BASELINE STUDY

FEED THE FUTURE SENEGAL DOOLEEL MBAY

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Cover photograph
40-year-old and mother of 6 children, Aissatou Balde, with her whole family in the village of Douta Diara in the Kolda Region. Photo by Xaume Olleros for RTI International.

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ACRONYMS

AMELP	Monitoring, Evaluation, and Learning Plan
ANSD	National Agency for Statistics and Demography
APU	Agricultural Production Unit
ATV	African Type Vegetable
CLUSA	Cooperative League of United States of America/Millet Value Chain Enhancement Project
CSPro	Census and Survey Processing System
CSC	Adverse warm season
DAP	Diammonium Phosphate
DAPSA	Directorate of Agricultural Analysis, Forecasting and Statistics
EHCVM	Harmonized Household Living Conditions Survey
FCFA	West African CFA Franc
FNM	Adult Women Only
HICP	Harmonized Index of Consumer Prices
HOH	Head of Household
ICT	Information and Communication Technology
IPAR	Initiative Prospective Agricole et Rurale
M&F	Males and Females
MELP	Monitoring and Evaluation Learning Plan
MSME	Micro, Small, and Medium Enterprise
NGO	Non-Governmental Organization
NPK	Nitrogen, Phosphorus, and Potassium
PAFA	Support Project for Agricultural Sectors
PCE	Projet Croissance Economique
PIZ	Project Intervention Zone
PPP	Purchasing Power Parity
USAID	United States Agency for International Development
USG	U.S. Government
VC	Value Chain
WFP	World Food Programme
ZOI	Zone of Influence

EXECUTIVE SUMMARY

The Feed the Future Senegal Dooleel Mbay project, which officially launched in May 2022, has the primary objective of increasing incomes along targeted food value chains (VCs). The main objective of this baseline study is therefore to establish a baseline for the 27 indicators in the project's Activity Monitoring, Evaluation, and Learning Plan (AMELP). The baseline study covers the entire geographic area of the project's zone of influence (ZOI), which is made up of the following eight regions: Fatick, Kaffrine, Kaolack, Kolda, Matam, Saint Louis, Sédhiou, and Ziguinchor. It targets the populations of agricultural households that are analyzed through a quantitative approach.

The objective of the quantitative study is to collect statistical information on the current status of households prior to the project intervention. Thus, a combined stratification and three-stage sampling approach was used. It includes a sample of 2,400 households in 200 villages in the 8 project regions to ensure that the results are representative at the regional level by VC.

The collection tools used are a questionnaire (with three modules: household, producer, and female decision-maker), a collection application developed in the Census and Survey Processing System (CSPro) and installed on tablets, and an interviewer's manual. The survey system relies on 40 collection agents who were trained from October 31, 2022, to November 3, 2022, by the Initiative Prospective Agricole et Rurale (IPAR) and the Dooleel Mbay team. The training provided an opportunity to discuss collection procedures, the behaviors to be adopted by the agents in the field, and the details of certain questions. Data collection took place from November 5, 2022, to November 21, 2022. Real-time data feedback and the supervision mission conducted by the IPAR team and Dooleel Mbay allowed for immediate and effective correction of the information in the field. Once the collected data was validated, the data processing consisted of structural and consistency checks, followed by the reconciliation and correction of the data files. Thus, 2,405 households were surveyed, including 2,136 agricultural households and 59 nonagricultural households, and all sampled localities were covered. The results show that the majority of households (98.6%) are adult male and female households with an average size of 10 persons. They are mostly headed by men (92.3%).The educational attainment of male and female heads of households (HOHs) was found to be disparate, with male HOHs exhibiting higher rates of education. A majority of male HOHs (46.1%) reported attending Koranic schools, whereas only 14.4% of female HOHs reported the same. In contrast, more female HOHs (23.4%) reported attending Franco-Arab Schools compared to their male counterparts (14.1%), although they did not complete primary education. It was also observed that female HOHs fared worse than their male counterparts in terms of overall educational attainment, with 50.9% of females having no prior education compared to 23.8% of males.Most households see their agricultural income occupy more than half of their overall income, i.e., 67.4%. More than half of the households have received loans from both formal and informal actors. Also, one person in two is poor in the project intervention zone (50.2%). The average deficit percentage to be made up by poor people to reach the poverty line is 36.8%.

The distribution of household heads (HOHs) based on their age group reveals that the majority (53.9%) of HOHs fall within the 45–64 age group. A significant proportion (22%) of HOHs belong to the 30-44 age group, while 21.9% are aged 65 or older. Youth-aged HOHs (15-29) account for a small minority, with only 2.2% belonging to this age group… An analysis of households in various value chains indicates a significant disparity in the distribution based on gender of the head of household (HOH). Specifically, 92.3% of households engaged in agricultural activities have a male HOH, which is consistent across all chains with a strong predominance (over 80%) of male-headed households noted in each. However, in market gardening, the proportion of female HOHs is higher (16.5%) owing to the prevalence of female HOHs in Ziguinchor (27.9%) and St-Louis (20.4%) regions who practice this activity. The percentage of female HOHs in the other value chain is 7% for irrigated rice with a 9.5% in the St-Louis region, 12.6% for rainfed rice with a 29.5% in the Ziguinchor region, 3.5% for millet, 9.9% for mango with 22.8% in the Ziguinchor region, and 6% for small ruminants.. They are not generally members of a producer

network (88.2%) and have not benefited from any project. Rainfed agriculture represents four-fifths of the cultivated land. Individual ownership is in the majority and is more pronounced in male HOHs, where 61.8% of plots are individually owned. The exploitation of plots is based almost entirely on direct tenancy (97%). Analysis of the area sown shows an average of 0.92 (ha) per household for all VCs combined. Cereal-producing households sow the largest areas on average (1.20 ha). In contrast, vegetables are sown in small areas (0.33 ha).

Drought and wind are the climatic risks most experienced by households. The low capacity to access inputs affects nearly three-fourths of producers. More than half of households have access to and use climate information (55%). The choice of crops/varieties (69%), sowing periods (87%), and fertilizer application (66.1%) are the main reasons for using climate information. Producers are most interested in information about rainfall forecasts (89.1%) and rainy season breaks (81.9%).

The results on the adoption of information and communication technology (ICT) show that nearly 7 out of 10 households have access to ICT via Android phones (77.9%) and simple phones (48.5%). They are mainly used to access information on rainfall dates (75.9%). In contrast, more than half of households do not have access to the internet. Access to food (73.6%) and agricultural inputs (61.1%) are the main shocks experienced by households, while few households are more resilient to shock/stress (19.2%). There is very little insurance coverage. Only 6.3% of producers have taken out agricultural insurance, with 8.2% of male producers and 2.4% of female producers taking out insurance.

