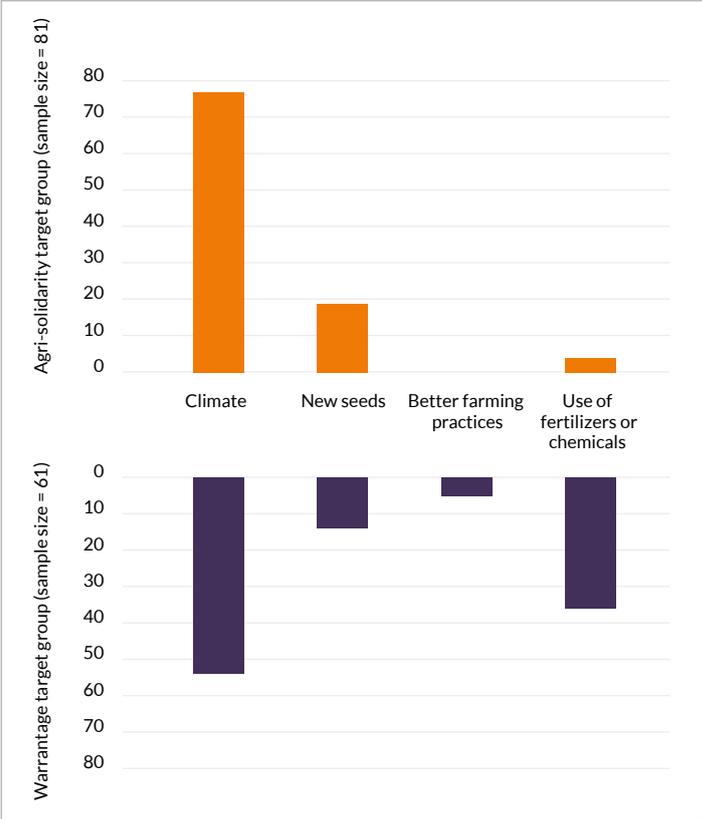


Figure 3. The number of farmers having indicated improved harvest citing one main factor associated with the improvement during the current season compared to the two previous seasons based on the survey results.

to attribute these improvements to climate (95%), followed by new seeds (23%) and use of fertilizers or chemicals (5%). No differences could be found in the analysis of the three subgroups.

For farmers in the warrantage target group (Tambacounda), the climate was also the main reason for improved harvests (89%), but over half of the farmers attributed the improvements also to the use of fertilizers or chemicals (59%) and 23% to new seeds. Additionally, few producers in the warrantage target group (8%) mentioned better farming practices as a reason for improved harvests. This notion is most likely connected to the larger share of farmers in the warrantage target group having received agricultural training from the development programs in place there (32% compared to 14% for farmers in the agri-solidarity target group). Again no differences could be found in the analysis of the three subgroups.

Among the agri-solidarity target group there were 8 persons (8%) reporting reduced harvest (improved harvests were 81 persons or 81%) and of these 8 persons 38% attributed reduced harvests to the lack of seeds, fertilizers, chemicals or other inputs (Figure 4) and 38% to climate. Moreover, among the warrantage target group 37 persons (37%) reported reduced harvest (improved harvests were 61 farmers or 61%). Out of these 37 persons 73% attributed reduced harvests to the lack of seeds, fertilizers, chemicals or other inputs and 51% to climate. In addition, 16% of farmers in the warrantage target group reporting reduced harvests attributed this to pests and diseases. Although only a few farmers in the survey attributed the reduced harvest to climate, during the FGDs farmers in both product target groups mentioned deviation of the rains and lack of water for irrigation as important obstacles for production. In both product target groups, this was further coupled with a decline of soil fertility due to wind and water erosion.

Moreover, the survey was used to investigate the investment priorities of the farmers by asking them to indicate whether they paid for any agricultural inputs or services during the past two agricultural seasons (table 3). Almost half (45%) of farmers invested in several farm inputs at once, often a combination of fertilizers with farm chemicals or equipment. Investment in transport (bought or rented) and in training is less common, with only 11% and 2% reporting this, respectively. During the FGDs, farmers in the warrantage target group identified a crucial need to access post-harvest equipment, such as a thresher for millet and other cereals, in their village or in the nearby areas, since currently, they rely on mobile processing facilities that travel around offering their services. However, these mobile services begin their work in the communities closer to the roads and only later move deeper into the rural areas. Therefore, the more rural populations cannot currently process crops and establish stocks in a timely manner. The post-harvest equipment is seen in these villages as a major condition for the success for the warrantage

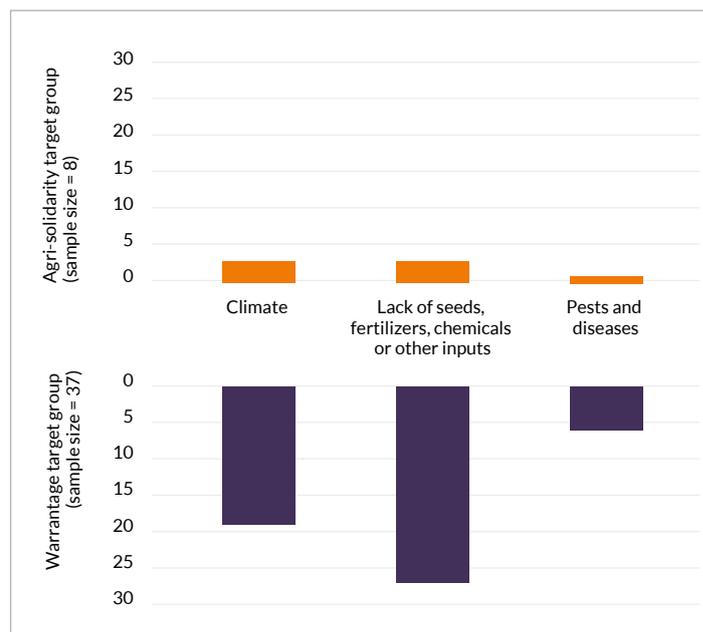


Figure 4. The number of farmers having indicated reduced harvest citing one main factor associated with the reduction during the current season compared to the two previous seasons based on the survey results.

project. Due to the lack of post-harvest equipment such as threshers (for millet and sorghum specifically), the farmers will not necessarily be able to store their harvest in time to be part of the warrantage loan. In addition, access to fertilizers and other agricultural equipment, such as seeders, ploughs and hullers, were mentioned as important success factors among the FGDs participants in the warrantage target group. Also, according to the agri-solidarity target group, a lack of agricultural equipment causes delays when farmers need to wait for the owner of the equipment to finish the planting before they can borrow the needed equipment. This was mentioned as a risk to their production levels.

Table 3. Percentage of farmers citing the usage of specific inputs for farming during the past two agricultural seasons based on the survey results (n= 200 farmers). The farmers were allowed to give multiple responses.