The use of manual equipment dominates in soil preparation (53.9% of plots). This situation is even more prevalent for rainfed rice in Ziguinchor (91%) and vegetables (77%). The main method of soil preparation observed in the intervention zone is plowing, which concerns 58% of plots. Despite the low use of certified seed (26.5%), households respect the recommended seed rates. Transplanting (29.2%) and sowing in rows (42.3%) are the main sowing methods used by producers. The seeds used come mainly from the producers' personal reserves (60%) with moderate to low use of mineral fertilizers (39.1% for nitrogen, phosphorus, and potassium [NPK], 31% for urea, 5.5% for diammonium phosphate [DAP]). Herbicides are rarely used, with the exception of irrigated rice in Saint-Louis (60.9%) and rainfed rice in Kolda (33.1%). Generally, plots are harvested manually (91.5%) and the use of stock preservation methods is very low (10.7%).

There is an average production of more than one ton of cereal per producer (1,421 kg). Relatively high yields for irrigated rice (5,074 kg/ha), average yields for corn (1,804 kg/ha) and rainfed rice (1,337 kg/ha) and low yields for millet (822 kg/ha). Overall, vegetable yields were low (19,686 kg/ha), whereas mango yields were 2687 kg/ha.) In terms of small ruminants, the size of the herd is generally very small. On average, a producer/breeder has 5.4 sheep and 4.7 goats, and births account for more than half of the incoming flows (60%). Cereal production is essentially intended for self-consumption (72.4%), except for irrigated rice in Saint-Louis, where one-third (33.4%) of the harvest is destined for the market, and millet in Kaolack (20.7%), where one-fifth of the production is marketed. A good portion of the market garden production (64.2%) and mango production (61.2%) is marketed. Deaths, losses, and donations are the most important outflows from the livestock population. In fact, 57.8% of sheep and 56.3% of goats leave the herd through losses (theft or death) or donations.

In terms of household credit and saving, female-headed households took out relatively more cash loans (49% vs. 46.1%) than male-headed households. This was more common among female-headed households in the cereal value chain, particularly in the groundnut basin (corn and millet), and in Matam in rice production. However, at the regional VC level, for corn in Kolda, irrigated rice in Sédhiou, and market gardening in Matam, the respective proportions of households with loans are less than 25%, and almost nonexistent in Kolda

Marketing contracts are not very common among grain (1.2%) and vegetable (4.9%) producers. Direct sales at the market are the main method of marketing for cereal producers (66.4%) and vegetable producers (82.4%). Market garden crops (844,000 FCFA) generate more marketing revenue than cereal

crops (137,000 FCFA). The analysis of sales of small ruminants in agro-pastoralist households shows that the average sales revenue is 89,582 FCFA. The sale of animals was highest in Saint-Louis (199,916 FCFA), followed by Matam and Sédhiou with amounts of 82,440 FCFA and 75,346 FCFA, respectively. The gross margin per hectare is highest for market gardening (4,331,154 FCFA/ha), followed by mango (1,747,711 FCFA/ha) and cereal crops (302,983 FCFA/ha).

In addition, the empowerment of women in agriculture is an important component of the project. The related results show that more than half of the women are not yet autonomous in agricultural production. They do not generally have decision-making power in the use of household income (60.4%). The proportion of women who are overworked is relatively high (44.4%). In contrast, most women are autonomous in terms of holding productive assets. Slightly more than half of the women contribute to decisions regarding financial services and one out of two women is a member of a community group. Thus, the women's empowerment index in the five areas is 0.52.

1   INTRODUCTION

Officially launched in May 2022, the **Feed the Future Senegal Dooleel Mbay** project's main objective is to increase incomes along targeted food VCs.

Project activities, including technical assistance, training, and material support through subcontracting organizations, will be carried out as part of a comprehensive program that will promote increased productivity along food VCs, increased employment and enterprise development in key food VCs, increased access to markets and trade, and sustainable business relationships. All of this should contribute to increased incomes for small-scale producers and other stakeholders, reduced hunger, empowerment of women, development of local capacity, and increased resilience to economic and environmental shocks.

Performance indicators are categorized into outcome indicators (number of people trained, number of individuals participating in U.S. Government (USG) food security programs, number of organizations receiving USG assistance, number of micro, small, and medium enterprises (MSMEs) receiving USG assistance, number of vulnerable households receiving USG assistance, etc.) and impact indicators (number of MSMEs with a 60% increase in annual net sales) and impact indicators (number of MSMEs with a 60% increase in annual net sales), and adoption (number of hectares under improved management practices or technologies with USG assistance, etc.). Overall, 27 Dooleel Mbay indicators will be covered for this baseline study.

The main objective of this baseline study was therefore to establish a baseline for the project for several indicators in the project's Monitoring and Evaluation Learning Plan (MELP). The goal was to collect high-quality data that would be used to monitor the project's MELP indicator targets and provide all partners with useful data that will be used to inform implementation activities.

This report on the project baseline study presents in its main parts: i) the methodology of the study; ii) the results of the baseline survey of agricultural households; and iii) the results of the survey of other stakeholders. In addition, the summary tables included in the appendix present the status of all the project indicators covered by the baseline household survey.

2   METHODOLOGY

The methodology describes the design of the study and the various stages of its implementation. It explains the manner in which the objectives of the mission were achieved through the design of the services and the execution of the activities necessary to obtain the expected results. Thus, this section successively describes: i) the target population and the geographic coverage of the study; ii) the study technique on the target population; the sampling plan (sampling frame; sample: type of sampling, size of the population to be surveyed); iii) the collection tools; iv) the data collection; v) the processing (data entry, data cleaning, coding, adjustment); and vi) the analysis of the data and the writing of the report.

2.1   STUDY POPULATION AND GEOGRAPHIC COVERAGE

In this section, we define the population and the various units of the study in order to better guide the choice of collection methods and to define the scope of the analysis. Establishing the baseline situation for the Feed the Future Senegal Dooleel Mbay project, as well as monitoring its activities through its performance indicators, requires information at the level of households, the main beneficiaries of the project.

The **household** population consists of all households in the project's area of influence. A household is defined as a group of people, related or not, who live together under the same roof and pool all or part of their resources to meet their basic needs, including shelter and food. These people, called members of the household, usually eat together and recognize the authority of one person, the HOH.

In our national languages, the notions of "Njël" in Wolof, "Ngaak" in Sereer, "Hiraande" in Pulaar, and "Siitik" in Joola faithfully reflect the meaning of the household concept.

The baseline study of the Dooleel project covers the entire geographical area of the zone of influence (ZOI) consisting of the following eight regions: Fatick, Kaffrine, Kaolack, Kolda, Matam, Saint-Louis, Sédhiou, and Ziguinchor.

Figure 1: Map of the Feed the Future Senegal Dooleel Mbay Zone of Influence

2.2   HOUSEHOLD SURVEY TECHNIQUE

As noted above, the baseline study is based on a statistical population. Because of the large number of households and operational constraints, the survey method remains the most appropriate. It is therefore necessary to identify the statistical units for this population, which are the sampling unit, the unit of analysis and/or reference, and the reporting unit.

The objective of the quantitative study is to collect statistical information on the current status of households prior to the project intervention. Specifically, it will collect information on monitoring indicators related to economic performance, capacity building and the inclusion of youth and women. Since the survey method is the most appropriate for this type of exercise, the question that arises is "how can we ensure that the information to be collected accurately reflects the reality as it would have been obtained in a census?" This is what has guided the choices that were made in the design of the survey.

2.2.1 Sampling

This section presents the sampling frame, the design and type of sampling, and the size of the population to be surveyed.

☞   *Survey frame*

The 2013 General Census of Population and Housing, Agriculture, and Livestock conducted by the National Agency for Statistics and Demography (ANSD) listed all communes and their villages with information on the number of households and population size (male and female residents). The list of villages is exhaustive, which makes it possible to create an adequate sampling frame. Thus, our sampling frame is made up of the exhaustive list of villages in the rural communes within each region of the Feed the Future Senegal Dooleel Mbay intervention zone. In each village, it is possible to establish an exhaustive list of the agricultural households that make up the village.

☞ *Survey Plan*

Due to the large number of households that make up the sample unit and operational constraints, the survey method remains the most appropriate. The sample design includes a statistically valid sample of 2,400 households. The sample was distributed among the regions in proportion to the population of the Feed the Future Senegal Dooleel Mbay project intervention area. Note that the sample size was chosen to ensure representativeness at the regional level (Table 2.1).

Because the sampling methods were not mutually exclusive, a combined stratification and three-stage sampling approach was used to better meet the study objectives. The strata were formed by the eight target regions. The sample was then drawn in three stages:

- In the first stage, a random sample of rural communes corresponding to the primary units is drawn.

- In the second stage, a sample of villages was randomly selected in each rural commune.

- In the third stage, the list of households in each village drawn allowed agents to select a sample of households, taking into account both indigenous and newly settled households. The selected HOHs were then interviewed for the survey.

Note that in each commune, four villages were selected. Regarding the number of households to be surveyed per village, a constant number of households was selected in each village. This constant number of secondary units is equal to 12, because after a certain sample size, the information becomes redundant in rural areas.

The advantage of this method is that it is not necessary to have an exhaustive list of households for the entire project area, but only for those residing in the sampled villages. This method also allows us to reduce travel and consequently the costs of the survey. It also allows us to take into account the possibility of aggregating the results according to the three agro-ecological zones covered by the project (the Senegal River Valley, the Groundnut Basin, and Casamance) characterized by different climates, soil types and agricultural systems.

Table 2.1   Distribution of the sample by region

Region	Number of households	Number of villages	Number of rural communities
Fatick	144	12	3
Kaolack	384	32	8
Kaffrine	240	20	5
Sedhiou	336	28	7
Kolda	432	36	9
Ziguinchor	288	24	6
Matam	192	16	4
Saint-Louis	384	32	8
Total	**2,400**	**200**	**50**

<u>Source</u>: IPAR, *Baseline Dooleel Mbay, 2022.*

In the first stage

Within each stratum, we perform a simple random selection of communes. Designating by :

H: the number of strata (index h, H = 8);

N_h: total number of municipalities in stratum h;

n_h : sample of municipalities drawn from stratum h.

Since this is a random draw without replacement of the communes in each stratum, the probability of inclusion of the communes in stratum h is given by :

$$f_{1h} = \frac{n_h}{N_h}$$

In the second stage

At this level, in each of the communes drawn in the first stage, we randomly draw a sample of villages.

M_{ih} : the number of villages in commune i of stratum h;

m_{ih} : sample of villages drawn in commune i from stratum h

The probability of inclusion of villages in commune i in stratum h is given by :

$$f_{2ih} = \frac{m_{ih}}{M_{ih}}$$

In the third stage:

It involves drawing a sample of households in each sample village. Before the sample is drawn, a list of households in the village is needed to allow random selection of the sample households. This is facilitated by village leaders who have a list of both indigenous and newly settled households.

The notations to be adopted for this degree of drawing are as follows:

X_{jih}: The number of households in sample village j in commune i in stratum h;

x_{jih}: The sample size of the household drawn in sample village j of sample commune i of stratum h;

The probability of inclusion of the household in sample k in sample j village in sample i commune in stratum h is:

$$f_{3jih} = \frac{x_{jih}}{X_{jih}}$$

In sum, the overall probability of inclusion of a household in stratum h, commune i and village j is:

$$f_{hij} = f_{1h}f_{2ih}f_{3jih}$$

This is justified by the fact that the draws are independent from one degree to another.

Weighting

Given that the inverse of the probability of inclusion is the weight of the surveyed units, we agree that each surveyed household in stratum h, commune i, and village j has a weight p_{hij} equal to:

$$p_{hij} = \frac{1}{f_{hij}}$$

The sampling weight is determined by the inverse of the drawing probabilities for each household. The drawing probabilities are calculated for each village as the ratio of the number of households drawn to the total number of households.

2.2.2 Collection tools and reporting units

The questionnaire is the appropriate collection instrument for this type of survey. It was designed to provide reliable information on the initial situation of the Dooleel Mbay project indicators. To this end, the questionnaire includes a "household" module, a "producer" module, and a female decision-maker module. Each module was organized into sections, each dealing with a specific theme. Thus, the household questionnaire includes

- **A household module** with sections to collect information on household sociodemographic characteristics, housing, durable goods, different sources of household income, use of financial services, use of climate information, household size, economic activities (e.g., crops grown, quantities sold, revenues generated, external support, challenges, technologies used and recently adopted, and areas covered by improved technologies or management practices and by women and youth), prevalence and level of poverty, resilience to shocks and stresses, and gender roles within the household.

- **An agricultural production unit (APU) module** addresses land capital, crop production, livestock, paid labor, project/program support/advice, and access to financial services. *This module is intended for households with at least one APU that produces at least one of the following crops: millet, corn, rainfed rice, irrigated rice, horticulture (African type vegetable [ATV] and mango production), or small ruminant production.*

- **A women's economic empowerment module** that was administered to women decision-makers in the household (or consulted by the HOH in decision-making). This module addresses decision-making in productive activities, use of income, access to financial services, women's membership in groups, and time allocation in productive activities.

- All of the first two modules were administered to a single resource person, in particular the HOH. This does not prevent the information from being completed by other people in the household, especially the producers concerned, apart from the main contact person.

2.2.3 Interviewer/Supervisor Training and Data Collection

Once the collection instruments had been validated, we proceeded to train the field staff, consisting of supervisors and interviewers recruited on the basis of criteria relating to their level of education, language according to the survey area and their experience for this type of work. They were trained not only to have a perfect mastery of the tools but also to be aware of their level of responsibility. An important part of the training was reserved for the handling of the collection tablets. A computer application specific to the questionnaire was developed and installed on the tablets by the team's computer specialist. To ensure that the training workshop was well facilitated, the team of trainers alternated between theory and practice, and interactivity in the form of questions and answers with the field agents was observed as much as possible. To further promote mastery of the questionnaire, a field test followed by a debriefing was also conducted during the training.