Input	Percentage of farmers
Fertilizers / manure	54
Farm chemicals	34
Equipment (bought or rented)	33
Transport (bought or rented)	11
Trainings	2

Investments in farm inputs do not differ when looking at FHHs or youth specifically. Moreover, when comparing the investment in the different input categories between the two product target groups, 61% of the farmers in the warrantage target group invested in multiple inputs, while this

was only 25% for farmers in the agri-solidarity target group. Sample sizes were too small for an analysis of the subgroups.

Unfortunately, new seeds were not among the options included in the questionnaire as their significance did not emerge until later in the study. Nevertheless, based on the feedback given during the FGDs, farmers in the agri-solidarity target group reported that the purchase of quality seeds was very important, but a challenge due to untimely disbursement of loans. Sometimes this results in buying seeds late when the price is doubled and causes delays in sowing which can lead to repayment risks.

Farmers with a larger land size use a greater number of inputs, which is related to their wealth status (Figure 5). The land size ranges from an average of 2,3 ha for farmers having chosen no input category, to an average of 6,9 ha for farmers who have invested in three types of input.

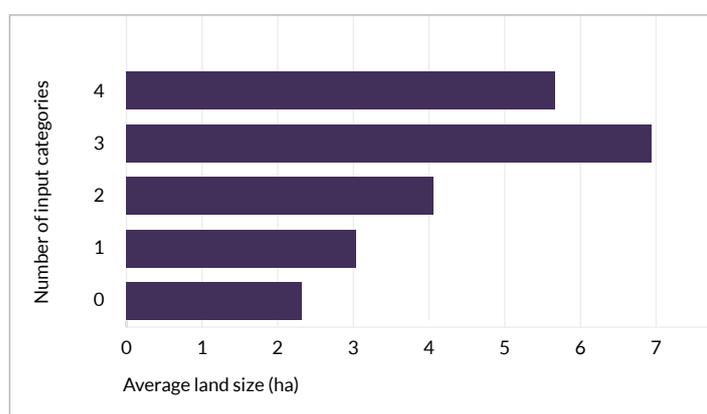


Figure 5. The relationship between land size and farmers' investment in inputs during the past two agricultural seasons.

Moreover, the survey data suggest that the use of hired labour, another important farm input, differs between the two product target groups: 37% for farmers in the warrantage target group and 12% for farmers in the agri-solidarity target group. However, only 21% of the warrantage target group producers and 10% of the agri-solidarity target group farmers reported that more than half of their entire farm work is done by hired labourers.

Additionally, the results indicate that 85% of farmers in the agri-solidarity target group and 89% in the warrantage target group use their harvest at least partly for home consumption. In fact, except for peanuts, the main crops cultivated by both agri-solidarity target group and warrantage target group are food crops such as millet, sorghum, cowpea and maize. Aside from this, farmers in the agri-solidarity target group rely on the local spot markets (82%) and traders (13%) as the most important channels to sell surplus yields. In addition, one farmer in the agri-solidarity target group is linked to big buyers like processors. For farmers in the warrantage target group, the local spot

markets (44%), cooperatives (30%) and traders (26%) provide additional sales channels. Next to these alternatives, 27% of farmers in the warrantage target group and 15% of farmers in agri-solidarity target group reported the use of other outlets. The most important of these were using the produce for seeds or storing it for later usage.

Looking at the individual channels and how often they are reported (counts), the following priority channels emerge for farmers in the two product target groups (Figure 6). It is important to note that the result is not based on the volume of a specific outlet but on the number of instances it was reported. Farmers could report multiple different outlets.

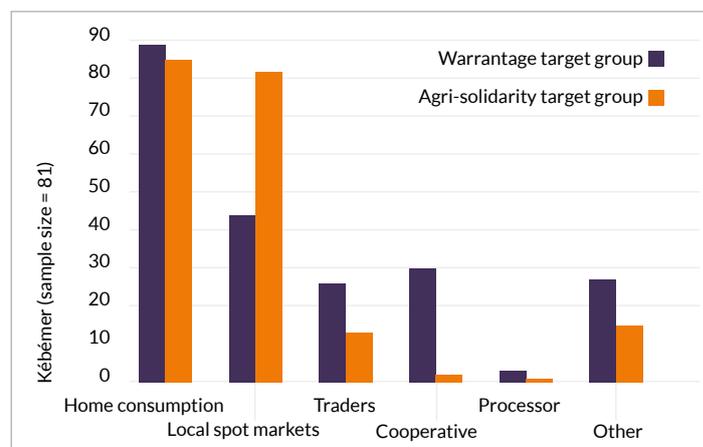


Figure 6. Percentage of farmers citing a specific outlet for their produce (n= 200 farmers).

## ACCESS TO FINANCIAL SERVICES

Around 68% of all surveyed farmers have at some point taken an interest-bearing loan. During the FGDs among the farmers in the warrantage target group, it was mentioned that these loans are used for several purposes, including farming and trade, but they are also used for buying food and inputs and for paying for school fees and inputs. In most cases, the loan comes from an MFI (45%). As noted, this is most likely due to the sample selection. However, the findings reveal a relatively low engagement with other lenders, such as informal money lenders that were mentioned in the FGDs to be mostly shopkeepers and merchants.

Alternatively, the other sources of finance might have been underreported if people did not feel comfortable about giving out this type of information. During the FGDs with farmers in the agri-solidarity target group, it was noted that participants were unwilling to discuss specific details about their loans such as the amounts involved, interest rates and deadlines. They also reported not knowing any details like these about loans taken by neighbours due to privacy issues.

According to the survey results, the second most popular form of credit for farmers in the warrantage target group is a

loan from a family member (15%) and for farmers in the agri-solidarity target group a loan from VSLA (15%). When scoring how often a particular source of loans was reported (how many instances) in the survey, the following trends emerge (Figure 7):

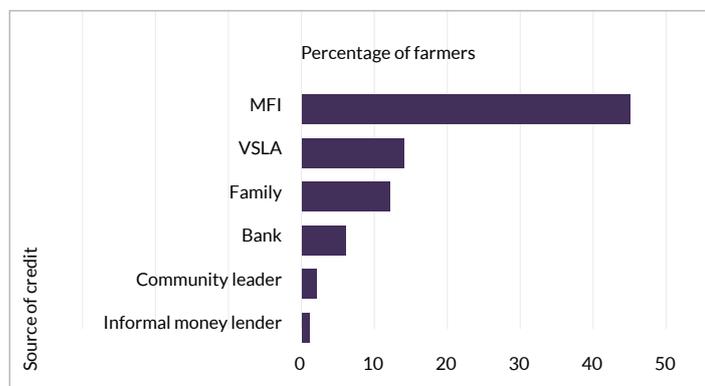


Figure 7. Percentage of farmers accessing specific sources of credit (n= 200 farmers).

The survey data suggest that previous access to credit correlates to some extent with current access to the agri-solidarity lending and the warrantage loan products. A majority (73%) of the 120 farmers in the whole study that applied for and received an agri-loan, had already previous experience with credit. However, only 37% of the group who applied for a loan but was rejected, had previous access. During FGDs it was mentioned that some of these farmers were denied credit because they could not make the initial contribution or because they were related to the existing borrowers based on their household (for instance a parent, spouse or sibling). In comparison, in Tambacounda, all the farmers who applied for a loan as part of the warrantage system were approved.

When analysing more closely the farmers in the two product target groups, it is apparent that the warrantage farmers report having access to a greater variety of credit sources than the farmers of the agri-solidarity target group. Nevertheless it is important to highlight that the purposive sampling through the MFIs most likely affect the outcome of this analysis since, for instance, the farmers in the group 'Applied and approved' in the agri-solidarity target group reported having access to more sources than the farmers in the two other subgroups.

Of the farmers that have previously accessed a loan, 21% reported a 'really good', 53% a 'good' experience and 9% a neutral experience with their access to finance, while 13% indicated a negative experience (4% did not reply). The satisfaction rates vary between the farmers in different product target groups; out of the farmers that have previously accessed a loan, 62% of the farmers in the agri-solidarity target group and 40% in warrantage target group have had a positive experience with the loan. In the warrantage target group, a slightly larger share of farmers (11%) reports a negative experience with the loan compared to agri-solidarity target groups (2%).

Of all the farmers, 55% would certainly recommend the credit product to others (considered a 'promoter'). Of the remainder, 31% would only probably promote it (considered 'passive'), and 14% would not or did not know (considered a 'detractor'). This can be summarized in the Net Promoter Score (NPS) that quantifies the willingness of customers to recommend a credit product, and the score can range from -100 to +100. The NPS in this study is 41 (55,15 - 13,97 = 41,18), which is relatively high.

When looking specifically at the agri-solidarity target group, the NPS score is high (NPS = 79). 54% would certainly recommend the credit product to others (considered a 'promoter'). Of the remainder, 12% would only probably promote it (considered 'passive'), and 1% would not or did not know (considered a 'detractor'). In comparison, the NPS score is much lower for the warrantage target group (NPS = 4). 21% of this group would certainly recommend the credit product to others (considered a 'promoter'). Of the remainder, 30% would only probably promote it (considered 'passive'), and 18% would not or did not know (considered a 'detractor').

To summarize, overall farmers are highly satisfied with the credit products, and they are eager to recommend the loan to others (family, friends and neighbours). However, farmers in the warrantage target group are less satisfied with the credit products than farmers in the agri-solidarity target group, and they are less eager to recommend the products to others. Some major issues mentioned during the FGDs among the warrantage target group members that could explain this lack of satisfaction, include disbursement delays, lengthy procedures, high travel costs to MFIs, high application fees for loans, high opening fees and high account maintenance fees. In addition, for experienced producers within the warrantage target group, the lack of post-harvesting equipment coupled with the need for timely post-processing and storage within the warrantage system could explain these figures.

# 02 Factors influencing credit product uptake



## FINANCIAL ATTITUDES

With respect to both credit product types, a relatively high share of producers report saving for the future; 73% in the agri-solidarity target group and 60% in the warrantage target group. However, only 11% of farmers in the agri-solidarity target group keep financial records. Out of these farmers, 45% went to school (at least learned to read and write). In contrast, in the warrantage target group, only 9% keep financial records, while all of them went to school (at least learned to read and write).

The data suggest that most producers (51%) are willing to take some risks to increase their chance of a higher revenue, and 16% are prepared to even risk losing their entire investment if it is possible to gain a higher revenue. This risk appetite is similar for the farmers of both product target groups as well as for youth and FHHs. During the FGDs it was reported that people assess the perceived level of risk against the profitability of their activity, and will accept high-interest rates if the activity is likely to be very profitable. Furthermore, it was also mentioned that farmers with cattle are more willing to take loans because they can sell the cattle to repay the loans if there is a delay related to, for instance, rains stopping early or crop failure.

It is also important to highlight that among all the farmers in the survey sample, a high share (83%) reports that they would need to get the money back in one harvest cycle, indicative of limited savings and a (near) subsistence level household economy. Of the warrantage target group farmers 17% can wait for 2-4 harvest cycles, or even more than four harvest cycles (8%) before needing to get their money back. Farmers in the agri-solidarity target group need to get their money back faster (8% and 1%, respectively). Importantly, the survey result suggests a widespread (96% of the sample) reliance on agriculture, and 51% of the farmers have the ambition to expand their current enterprises and farm more land in the future. During the FGDs, farmers mentioned that they believe that there is a future in agriculture, and they are willing to work and invest in it. They expressed being eager to diversify their production by cultivating multiple types of crops (cabbage, pepper, okra and tomato, for instance) and by fattening cattle or sheep.

## CATALYSTS AND BARRIERS TO ADOPTING A CREDIT PRODUCT

According to the sampled farmers, there are a number of factors that impede or reduce the access to agricultural credit. These are summarized here:

### Factors that farmers find attractive in a credit product

The key incentives for farmers to adopt credit include:

- Suitability of the credit to the producers. The high satisfaction rates noted in the survey (55% of the sample would certainly recommend the loan product to others) are reported during the FGDs to be associated with the following factors:
  - Lack of cumbersome procedures and flexibility of the conditions of granting the credit.
  - Proximity to the credit institution. Producers value disbursements at the village level.
  - Quality products that meet farmers' needs in terms of loan size, reimbursement conditions, affordable interest rate, loan purpose and disbursement timing.
- Farmers report to be looking for:
  - Appropriate timing of loan disbursements, which is mentioned as being the most important factor.
  - The right amount of credit and they find it important to have the possibility to be granted larger volumes of credit if needed.
  - Reduction of interest rate and amount of the contribution.
- Other important incentives:
  - Availability of harvesters for cereals.
  - Awareness and information regarding the product.

Some farmers in Kébémér received in the past loans through World Vision, who later set up MEC FADEC, and they mentioned the conditions of these loans as an example of an attractive credit product. However, it is important to keep in mind that these loans initially may not have been commercially viable since World Vision is an NGO. The conditions included no initial contribution, the amount depended on the guarantee and the confidence of village 'head of credit', low-interest rate, simple explanations of the terms provided and loans accessible on village level with no need to travel. Conversely, wells for irrigation were provided as part of these loans, but subsequently, all pumps became inoperative and farmers have been unable to repair them.

### What farmers additionally look for in credit products

Farmers mentioned that they seek suitable credit products for the following reasons:

- To undertake activities out of season: for the agri-solidarity target group, the highest need for credit is in June and

July corresponding with the beginning of the rainy season. In contrast, for the warrantage target group, most farmers need loans for agri-activities during winter and in dry season (from November to June) to invest in marketing of their grain or livestock.

- To enhance existing activities: For example by purchasing of traction animals such as horses and donkeys and buying land to strengthen agricultural activities.
- To diversify: farmers are willing to diversify investments in response to climate change risks. In the first place they are interested in crop diversification and cultivation of vegetables. Additionally, they would like to diversify their sources of income such as combining agriculture with livestock raising and fattening, poultry farming (for women specifically) and trade.
- To buy agricultural and processing equipment such as seeders, ploughs, threshers and hullers.
- To trade: storage and selling when prices are higher.
- Especially women apply for credit in order to practice activities such as grain processing, retail and farming. These are better options when land is not available.
- To purchase agricultural inputs such as seeds and fertilizer.
- To invest in the construction of solar pump wells.