It allowed us to organize the logistics and to divide the agents by team before specifying to each one the tasks, in particular the workload to be carried out in the field for each supervisor and each investigator.

Data collection was then carried out in the project's ZOI from randomly selected households. Data collection was conducted in parallel in all survey areas over the same period.

2.2.4 Collection, processing, and analysis of household data

The data collected through the tablets was sent via the internet to a web platform set up for this purpose. The technology we used for mobile data collection is called CSPro, which is a suite of tools that allows us to collect data using mobile devices such as smartphones and/or tablets (running on Android) and to submit these same data to an online server. Once the data is collected in the field with CSPro, it is possible to import and manage the data using CSWeb, which is the platform's server module.

The reporting was coordinated by the supervisors of each survey team in conjunction with the IPAR team, particularly the computer scientist in charge of the web platform. Real-time data transmission allowed for real-time processing of the data sent and immediate feedback to the field teams whenever the team of statisticians noted errors in the data transmitted, thus allowing for immediate and effective correction of the information in the field. In addition, a supervisory mission led by the IPAR team and Dooleel Mbay allowed for quality control of the data by attending a few interviews in the field followed by debriefing with the collection staff.

Once the collected data was validated, the data processing consisted of proceeding to structure and coherence controls, then to the auditing and correction of the data files. The database was built in an accessible format (Stata and SPSS). For the analysis, to save time and efficiency, a grid was developed in agreement with the Dooleel Mbay project team and served as the basis for producing results in the form of tables and graphs.

2.3 THE STUDY'S SETUP

2.3.1 Composition of the main team

The study was conducted by the IPAR team, which is shown in Table 2.2.

Table 2.2   IPAR Staff for the Mission

IPAR team	Specific tasks
Head of mission (statistician)	- Coordinate the study - Propose a collection protocol including sampling - Propose collection tools - Train investigators - Overseeing field surveys - Ensure data quality - Process and analyze data; - Participate in report writing
Statistical specialist (Statistician)	- Participate in the development of the collection protocol, including sampling - Participate in the development of collection tools - Participate in the training of investigators - Participate in the supervision of field surveys - Participate in data processing and analysis - Participate in report writing
IT specialist	- Propose an architecture for data feedback - Set up a data transfer system (web platform) - Build data entry mockups - Set up a data storage platform - Supervise day-to-day data transfers

NB: Other experts were mobilized in the IPAR team whenever necessary. For example, the livestock and gender experts helped to ensure that these aspects were considered in the collection tools and in the analysis grid.

The Executive Director of IPAR was the overall coordinator of the mission.

2.3.2 Composition of the data collection team

Data collection from households took place over a **15-day period**, i.e., data was collected from **160 households per day**. Taking into account the contingencies related to the survey period, mainly the lack of time on the part of producers, the average workload was **four questionnaires/day/investigator**, or a collection team size of **40 investigators**. The deployment of interviewers in the field took into account the number of households to be surveyed per zone and the distances to be covered. By dividing the number of collection team members into **teams of four interviewers**, we were able to mobilize **10 supervisors**.

NB: Given the time constraints of the study, a 15-day collection period allowed for more time to process and analyze the data and write the report.

2.4 ASSESSMENT OF THE DATA COLLECTION

The survey targeted 2,400 households in 200 villages in the 8 project regions (Fatick, Kaolack, Kaffrine, Saint-Louis, Matam, Kolda, Sédhiou, and Ziguinchor). At the end of the quantitative data collection, 2,405 households were surveyed and all sampled localities were covered (Table 2.3).

Table 2.3   Number of Planned and Actual Locations and Households by Region

Region	Planned		Performed	
	Number of villages	**Number of households**	**Number of villages**	**Number of households**
Fatick	12	144	12	144
Kaffrine	20	240	20	241
Kaolack	32	384	32	385
Kolda	36	432	36	435
Matam	16	192	16	192
Saint-Louis	32	384	32	383
Sedhiou	28	336	28	336
Ziguinchor	24	288	24	289
Total	**200**	**2,400**	**200**	**2,405**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Of the 2,405 households surveyed, 2,316 were agricultural households and 89 were nonagricultural. Of the 2,316 agricultural households (cereals, vegetables, mango, and livestock), 2,252 households have at least one producer who grew at least one of the target crops in cereals (rice, millet, and corn) and ATVs during the 2021/2022 period (Table 2.4).

Table 2.4   Number of Households Surveyed by Household Type by Region

Region	Number of households surveyed	Number of non-farm households	Number of farm households in the VC (cereals and vegetables)	Number of farm households in the VC (temporary crops, mango, and livestock)
Fatick	144	3	133	141
Kaffrine	241	4	236	237
Kaolack	385	7	362	378
Kolda	435	19	407	416
Matam	192	3	189	189
Saint-Louis	383	3	379	380
Sedhiou	336	20	309	316
Ziguinchor	289	30	237	259
Total	**2,405**	**89**	**2,252**	**2,316**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

2.5 ANALYSIS OPTIONS ACCORDING TO VALUE CHAINS AND ZONES

Given the project's objective to intervene in specific VCs at the level of each zone and to focus on increasing the income of small producers, the analyses were done according to VCs by administrative region.

First, in the northern zone regions (Matam and Saint-Louis), irrigated rice was analyzed. Then, in the central zone (Fatick, Kaolack and Kaffrine), millet and corn were analyzed. Finally, in the southern zone (Sédhiou, Kolda, and Ziguinchor), rainfed rice, corn, and mango were studied. However, the small number of households that planted corn in the Ziguinchor region (5 households) means that results for this crop were not analyzed in this region. Vegetables and small ruminants were analyzed for all regions.

The analyses will focus on each type of vegetable in each region based on representativeness. In other words, the numbers below 15 are not displayed. Thus, **onions** were analyzed in the regions of Saint-Louis and Ziguinchor; **tomatoes** in the regions of Kaolack, Saint-Louis, and Ziguinchor; **okra** in each of the three southern regions of Casamance (Sédhiou, Kolda, and Ziguinchor), and in Kaolack and Matam; **sweet eggplant** in Saint-Louis and **bitter eggplant** in Ziguinchor. Thus, only the regions of Fatick and Kaffrine will not be included in the analysis of vegetable types by region.

Table 2.5   Number of Households by Value Chain by Region

Region	Irrigated rice CSC	Rainy season irrigated rice	Rainfed rice	Millet	Corn	Vegetables	Mango	Livestock
Fatick	0	0	3	**86**	**21**	23	28	122
Kaffrine	0	0	0	**153**	**63**	20	2	212
Kaolack	0	0	0	**227**	**88**	47	34	351
Kolda	0	5	**89**	73	**155**	85	**30**	330
Matam	**30**	**31**	20	37	19	52	2	171
Saint-Louis	**123**	**54**	3	27	12	160	9	289
Sedhiou	0	7	**94**	76	**70**	62	**22**	225
Ziguinchor	0	1	**99**	14	**5**	118	**57**	155
Total	**153**	**98**	**308**	**693**	**433**	**567**	**184**	**1,855**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Table 2.6   Number of Households by Vegetables by Region

Region	Onion	Tomato	Sweet potato	Okra	Sweet eggplant	Bitter eggplant	Chilli	Other vegetable
Fatick	12	1	0	2	2	2	3	1
Kaffrine	1	0	0	5	1	2	3	8
Kaolack	3	15	0	15	3	4	3	4
Kolda	3	4	6	39	0	6	12	15
Matam	10	3	2	29	2	2	0	4
Saint-Louis	63	42	14	13	18	1	6	3
Sedhiou	9	6	4	20	0	1	6	16
Ziguinchor	15	25	10	28	7	21	8	4
Total	**116**	**96**	**36**	**151**	**33**	**39**	**41**	**55**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

NB: The disaggregated tables for small ruminants, vegetables, and mango by region are mostly in the appendix.

3 THE RESULTS OF THE BASELINE SURVEY OF FARM HOUSEHOLDS

3.1 CHARACTERISTICS OF FARM HOUSEHOLDS

3.1.1 Sociodemographic characteristics of heads of agricultural households.

Households with adult males and females (M&F) are by far the majority

Two types of households are identified: households with adult males and females (M&F) and households with adult women only (FNM). Note that households with children without adults (CNA) or with adult males only were not identified. In fact, the results in Table 3.1 show that the majority of households, 98.6%, are households with adult men and women (M&F). Thus, those with only adult women represent only 1.4% of households. In addition, almost all male HOHs are obviously identified in households with adult males and females as well as 81.9% of female HOHs who are identified in households with adult males and females. This pattern remains similar for each of the VCs across regions.

Table 3.1   Distribution of household types by value chain and region (%)

Value chain	Region	Male			Female			Total		
		M&F	FNM	Total	M&F	FNM	Total	M&F	FNM	Total
Dooleel Mbay area		100.0	0.0	100.0	81.9	18.1	100.0	98.6	1.4	100.0
Irrigated rice	Matam	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0
	Saint-Louis	100.0	0.0	100.0	95.2	4.8	100.0	99.5	0.5	100.0
	Total irrigated rice	**100.0**	**0.0**	**100.0**	**95.7**	**4.3**	**100.0**	**99.7**	**0.3**	**100.0**
Rainfed rice	Sedhiou	100.0	0.0	100.0	66.9	33.1	100.0	98.3	1.7	100.0
	Kolda	100.0	0.0	100.0	87.7	12.3	100.0	99.9	0.1	100.0
	Ziguinchor	100.0	0.0	100.0	70.8	29.2	100.0	91.4	8.6	100.0
	Total rainfed rice	**100.0**	**0.0**	**100.0**	**63.0**	**37.0**	**100.0**	**95.3**	**4.7**	**100.0**
Millet	Fatick	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0
	Kaolack	100.0	0.0	100.0	92.5	7.5	100.0	99.5	0.5	100.0
	Kaffrine	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0
	Total millet	**100.0**	**0.0**	**100.0**	**95.5**	**4.5**	**100.0**	**99.8**	**0.2**	**100.0**
Corn	Fatick	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0
	Kaolack	100.0	0.0	100.0	77.3	22.7	100.0	99.3	0.7	100.0
	Kaffrine	100.0	0.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0
	Sedhiou	100.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	100.0
	Kolda	100.0	0.0	100.0	48.0	52.0	100.0	99.6	0.4	100.0
	Ziguinchor	100.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	100.0
	Total Corn	**100.0**	**0.0**	**100.0**	**77.1**	**22.9**	**100.0**	**99.5**	**0.5**	**100.0**
Total cereal		**100.0**	**0.0**	**100.0**	**76.9**	**23.1**	**100.0**	**98.7**	**1.3**	**100.0**
Total ATV		**100.0**	**0.0**	**100.0**	**87.6**	**12.4**	**100.0**	**98.0**	**2.0**	**100.0**
Total mango		**100.0**	**0.0**	**100.0**	**73.6**	**26.4**	**100.0**	**97.4**	**2.6**	**100.0**
Total livestock		**100.0**	**0.0**	**100.0**	**83.5**	**16.5**	**100.0**	**99.0**	**1.0**	**100.0**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Mostly male-headed households

The distribution of households according to the gender of the HOH is presented for households in the entire VC. It shows that 92.3% of households engaged in agricultural activities have a male HOH. In all chains, a strong predominance (over 80%) of households headed by men is noted (**Table 3.2**). However, the proportion of female HOHs is higher in market gardening (16.5%), mainly because of the high frequency of female HOHs in Ziguinchor (27.9%) and St-Louis (20.4%) regions practicing this activity (Appendix Table 0.2).

Table 3.2   Distribution (%) of households by HOH gender by region and value chain

Value chain	Region	Gender of head of household		
		Male	Female	Total
Dooleel Mbay area		92.3	7.7	100.0
Irrigated rice	Matam	97.8	2.2	100.0
	Saint-Louis	90.5	9.5	100.0
	Total irrigated rice	**93.0**	**7.0**	**100.0**
Rainfed rice	Sedhiou	94.7	5.3	100.0
	Kolda	99.6	0.4	100.0
	Ziguinchor	70.5	29.5	100.0
	Total rainfed rice	**87.4**	**12.6**	**100.0**
Millet	Fatick	98.8	1.2	100.0
	Kaolack	93.9	6.1	100.0
	Kaffrine	97.0	3.0	100.0
	Total millet	**96.5**	**3.5**	**100.0**
Corn	Fatick	91.8	8.2	100.0
	Kaolack	97.0	3.0	100.0
	Kaffrine	99.6	0.4	100.0
	Sedhiou	100.0	0.0	100.0
	Kolda	99.3	0.7	100.0
	Ziguinchor	100.0	0.0	100.0
	Total corn	**97.8**	**2.2**	**100.0**
Total cereal		**94.4**	**5.6**	**100.0**
Total ATV		**83.5**	**16.5**	**100.0**
Total mango		**90.1**	**9.9**	**100.0**
Total livestock		**94.0**	**6.0**	**100.0**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Male HOH are generally younger than women, and the largest households are headed by men

Analysis of the results reveals an average household size of 10.4 persons. This average size varies slightly between 9 and 11 persons depending on the agricultural VC, and the households with the largest average number of members are observed in small ruminant farming with 11 persons, followed by cereal farming with 10.8 persons. The lowest average household size is observed in ATV-producing households with 9.2 persons (**Table 3.3**).

According to the gender of the HOH, the size is relatively higher when the HOH is male (10.6 persons compared with 8.1 in households when the HOH is female). In all types of VCs, the same observation is made and it is more pronounced in mango-producing households. In these households, the size of households with a male HOH is almost twice as large as for households with a female HOH (10 vs. 5.4). In addition, the standard deviations observed for female-headed households are lower for all chains, reflecting a relatively more homogeneous size.