### Factors contributing to an unwillingness to access credit

Some farmers are unwilling or reluctant to access credit.

The reasons identified include:

- **Untimely disbursement:** farmers reported that this leads to problems with respect to yield and profitability, lost opportunities to buy the needed quantity and quality of inputs at low cost. For instance, seed prices can double, which can delay sowing contributing to a risk of defaulting on the loan. Long delays discourage borrowers.
- **Farmers hearsay:** farmers are very susceptible to positive or negative reports by others related to the loan products. For instance, stories of officials or chairs of groups vanishing with large sums of money from the community result in lower enthusiasm.
- **Procedures and terms:** cumbersome administrative procedures and difficulty of understanding documents and terms. Many farmers have a low level of financial literacy and they are afraid of accepting poor terms and clauses since they are unfamiliar with contracts. They also reported to lack information about group lending mechanisms.
- **Lack of confidentiality in procedures:** farmers fear a risk of exposure or humiliation in case they default on their loan.
- **Farmers fear of default risk due to:**
  - Climate change that brings about irregular rainfalls and droughts and a consequent decline in soil fertility due to water and wind erosion
  - Pests and diseases
  - Death of livestock bought with credit
  - Poor seed quality

- Poor harvest
- Price fluctuations. Farmers reported that the prices for basic food products double during lean months.
- Illness leading to either inability to repay or the need to use the loan for medical purposes.
- Misuse of loan for household purposes – including marriage and baptism
- **Water:** this is a large barrier. Often there is only one well in the village, which cannot be used for irrigation of crops. This is especially hard on women if there is an increase in loans and agri-production as they must fetch more water, which will be an added burden for them.
- **Land fertility:** Decline in the fertility of land due to wind and water erosion and a lack of trees growing in the fields, which constitutes a major problem in the area since the soil is a crucial factor in the agricultural production.
- **Group composition:** People are unwilling to form groups with people they do not know well since they feel hesitant to discuss financial affairs with other group members. They would rather form groups as families. This is reported leading to some group members going to the bank individually since they do not trust the chairman. However, non-membership of a group prevents access to credit.
- **High-interest rates and guarantees:** Level of contribution is reported to be high relative to loan amounts. People are unable to liquidate enough assets during the loan application period as this coincides with the start of the lean season.
- **Travel:** Distance between the village and the credit institution causes travel costs. This increases the costs of credit since frequent travel is required. Especially farmers living in remote villages need to use some of their loan to finance the expensive transportation. The distance is also important related to security since there is a risk of theft and being attacked when needing to transport the credit to the village.

For experienced producers, specific barriers are mentioned:

- **Lack of post-harvest equipment or processing:** These farmers process grains using mobile processing facilities, which travel around offering their services and begin with communities closest to the road, only moving in towards rural areas later when they have processed the grains of the most accessible communities. Due to this, rural populations are not able to process crops and establish stocks in a timely manner, which causes delayed sales and possibly also more wastage. Millet threshers could help in order to process the crops in a timely manner.

### UPTAKE OF CREDIT BY WOMEN AND YOUTH

Women mention that they are highly interested in accessing credit since they need the income both for household activities and for paying for the education of their children.

However, women are reported to have less land to cultivate

than men, which inhibits their production. During the FGDs, the women pointed out that even if they gain land, they often do not control it, nor the proceeds earned. This was mentioned as a barrier for women POs since they produce less and therefore have less access to credit. The possibility of leasing land to overcome lack of land was not discussed as part of these FGDs but this method is employed in some parts of Senegal. In addition, during the FGDs with the agri-solidarity target group, it was brought up that the agricultural activities practiced by women last only four months. Women can generate some more income during the rest of the year by horticulture and fattening livestock. With regard to the warrantage target group, women are faced with challenges in the warrantage system due to their limited stocks that certain MFIs do not find profitable. The only way for them to currently overcome this problem is by forming groups.

Another issue for women is the lack of transparency regarding the household's financial affairs, which leads to some women needing to ask for permission from their husband for obtaining a loan while some choose to conceal loans from their husbands, but this might cause difficulties in their marriage. It is, however, unclear whether husbands either conceal loans or discuss them with their wives and whether they are willing to grant permission to wives seeking agricultural loans. Nevertheless, it was mentioned that sometimes women are used by men to access loans in their names.

Other influencing factors that might favour men over women in accessing loans are that they generally travel more, make household decisions and have more access to information and to business opportunities. However, it was mentioned during the FGDs that women also travel and are often regarded as more trustworthy than men. Although, some participants mentioned that women may redirect credit towards household expenses.

The youth who have already accessed credit are seen to benefit from being part of a group in the agri-solidarity lending system because they can gain important financial knowledge from the older and more experienced group members. In addition, it was pointed out that it is especially valuable for youth to learn how to communicate with MFIs in order to discuss possible challenges in repayment schedules in the future. In contrast, the youth, who are struggling to access credit, expressed that they want to return to their villages and invest in horticulture as well as in sheep and poultry farming, but they lack the financial means. During the FGDs, youth pointed out that loans would reduce their illegal migration. On the other hand, a group of women mentioned that youth are seen as risky targets as they often are unemployed, lack a guarantee and might disappear with the loan to another country. They also mentioned that it is relatively easy for youth to migrate if they cannot repay the loan.

## POTENTIAL AREAS FOR IMPROVEMENT OF MFI LOANS

Farmers highlighted several areas for potential improvement in MFI's service provision, including:

- Provide variable sizes and durations of loans since there is a need for flexibility among the farmers.
- Timeliness of loan disbursements is critical. Tailor loan periods more closely to cultural and climate timetables. For instance, the demand for grain and meat is higher around religious events.
- Promote transparency and less intrusive practices in the procedures of application for credits.
- Improve awareness regarding the loans. For instance, rumours are a problem and the information needs to be carefully and clearly worded since the terms, such as contributions and interest rates, are challenging for people to understand. Note that this process takes time.
- Build relationships and involve local authorities such as mayors, chiefs or other leaders.
- Provide technical support (e.g. training on agri-techniques). Partner with existing state structures e.g. research and extension services.
- Consider opportunities to partner with suppliers of seeds and fertilizers by tapping into existing networks.
- Proximity to MFIs is considered crucial. Go to village level to disburse and organize regular meetings locally to educate and inform farmers.
- Strengthen group lending, coops and interest groups. Promote capacity building activities within groups in order to reduce lending and monitoring costs for MFIs.
- Promote training in combating wind and water erosion among producers.
- Build boreholes or wells equipped with solar pumps.
- Promote tailored credit for equipment, especially related to post-harvesting equipment such as threshers for miller and other cereals. This is especially a condition for the success and development of the warrantage system.

# 03 Baseline for impact on income and food security



By providing farmers with access to finance, the STARS program aims to enable them to access the right inputs and improve their farming. As a result, they will improve their income and food security. To gauge such changes over time, we measured their starting point with respect to income and food security.

## WEALTH AND INCOME

It is challenging to measure income, particularly for small-holder farmers with seasonally fluctuating earnings and poor numeracy skills, but changes in income will be reflected by wealth which we therefore focused on in this study. Current wealth level is also important in determining access to finance, as loans must be secured with valuable collateral. While this makes sense in financial terms, it also contributes to conditions in which poorer farmers are unable to escape the cycle of poverty for lack of collateral to access loans. A household's wealth was assessed by determining the following characteristics: land size, an index for the household assets as well as an index for livestock owned by the household<sup>8</sup>, and finally by establishing the poverty likelihood of the household<sup>9</sup>.

According to the results, there is a mixed variation in wealth levels among the target group farmers of the two credit products (Table 4). Since there is a great variation between the average household size of the two credit product target groups (agri-solidarity 13,06 and warrantage 15,83), it is important to perform the analysis of the wealth level on a per capita basis (assets divided by the number of household size). Based on this analysis, farmers in the agri-solidarity target group have on average slightly less land than farmers in the warrantage target group. Nevertheless, the farmers in the agri-solidarity target group on average have more per capita assets and livestock, and a slightly lower likelihood of falling below the national poverty line than the farmers in warrantage target group. It is also important to highlight that the assets included in the PPI were purposely not incorporated as part of the asset index used in this study in order to prevent autocorrelation.

Table 4. Per capita wealth indicators for the agri-solidarity target group in Kébémér and the warrantage target group in Tambacounda.

Target group	HH size	Asset index per capita	TLU per capita	Land size per capita	Poverty likelihood (national poverty line)
<b>Agri-solidarity target group (overall)</b>	13,06	0,78	0,39	0,26	52,26
Applied and approved	13,50	0,87	0,49	0,24	54,23
Applied and not approved	12,87	0,69	0,21	0,27	43,91
Did not apply	11,20	0,47	0,12	0,35	51,47
<b>Warrantage target group (overall)</b>	15,83	0,52	0,28	0,30	54,58
Applied and approved	18,08	0,46	0,37	0,31	57,52
Did not apply	13,58	0,58	0,19	0,30	51,64

When analysing the wealth indicators for the subgroups in the agri-solidarity target group farmers, a clear difference can be seen in the wealth levels of the groups 'Applied and approved' and 'Did not apply'. To start with, the former has a higher average household size of more than 13, while for the latter this is around 11. The farmers in the 'Applied and approved' group have more assets and more livestock (TLU), but the farmers in the 'Did not apply' group on average have more land and a slightly lower likelihood of falling below the national poverty line. Interestingly, when looking at the group 'Applied and not approved', the average values of the wealth indicators fall in the middle of the values of the two other groups except for the likelihood of falling below the national poverty line, which is clearly much lower for this group compared to the other two groups. For the warrantage subgroups there are strong differences in average household size, with mixed results for the different wealth indicators.

The findings furthermore suggest that FHHs are clearly poorer than the other households, although it has to be mentioned that only 7 FHHs were included in the survey sample (Table 5). However, the PPI interestingly indicates that FHHs have a much lower likelihood of falling below the national poverty line than the other households. This is challenging to explain and requires further analysis, but the

<sup>8</sup> The Tropical Livestock Unit (TLU) is used for an indication of the livestock resources. It is acquired by converting the body weight into the metabolic weight and can be used as an 'exchange ratio' among livestock species (Chilonda, P., & Otte, J. (2006). Indicators to monitor trends in livestock production at national, regional and international levels. *Livestock Research for Rural Development*, 18(8), 117).

<sup>9</sup> Poverty Probability index (PPI). For further information, see: Schreiner, M. (2016). Simple Poverty Scorecard Poverty-Assessment Tool Ethiopia. Retrieved from [http://www.simplepovertyscorecard.com/ETH\\_2010\\_ENG.pdf](http://www.simplepovertyscorecard.com/ETH_2010_ENG.pdf)

reason might simply be the low number of FHHs in this study. As family sizes are approximately the same, this cannot cause the observed differences. The average land size for FHHs is low compared to MHHs, and during the FGDs women expressed a desire to diversify their activities to include, for instance, processing, handicrafts and trading that are activities not dependent on access to land.

Table 5. Comparison of the average wealth indicators for FHHs and MHHs<sup>10</sup>.

HH type		Sample size	Land size (ha)	Asset index	TLU	Poverty likelihood (national poverty line)
MHHs	Group	193	3,79	7,12	3,82	54,05
	Per capita		0,29	0,66	0,35	
FHHs	Group	7	1,39	3,82	0,48	36,09
	Per capita		0,14	0,41	0,04	

Table 6. Comparison of average wealth indicators for youth and other households<sup>10</sup>.

HH type		Sample size	Land size (ha)	Asset index	TLU	Poverty likelihood (national poverty line)
Youth	Group	72	2,47	7,39	3,18	53,49
	Per capita		0,21	0,81	0,48	
Other HHs	Group	128	4,41	6,78	4,04	53,38
	Per capita		0,33	0,56	0,26	

Table 7. Comparison of average wealth indicators for youth and other households<sup>10</sup>.

Marital status		Sample size	Land size (ha)	Asset index	TLU	Poverty likelihood (national poverty line)
Polygamous	Group	43	7,69	7,58	6,52	59,65
	Per capita		0,49	0,50	0,38	
Monogamous	Group	23	4,15	5,89	5,42	47,25
	Per capita		0,40	0,58	0,45	

The data collected from youths in the sample reveal mixed results. Youth report having less productive assets (smaller parcels of land and less livestock) but slightly more household assets and a similar likelihood of falling below the national poverty line than the other households (Table 6).

Since polygamous marriages with their associated larger household sizes are an important social characteristic in Senegal (see Section 1), it is interesting to analyse the effect of this system on the wealth indicators. When investigating these households<sup>11</sup>, we find that on average polygamous households reported higher levels of wealth than monogamous households when comparing the absolute number of assets (the asset index and the TLU, see Table 7). Their poverty likelihood however is higher (PPI score), which seems paradoxical. Since the household sizes however are often large in polygamous households, it is important to perform the analysis on a per capita level to account for the effect caused by these larger household sizes. Interestingly, when looking at the per capita amount of assets, the results of the indicate that all the wealth indicators are approximately the same for farmers in polygamous and monogamous marriages, with the PPI score still indicating a higher poverty likelihood for these larger polygamous households.

As discussed in section 1, many polygamous and monogamous households live together in family compounds. Similarly in this study, 34% of all surveyed farmers live in a separate family compound that they share, mostly with two or three other nuclear households. In few cases, these compounds contain up to 7 nuclear households in this study, while still being considered a single big household in the ndieul-system. The households in family compounds show more or less similar levels of wealth than other households when comparing the absolute amount of land, assets and livestock (Table 8). They do however have a

Table 8. Wealth indicators for households living in family compounds and other households<sup>10</sup>.