The average age of the HOH is 53.9 years. The oldest HOHs are located in mango farming households (54.4 years) and the youngest HOHs are identified in small ruminants producing households (53.3 years). However, the standard deviations show that the age of HOHs in cereal-producing households shows greater variability due to differences in the age of resident HOHs, particularly in Matam in

irrigated rice production and in Sédhiou in rainfed rice production. Depending on the gender of the HOH, mango-producing households are the only ones to have relatively younger female HOHs than those whose HOH is a man (54.1 years vs. 54.5 years).

Beyond the trends described, the other types of VCs by region do not show any particular specificities. The overall situation remains generally valid (Appendix Table 0.5).

Table 3.3   Household size and average age of HOH by region and value chain

Value chain	Region	HOH gender	Household size				HOH age			
			Mean	Standard deviation	Minimum	Maximum	Mean	Standard deviation	Minimum	Maximum
Dooleel Mbay area		Male	10.6	5.5	2.0	40.0	53.7	13.0	21.0	98.0
		Female	8.1	4.8	1.0	33.0	56.0	11.5	22.0	75.0
		Total	**10.4**	**5.5**	**1.0**	**40.0**	**53.9**	**12.9**	**21.0**	**98.0**
Irrigated rice	Matam	Male	9.3	4.4	2.0	32.0	64.5	15.3	26.0	88.0
		Female	6.0	1.9	5.0	12.0	58.9	6.8	22.0	66.0
		Total	**9.2**	**4.4**	**2.0**	**32.0**	**64.4**	**15.2**	**22.0**	**88.0**
	Saint-Louis	Male	11.3	6.1	3.0	35.0	54.2	12.8	25.0	92.0
		Female	10.3	5.1	2.0	27.0	54.8	9.7	26.0	72.0
		Total	**11.2**	**6.0**	**2.0**	**35.0**	**54.3**	**12.6**	**25.0**	**92.0**
	Total	Male	10.6	5.6	2.0	35.0	57.4	14.6	25.0	92.0
		Female	9.9	5.0	2.0	27.0	55.2	9.5	22.0	72.0
		Total	**10.5**	**5.6**	**2.0**	**35.0**	**57.3**	**14.3**	**22.0**	**92.0**
Rainfed rice	Sedhiou	Male	11.1	7.4	2.0	33.0	52.8	14.0	21.0	80.0
		Female	6.5	3.6	4.0	16.0	56.3	13.0	39.0	75.0
		Total	**10.9**	**7.3**	**2.0**	**33.0**	**53.0**	**14.0**	**21.0**	**80.0**
	Kolda	Male	9.1	3.7	4.0	32.0	57.4	14.2	25.0	80.0
		Female	6.7	.5	6.0	7.0	60.5	1.8	58.0	64.0
		Total	**9.1**	**3.7**	**4.0**	**32.0**	**57.4**	**14.2**	**25.0**	**80.0**
	Ziguinchor	Male	9.3	3.4	3.0	16.0	56.7	10.6	25.0	80.0
		Female	4.9	2.7	1.0	17.0	54.3	12.4	35.0	74.0
		Total	**8.0**	**3.8**	**1.0**	**17.0**	**56.0**	**11.2**	**25.0**	**80.0**
	Total	Male	9.7	4.5	2.0	33.0	55.7	13.0	21.0	80.0
		Female	6.2	3.4	1.0	17.0	52.5	12.8	35.0	75.0
		Total	**9.3**	**4.6**	**1.0**	**33.0**	**55.3**	**13.0**	**21.0**	**80.0**
Millet	Fatick	Male	13.9	6.6	4.0	30.0	54.5	15.0	23.0	98.0
		Female	7.5	0.9	6.0	8.0	45.1	8.8	40.0	60.0
		Total	**13.8**	**6.6**	**4.0**	**30.0**	**54.4**	**14.9**	**23.0**	**98.0**
	Kaolack	Male	13.8	5.3	4.0	33.0	51.9	10.8	22.0	88.0
		Female	9.7	5.9	3.0	33.0	65.7	10.4	37.0	71.0
		Total	**13.5**	**5.4**	**3.0**	**33.0**	**52.8**	**11.2**	**22.0**	**88.0**
	Kaffrine	Male	10.6	4.4	3.0	22.0	49.4	12.2	21.0	77.0
		Female	8.9	1.9	7.0	11.0	59.1	7.3	50.0	67.0
		Total	**10.6**	**4.4**	**3.0**	**22.0**	**49.7**	**12.2**	**21.0**	**77.0**
	Total	Male	11.8	5.5	2.0	33.0	51.9	12.7	21.0	98.0
		Female	9.8	5.0	3.0	33.0	62.2	11.2	33.0	72.0
		Total	**11.7**	**5.5**	**2.0**	**33.0**	**52.3**	**12.8**	**21.0**	**98.0**
Corn	Fatick	Male	13.7	4.4	7.0	21.0	50.5	13.0	35.0	72.0
		Female	8.3	2.3	7.0	17.0	50.1	2.3	42.0	52.0
		Total	**13.3**	**4.6**	**7.0**	**21.0**	**50.5**	**12.5**	**35.0**	**72.0**
	Kaolack	Male	15.9	6.2	6.0	36.0	53.4	10.9	27.0	76.0
		Female	5.0	0.0	5.0	5.0	42.7	4.2	35.0	45.0
		Total	**15.6**	**6.3**	**5.0**	**36.0**	**53.1**	**11.0**	**27.0**	**76.0**
	Kaffrine	Male	12.3	5.2	3.0	24.0	49.7	12.4	29.0	77.0
		Female	5.0	0.0	5.0	5.0	50.0	0.0	50.0	50.0
		Total	**12.3**	**5.2**	**3.0**	**24.0**	**49.7**	**12.3**	**29.0**	**77.0**
	Sedhiou	Male	12.1	7.0	2.0	38.0	54.6	13.1	21.0	79.0
		Female								
		Total	**12.1**	**7.0**	**2.0**	**38.0**	**54.6**	**13.1**	**21.0**	**79.0**
	Kolda	Male	8.8	4.8	2.0	40.0	53.4	13.4	23.0	82.0
		Female	6.0	1.9	3.0	8.0	60.5	4.7	54.0	65.0
		Total	**8.8**	**4.8**	**2.0**	**40.0**	**53.4**	**13.4**	**23.0**	**82.0**
	Ziguinchor	Male	9.7	2.7	6.0	12.0	57.1	8.8	47.0	73.0
		Female								
		Total	**9.7**	**2.7**	**6.0**	**12.0**	**57.1**	**8.8**	**47.0**	**73.0**
	Total	Male	10.9	5.9	2.0	40.0	53.0	12.9	21.0	82.0
		Female	7.4	2.4	3.0	17.0	54.1	9.0	35.0	70.0
		Total	**10.8**	**5.8**	**2.0**	**40.0**	**53.0**	**12.8**	**21.0**	**82.0**
Total cereals		**Male**	**11.0**	**5.5**	**2.0**	**40.0**	**53.7**	**13.2**	**21.0**	**98.0**