HH type		Sample size	Land size (ha)	Asset index	TLU	Poverty likelihood (national poverty line)
HHs living in family compound	Group	68	3,74	6,58	3,63	54,63
	Per capita		0,25	0,59	0,24	
Other HHs	Group	132	3,65	7,21	3,76	52,80
	Per capita		0,35	0,76	0,54	

<sup>10</sup> Data are presented as average for the entire group (averaged over households), as well as per capita (divided by household size).

<sup>11</sup> For this investigation we will analyze the data where the survey respondent was a male in either monogamous or polygamous marriages (n=66). The female respondents (n=121) were categorized only as being married or unmarried.

slightly higher likelihood of falling below the national poverty line. When performing the analysis on the per capita level, the actual differences in wealth levels of households living in family compounds become apparent with lower numbers of assets and livestock and smaller land size. This is now in line with their slightly higher poverty likelihood.

## FOOD SECURITY

### MAHFP, HFIAS and PPI Food line

To understand how food security changes over the course of the year, we measured the Months of Adequate Household Food Provisioning (MAHFP)<sup>12</sup>. This tool consists of two simple questions asking (1) whether there were months in the past 12 months during which the respondent did not have enough food to meet the family's needs and (2) if that is the case, which months these were. Based on the results, the time of the year when food shortages occur follow the monthly mean historical rainfall data patterns that are similar in the two study sites Kébémér (the agri-solidarity target group) and Tambacounda (the warrantage target group), as shown in figures 8 and 9. Both study sites fall in the Köppen climate classification in the warm semi-arid climate.

The lean season lasts from June to September in Kébémér, with a peak month in August. In Tambacounda, the lean season lasts for a small share of the households much longer, from January to November. The peak in the lean season in August affects a larger share of households in Tambacounda (46%) than in the case of Kébémér (36%). Data on food security were collected for the agri-solidarity target group (Kébémér) at the end of October and at the beginning of November 2017, which is just after the lean season. For the warrantage target group (Tambacounda), the data collection was done in May/June 2018, which is at the beginning of the lean season.

When comparing the results of the two target groups, for the agri-solidarity target group 78% of the sampled households report food insecurity at some point during the year, while for the warrantage target group this is 94%. Out of these affected farmers, the average number of months per year that people report experiencing food shortages differs slightly between the two target groups. For the agri-solidarity target group this is 2 months per year while for the warrantage target group it is 3 months (Table 9).

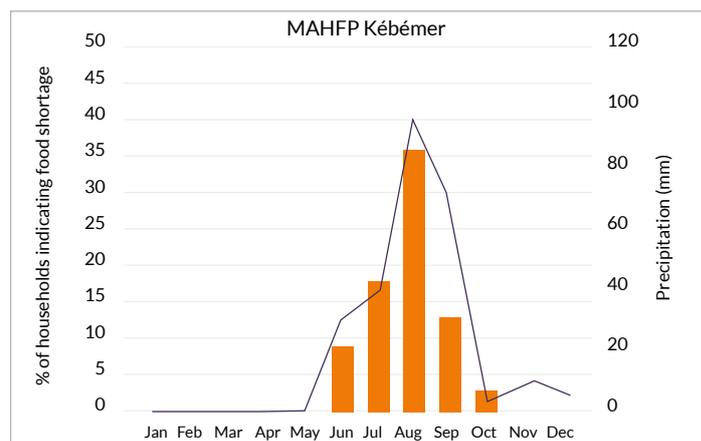


Figure 8. The percentage of households among the agri-solidarity target group (Kébémér) indicating food shortages (MAHFP) as histograms and average monthly precipitation in the two study sites as a line diagram.

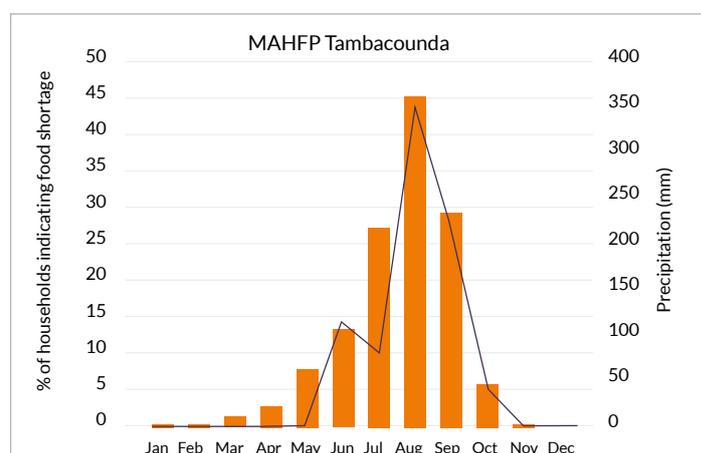


Figure 9. The percentage of households among the warrantage target group (Tambacounda) indicating food shortages (MAHFP) as histograms and average monthly precipitation in the two study sites as a line diagram.

Table 9. Food security indicators for the agri-solidarity target group (Kébémér) and the warrantage target group (Tambacounda).

Target group	Percentage of farmers with food shortages	Number of months with food shortages	HFIAS score	PPI food line
Agri-solidarity target group	78%	2	3	7,43
Warrantage target group	94%	3	9	7,67

<sup>12</sup> Months of Adequate Household Food Provisioning. For further information, see: Bilinsky, P. & Swindale, A. (2010).

Months of Adequate Household Food Provisioning (MAHFP) for Measurement of Household Food Access: Indicator Guide (v.4). Washington, D.C.: FHI 360/FANTA.

In addition to MAHFP, the HFIAS tool (Household Food Insecurity Access Scale)<sup>13</sup> was used to collect more in-depth information on food insecurity. HFIAS is composed of a set of nine questions to assess whether households have experienced problems with accessing food during the last 30 days. This is evaluated with HFIAS household score that can range from 0 to 27. The average HFIAS household score for the whole sample was 6.

When comparing the HFIAS scores for the two credit product target groups, the score for the agri-solidarity group is very low at 3. We collected these food security data just after the lean season, which may be one reason contributing to this low score. Nevertheless, it is important to note that since HFIAS has a 30-day recall period, these results stretch back to the end of September and October, which were still months of food insecurity. For the warrantage target group the score is 9. We collected these food security data at the beginning of the lean season. The score will likely increase following the height of the lean season. These HFIAS results support the outcomes of the MAHFP analysis, indicating that food insecurity is stronger in among the warrantage target group than among the agri-solidarity target group.

When analysing this further and when classifying the regional HFIAS score into four food security classes, 50% of all households in the warrantage target group are classified as either moderately or even severely food insecure, while this is 13% for the agri-solidarity target group (Table 10). Again, it is interesting to see that this clear difference between the two study sites in food (in)security is not supported by the Food Line of the PPI tool, which indicates that the average likelihood for a farmer in the agri-solidarity group to not have enough money to buy sufficient food is 7,43%, whereas in the warrantage target group, this is 7,67%. As sample sizes become too small, this analysis cannot be done for the three subgroups within the two credit products.

Table 10. Percentage of farmers classified into HFIAS food security categories within the different credit product target groups.

Target group	Food secure	Mildly food insecure	Moderately food insecure	Severely food insecure	Total
Agri-solidarity target group (Kébémér)	50	37	13	0	100
Warrantage target group (Tamba-counda)	26	23	34	17	100
<b>Total</b>	<b>38</b>	<b>30</b>	<b>23,5</b>	<b>8,5</b>	<b>100</b>

## Female-headed households and youth

There was a clear difference in food security between the FHHs and the MHHs. The HFIAS score for FHHs was 15, which is indicative of moderate food insecurity, while it was 6 for MHHs indicating mild food insecurity (HFIAS scores can range from 0 to 27). During the FGDs, women mentioned that horticulture is an important way for them to generate more income and to improve their food security. However, the villages have often only one well that does not have enough water for all the crops, and therefore women need to work hard to fetch water for horticulture. In addition, climate change might have an impact on horticulture in the future since this activity is heavily dependent on water. For youth, the HFIAS score was approximately the same as for the other households.

## Effects of family compounds and polygamous marriages

When examining farmers living in family compounds, the survey data show that 98,5% of them prepare their meals together with other households. In terms of food security, more households living in family compounds are classified as moderately or severely food insecure (38,2%), compared to families not living in compounds (28,8%). This clear difference arises due to the high percentage of families living in family compounds that are classified as severely food insecure (almost 15%, see Table 11). Hence the strategy of living in family compounds and organizing meals with multiple families does not seem to contribute to avoiding moderate or severe food insecurity.

Table 11. Percentage of farmers classified into HFIAS food security categories for the households living in family compounds and other households.

HH type	Sample size	Food secure	Mildly food insecure	Moderately food insecure	Severely food insecure
HHs living in family compound	68	36,8	25,0	23,5	14,7
Other HHs	132	38,6	32,6	23,5	5,3

<sup>13</sup> Household Food Insecurity Access Scale. For further information, see: Bilinsky, P. & Swindale, A. (2010). *Months of Adequate Household Food Provisioning (MAHFP) for Measurement of Household Food Access: Indicator Guide (v.4)*. Washington, D.C.: FHI 360/FANTA.

When investigating more specifically whether polygamy has an effect on the levels of food security, as for wealth levels, results show only a small difference with 25,6% of polygamous families being classified as moderately or severely food insecure, while this figure is 21,7% for monogamous families (Table 12). However, a smaller share of households living in polygamous marriages falls into the category of severely food insecure compared to monogamous marriages (4,7% and 8,7% respectively).

Table 12. The percentage of male farmers living either in polygamous or monogamous marriages classified into HFIAS food security categories.

HH type	Sample size	Food secure	Mildly food insecure	Moderately food insecure	Severely food insecure
Polygamous	43	41,9	32,6	20,9	4,7
Monogamous	23	47,8	30,4	13,0	8,7

Finally, a striking fact is that the way the household’s food security is reported seems to some extent depend on who is replying to the question. When husband and wife reply to food security related questions together, the HFIAS HH score was the lowest (4) compared to when the husband (5), first wife (6) or second or other wives answered alone (8). It is important to note that the sample size of “husband and wife replying together” was only five, but the differences in the answers given by the first and the second or other wives could be related to how the intra-household distribution of household’s resources is governed<sup>14</sup>.

To summarize, the results point towards the farmers in the agri-solidarity target group having a better food security situation in general than the farmers in the warrantage target group, although many farmers still experience shortages during the lean season. The participants in the FGDs of the agri-solidarity target group pointed out that families have multiple survival strategies during the lean season. They can borrow money or buy food on credit but this might be done in an invisible way since some households systematically receive money transfers from family members in urban areas. Other households may also sell animals (small ruminants or poultry) in order to deal with food shortages. In the warrantage target group, a small share of the households experiences shortages almost throughout the year, while in the peak month of the lean season almost half of the farmers reported shortages. This is interesting since it was reported that the warrantage loans were also used for buying food among other inputs. This finding is important to keep in mind when developing the warrantage system in the future in order to support the households in reaching better food security.

<sup>14</sup> Cudeville, E., Guénard, C., & Robilliard, A. S. (2017). *Polygamy and female labour supply in Senegal* (No. 127). World Institute for Development Economic Research (UNU-WIDER).

# 04 Conclusions and next steps



## CONCLUSIONS

### Key findings

- Farmers are particularly attracted to credit packages that have flexible conditions and lack cumbersome procedures, when the loan disbursements are done timely and at the village level, when there is proximity to the credit institution. In addition, it is important for farmers that they can access the right amount of loan that they need and that post-harvesting equipment is available for cereals as part of the loans.
- Some farmers are unwilling or reluctant to access credit due to untimely disbursement, cumbersome administrative procedures and due to the difficulty in understanding documents, due to a lack of confidentiality in procedures, due to fearing a default risk, and due to a lack of post-harvest equipment for processing (limiting the profitability). Additional barriers causing disinterest among farmers are: learning about negative experiences from others, distance between the village and the credit institution causing additional costs and a risk of theft, unwillingness to form groups and discuss financial aspects with people they do not know well and risks related to the future of agriculture in the area due to climate change, soil erosion and inadequate water supply.
- Particularly women struggle to access credit due to lacking a sufficiently large parcel of land and due to needing to either conceal the loan from their husband or have a permission from him. Women expressed a desire to diversify their activities to horticulture, fattening livestock, grain processing and retail. Youth would like to return to their villages and invest in horticulture and in sheep and poultry farming but they lack the financial means. The loans could help in reducing illegal migration for youth but they are often facing problems in accessing credit due to high unemployment rates, a lack of guarantee and due to being regarded as a risky group due to possibly emigrating with the loan to another country.
- The potential areas of improvement of MFI loans, that were recognized by the farmers, include promotion of transparency and awareness regarding the procedure of application for credit, provision of variable sizes and durations of loans, and an increase in proximity to the villages. Additionally, it is critical to disburse the loans in a timely manner and to tailor loan periods more closely to cultural and climate timetables, to promote tailored credit for equipment, especially related to post-harvest processing and wells equipped with solar pumps, to provide technical support in agri-production and training in combating wind and water erosion in parallel with financial services by partnering with existing services, to build relationships and involve local authorities and to promote capacity building activities within group lending.

## NEXT STEPS

The data collected as part of this study will be further used to conduct a deeper level of analysis targeting especially catalysts and barriers for adopting a credit product, identification of differences in farmer types, sociological differences and other topics of interests that can help in understanding, for instance, farmers' needs and capacities. Moreover, a follow-up study, using the same questionnaire as for this study, will be performed in 2019. Ideally, the same target group will be revisited at that point. In addition, qualitative data will be collected using FGDs and participatory methods, such as Most Significant Change workshops.

### What are your reflections as STARS microfinance manager on the CPDD report?

#### When looking at the entire report, do you support the findings or do you want to add some nuances, or correct the information? What is the relation with the pilot evaluation, do findings concur or conflict?