Value chain	Region	HOH gender	Household size				HOH age			
			Mean	Standard deviation	Minimum	Maximum	Mean	Standard deviation	Minimum	Maximum
		Female	7.7	4.4	1.0	33.0	55.3	12.2	22.0	75.0
		Total	10.8	5.5	1.0	40.0	53.8	13.2	21.0	98.0
Total ATV		Male	9.3	5.6	2.0	31.0	53.8	12.4	22.0	90.0
		Female	8.5	5.3	1.0	29.0	56.8	10.5	26.0	75.0
		Total	9.2	5.5	1.0	31.0	54.3	12.1	22.0	90.0
Total mango		Male	11.3	6.2	2.0	35.0	54.5	11.9	23.0	89.0
		Female	9.7	5.5	3.0	25.0	54.1	11.8	35.0	70.0
		Total	11.2	6.2	2.0	35.0	54.4	11.9	23.0	89.0
Total small ruminants		Male	11.2	5.7	2.0	40.0	53.2	12.8	21.0	98.0
		Female	8.8	5.1	1.0	33.0	55.7	11.2	22.0	75.0
		Total	11.0	5.7	1.0	40.0	53.3	12.7	21.0	98.0

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

More than half of the households are headed by a HOH between 45 and 64 years old

The distribution by gender and age group of the HOH shows that 53.9% of the HOHs are in the 45–64 age group, 22% are in the 30-44 age group, 21.9% are in the 65 and older age group, and only 2.2% are in the under 30 age group. From the perspective of the HOH gender and the types of VC, a similar pattern is found for both men and women (Table 3.4 and Appendix Table 0.6).

Table 3.4   Distribution of households by gender and age group of HOH by region and value chain (%)

Value chain	Region	Male				Female				Set			
		Under 30 years old	30–44 years old	45–64 years old	65 years and older	Under 30 years old	30–44 years old	45–64 years old	65 years and older	Under 30 years old	30–44 years old	45–64 years old	65 years and older
Dooleel Mbay area		2.4	22.4	53.9	21.3	0.6	17.7	53.4	28.3	2.2	22.0	53.9	21.9
Irrigated rice	Matam	1.2	3.5	53.6	41.8	1.4	0.0	63.1	35.4	1.2	3.4	53.8	41.7
	Saint-Louis	0.5	26.4	52.6	20.5	4.5	5.4	69.0	21.2	0.9	24.4	54.2	20.6
	Total irrigated rice	**0.8**	**19.2**	**52.7**	**27.3**	**4.2**	**4.8**	**68.4**	**22.6**	**1.0**	**18.2**	**53.8**	**27.0**
Rainfed rice	Sedhiou	5.4	25.0	49.6	20.0	0.0	12.8	56.6	30.6	5.1	24.3	50.0	20.6
	Kolda	1.6	17.1	47.3	34.0	0.0	0.0	100.0	0.0	1.6	17.1	47.6	33.8
	Ziguinchor	1.3	14.5	61.0	23.2	0.0	26.7	65.4	7.9	0.9	18.1	62.3	18.7
	Total rainfed rice	**2.0**	**18.0**	**54.4**	**25.7**	**0.0**	**32.3**	**59.6**	**8.1**	**1.7**	**19.8**	**55.1**	**23.5**
Millet	Fatick	5.8	20.4	48.9	24.8	0.0	74.4	25.6	0.0	5.8	21.1	48.6	24.5
	Kaolack	2.3	17.0	70.5	10.3	0.0	10.1	9.4	80.4	2.1	16.5	66.8	14.5
	Kaffrine	4.2	33.4	51.9	10.5	0.0	0.0	54.5	45.5	4.0	32.4	52.0	11.6
	Total millet	**3.3**	**24.0**	**56.8**	**15.8**	**0.0**	**11.1**	**22.6**	**66.3**	**3.2**	**23.6**	**55.6**	**17.6**
Corn	Fatick	0.0	54.9	17.3	27.8	0.0	6.3	93.7	0.0	0.0	50.9	23.6	25.5
	Kaolack	0.9	26.6	53.3	19.2	0.0	22.7	77.3	0.0	0.9	26.5	54.0	18.7
	Kaffrine	0.4	35.8	54.8	9.1	0.0	0.0	100.0	0.0	0.4	35.6	54.9	9.0
	Sedhiou	3.0	23.1	40.7	33.1	0.0	0.0	0.0	0.0	3.0	23.1	40.7	33.1
	Kolda	3.4	24.2	48.4	24.0	0.0	0.0	50.0	50.0	3.4	24.0	48.4	24.2
	Ziguinchor	0.0	0.0	62.0	38.0	0.0	0.0	0.0	0.0	0.0	0.0	62.0	38.0
	Total corn	**2.3**	**27.3**	**48.3**	**22.1**	**0.0**	**6.3**	**73.3**	**20.4**	**2.2**	**26.9**	**48.8**	**22.1**
Total cereal		**2.4**	**23.2**	**53.3**	**21.1**	**0.6**	**20.4**	**54.0**	**25.0**	**2.3**	**23.0**	**53.3**	**21.3**
Total ATV		**2.4**	**18.8**	**55.7**	**23.0**	**0.6**	**14.6**	**52.8**	**32.0**	**2.1**	**18.1**	**55.3**	**24.5**
Total mango		**2.3**	**17.0**	**58.7**	**22.0**	**0.0**	**26.8**	**45.0**	**28.2**	**2.1**	**18.0**	**57.3**	**22.6**
Total livestock		**2.4**	**22.5**	**56.6**	**18.6**	**1.0**	**17.8**	**54.1**	**27.1**	**2.3**	**22.2**	**56.4**	**19.1**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

HOH men are educated in Koranic schools, whereas HOH women are uneducated

Analysis of the distribution of HOHs by gender and level of education of the HOH shows that 43.7% of HOHs went to Koranic school (Daara) and 25.9% were not educated. For the Franco-Arab and French schools, they concern only a smaller proportion of the HOH with 14.8% and 12.4%, respectively, almost all of whom did not finish primary school and none of whom finished secondary school (**Table 3.5**).

Among the types of VCs, mango cultivation stands out because of the importance of the other levels of education that characterize the HOHs. In Ziguinchor, for example, HOHs have a higher level of education, with more than 60% of them having attended Franco-Arab or French schools (Appendix Table 0.8 and Table 0.9).

When we look at the HOH gender, the female HOHs have mainly no level of education (50.9%), whereas the male HOHs have mainly attended Koranic school (46.1%). There are relatively more women educated at the Franco-Arabic school, but they did not complete primary school. However, entry into secondary school without having completed it is only observed among HOH men, even if it concerns very few of them.