- Having a good understanding of customers' characteristics is a very important success factor for a financial product. The results (for example that farmers are particularly attracted to flexible credit programs without cumbersome procedures and with timely disbursement) coincide with the results of other product evaluations. The information on product satisfaction and product recommendations show that STARS is on the right path, even when improvements can still be made. The identified challenges related to the need for farming equipment, post-harvest equipment and the distance between the villages (especially for the warrantage credit) underline and complete the information of the other product evaluations. Longer-term access to capital for MFIs, however, does limit the roll-out of this type of product with a longer repayment period and higher loan amount.
- Suggestions for providing training support on financial skills or farming techniques are very relevant. The skills or willingness of farmers to do financial bookkeeping (11% Kebemer and 9% Tamba) are linked to the very low levels of schooling of the populations in rural areas in Senegal. Thus, in the program, a capacity building mechanism for clients of MFIs focused on training in product management and knowledge was introduced. Farmers are very committed and determined to increase their income (51% ready to take more risk without worrying about interest rates). This is a good indication of the behavioural change with them. The 55% customer satisfaction level on the products indicated in this report (with clients willing to recommend products to others) strengthens us in scaling up. Most of the product adaptation recommendations are achievable and MFIs have already made statements on this during the restitution and sharing workshops.
- The reasons for the reluctance to take out credit are similar to those of the evaluations and shared during the validation workshops. The availability of the loan amount in a timely manner is an important element for an appropriate farming product. Especially because the rainy season in Senegal just comes once a year and then lasts four months from June to September. A delay of only one week in loan disbursement causes a very important impact on the agricultural calendar of the farmer and influences the profitability. In general, slow disbursement is related to administrative procedures.
- There are some points in the report to be nuanced. The number of participation in financial training is higher for households headed by men (25%) compared to 14% for households headed by women. However, the training approach in the program does not target heads of households, but rather it is intended for clients. The rate of women participating in the training in the STARS program was very high at 80%. This stems from the training needs of women in the management of solidarity groups for which they are responsible locally. The strategy to organize training sessions in close proximity of clients greatly facilitated the participation of these women who generally faced constraints (travel, permission, domestic responsibilities, social reputation).
- Another thing is the risk of violence in dealing with clients. That is no longer quite possible now. Clients are protected by universal standards of protection already well-known in Senegal and introduced in all MFIs. The transparency and confidentiality of customer information are closely monitored by the BCEAO, which requires the publication of credit terms and procedures displayed on a chart in front of each MFI. Perhaps communication and customer awareness needs to be improved though.

### What are the key learnings that you find most relevant in the CPDD study?

#### Which elements in the report are most relevant in your opinion with respect to the MFI's outreach (especially women and youth), scale-up plans, and potential impact with farmers?

The information in this report is an important and necessary part of tailoring products to customer needs.

The clients are mostly young to middle-aged, with little schooling and a low knowledge of good farming practices and a low financial management capacity, and without much collateral. Important elements to the success of STARS are:

- The use of inputs is an important part of a farmer's productivity and success. Producers give a lot of importance to the timely availability of inputs. Farm profitability determines the motivation of the producer and the producer is willing to take a risk by accessing a loan if his business can be successful and profitable
- Climate also is an important factor for success of agricultural production in Senegal. It can have a positive and negative impact on production and repayment capacity
- Good communication on the details of credit conditions is of great interest to the client. And a positive relationship between clients and MFIs generates trust, which helps in loan recovery in case of delay
- Youth and women are an important target group but face challenges with distance to the MFI office, collateral requirements and bureaucracy. The own contribution as included in the credit conditions also limits these and other vulnerable producers
- The selective choice of members in solidarity groups can limit access to credit groups. Forming a group of family members can be a threat. However, this can be nuanced because rural activities are more family-oriented as fields belong to the family for the most part
- The characteristics of the producers differ according to the differences of geographical and socio-cultural zones. So training needs are more needed in areas with lower levels of education and completion (like Kébémér). At the same time, the uptake of training is difficult for these producers.

## What is the feedback on these key learnings from implementing partners?

### Which do partners agree with and want to work on in STARS? What do they not agree with and would oppose working on?

Based on the results received from evaluations and shared with partners, all partner MFIs are in line with these lessons. They are all committed to expanding the product to other points of services for a greater outreach. Action plans have been developed by each MFI taking into account these and other improvements. This includes cumbersome procedures, proximity, seed financing, and savings mobilization. But also the conditions for the credit will be improved, and for warrantage, this includes a disbursement on the spot after the deposit of stocks, instead of after a week. MFIs have also set up financial education activities that will accompany the extension phases of the products. For post-harvest equipment and farming equipment, UIMCEC management already has a farm equipment product available for farmers with a viable project. A financial product for processing equipment is also developed in the STARS program to facilitate access to these types of investments. And a light and an innovative mechanism have been designed for group loans in the onion value chain. This product will allow access to solar pumps for groups of women (5 to 10). The MFIs who are very committed to scaling up have made a real commitment. Only one MFI (UFM) is concerned with the delays in refinancing. However, it remains to have a strong commitment to the STARS program. An additional refinancing strategy can be found in the short term through the CNCAS commercial bank.

## How are you taking these learning's forward, what is your plan of activities?

### How do we incorporate these findings into our intervention? How are we using them for stimulating adoption and impact, especially with women and youth?

The key elements of these lessons will be taken into account in plans for adaptation and scaling up. However, suggestions related to training in agriculture cannot be supported by MFIs. Producers also do not have the capacity to pay for themselves, but we are committed to finding synergies with government programs and services for the promotion of agriculture. However, MFIs have developed a strategy for including financial training. Managers of MFIs and heads of client groups will receive training by specialists. Training capacities will be internalized and delivered on a regular basis to loan agents and clients.

Training tools will be adapted for women with a lower level of education (Kébémér). Training sessions will be held closer to the villages to facilitate women's participation. Training for producers in Tambacounda can be based on the current tools (as they have a higher level of education). Entrepreneurship training is introduced by UIMCEC and CAURIE Microfinance (another MFI in partnership with the STARS program) to strengthen the negotiation and marketing skills of women. This includes training in processing technology for women processors. Financial education training sessions are planned to accompany group credits with women and young people. These sessions aim to strengthen the management of agricultural activities for women and improve their participation in agricultural value chains. MFIs already have in-house skills for these financial education training and the targets are also well defined (UIMCEC Women's Network, CAURIE Women's Village Bank). The developed credit products are sensitive to woman and youth, and the MFIs still want to strengthen this given the very positive impact it generates. Specific projects promoting the economic empowerment of rural women are set up to support the scale-up.

The mobilization of funding for UFM remains a point closely followed by the program. UFM Louga itself has put in place a well-developed strategy based on the mobilization of capital grant funds (which has already received the interest of some partners like SIDI). UFM Louga, through its MECZOP agency, has also accessed funds promoted by the government (Kuwait Fund for Food Security) for the funding of female solidarity groups in the onion value chain.

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