Table 3.5   Distribution of households by gender and education level of the HOH by region and value chain (%)

Value chain	Region	HOH gender	None	Koranic school Daara	Literate in national language	Franco-Arab school	Primary incomplete	Full primary	Incomplete secondary	Full secondary
Dooleel Mbay area		Male	23.8	46.1	3.4	14.1	7.1	4.1	1.4	0.0
		Female	50.9	14.4	1.4	23.4	9.3	0.6	0.0	0.0
		Total	**25.9**	**43.7**	**3.3**	**14.8**	**7.3**	**3.8**	**1.3**	**0.0**
Irrigated rice	Matam	Male	38.5	40.7	11.7	5.5	2.8	0.8	0.0	0.0
		Female	47.1	52.9	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**38.7**	**41.0**	**11.4**	**5.4**	**2.8**	**0.8**	**0.0**	**0.0**
	Saint-Louis	Male	15.0	46.9	3.6	27.8	1.9	3.6	1.3	0.0
		Female	69.6	8.2	0.0	22.2	0.0	0.0	0.0	0.0
		Total	**20.2**	**43.2**	**3.2**	**27.2**	**1.7**	**3.2**	**1.2**	**0.0**
	Total	Male	22.5	44.6	6.2	19.8	3.1	3.0	1.0	0.0
		Female	67.3	12.7	0.0	20.0	0.0	0.0	0.0	0.0
		Total	**25.6**	**42.4**	**5.7**	**19.8**	**2.8**	**2.8**	**0.9**	**0.0**
Rainfed rice	Sedhiou	Male	25.1	21.8	0.0	27.7	18.8	1.9	4.8	0.0
		Female	36.3	63.7	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**25.7**	**24.0**	**0.0**	**26.2**	**17.8**	**1.8**	**4.5**	**0.0**
	Kolda	Male	46.1	29.6	1.3	6.6	16.1	0.1	0.1	0.0
		Female	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**46.4**	**29.5**	**1.3**	**6.6**	**16.0**	**0.1**	**0.1**	**0.0**
	Ziguinchor	Male	5.5	9.1	0.0	29.1	44.4	9.4	2.5	0.0
		Female	10.5	0.0	0.0	84.1	2.1	3.3	0.0	0.0
		Total	**7.0**	**6.4**	**0.0**	**45.3**	**31.9**	**7.6**	**1.8**	**0.0**
	Total	Male	29.7	27.5	0.6	16.7	21.3	2.7	1.5	0.0
		Female	33.5	4.3	0.0	58.5	1.5	2.3	0.0	0.0
		Total	**30.2**	**24.5**	**0.5**	**22.0**	**18.8**	**2.6**	**1.3**	**0.0**
Millet	Fatick	Male	1.9	94.1	0.0	3.0	0.3	0.8	0.0	0.0
		Female	25.6	74.4	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**2.2**	**93.9**	**0.0**	**2.9**	**0.3**	**0.8**	**0.0**	**0.0**
	Kaolack	Male	1.8	81.5	0.0	11.1	2.4	2.2	1.0	0.0
		Female	33.3	5.0	0.0	2.4	59.2	0.0	0.0	0.0
		Total	**3.7**	**76.9**	**0.0**	**10.6**	**5.9**	**2.1**	**0.9**	**0.0**
	Kaffrine	Male	26.3	58.0	3.5	6.2	2.6	1.9	1.4	0.0
		Female	54.5	45.5	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**27.2**	**57.6**	**3.4**	**6.0**	**2.6**	**1.9**	**1.4**	**0.0**
	Total	Male	19.7	65.4	1.9	7.5	2.3	2.3	0.9	0.0
		Female	43.6	18.9	0.0	1.5	36.0	0.0	0.0	0.0
		Total	**20.5**	**63.8**	**1.8**	**7.3**	**3.5**	**2.2**	**0.8**	**0.0**
Corn	Fatick	Male	0.0	95.7	0.0	1.6	2.7	0.0	0.0	0.0
		Female	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**8.2**	**87.8**	**0.0**	**1.5**	**2.5**	**0.0**	**0.0**	**0.0**
	Kaolack	Male	4.3	81.0	1.0	4.6	8.5	0.5	0.0	0.0
		Female	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**4.2**	**81.6**	**1.0**	**4.4**	**8.3**	**0.4**	**0.0**	**0.0**
	Kaffrine	Male	16.6	75.1	3.9	3.6	0.7	0.0	0.0	0.0
		Female	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**16.5**	**75.2**	**3.9**	**3.6**	**0.7**	**0.0**	**0.0**	**0.0**
	Sedhiou	Male	19.4	45.6	0.5	10.9	22.3	1.2	0.0	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**19.4**	**45.6**	**0.5**	**10.9**	**22.3**	**1.2**	**0.0**	**0.0**
	Kolda	Male	59.0	16.9	4.1	13.6	3.0	1.5	1.9	0.0
		Female	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Value chain	Region	HOH gender	None	Koranic school Daara	Literate in national language	Franco-Arab school	Primary incomplete	Full primary	Incomplete secondary	Full secondary
		Total	**59.3**	**16.7**	**4.1**	**13.5**	**3.0**	**1.5**	**1.9**	**0.0**
	Ziguinchor	Male	0.0	29.3	0.0	29.3	0.0	41.4	0.0	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**0.0**	**29.3**	**0.0**	**29.3**	**0.0**	**41.4**	**0.0**	**0.0**
	Total	Male	36.7	42.0	3.2	10.3	5.2	1.6	1.0	0.0
		Female	76.6	23.4	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**37.6**	**41.6**	**3.1**	**10.1**	**5.0**	**1.6**	**1.0**	**0.0**
Total cereals		Male	27.2	48.1	2.5	11.7	7.2	2.3	1.1	0.0
		Female	45.8	11.1	0.0	33.1	9.0	1.2	0.0	0.0
		Total	**28.2**	**46.0**	**2.4**	**12.9**	**7.3**	**2.2**	**1.0**	**0.0**
Total ATV		Male	14.6	41.1	7.6	19.4	6.7	7.9	2.7	0.0
		Female	56.7	18.3	2.9	12.5	9.6	0.0	0.0	0.0
		Total	**21.6**	**37.3**	**6.8**	**18.2**	**7.1**	**6.6**	**2.3**	**0.0**
Total mango		Male	9.2	45.9	1.1	16.6	13.7	11.7	1.7	0.0
		Female	31.9	24.7	3.3	29.9	10.3	0.0	0.0	0.0
		Total	**11.5**	**43.8**	**1.3**	**17.9**	**13.4**	**10.6**	**1.5**	**0.0**
Total small ruminants		Male	19.9	51.3	4.1	12.4	6.6	4.2	1.5	0.0
		Female	65.0	13.1	1.4	9.3	10.6	0.6	0.0	0.0
		Total	**22.6**	**49.0**	**4.0**	**12.2**	**6.8**	**4.0**	**1.4**	**0.0**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.1.2 Socioeconomic characteristics of households

Most households have more than half of their total income from agriculture

Table 3.6 presents the share of agricultural income in total income. It shows that a significant proportion of households (39.9%) see their share of agricultural income representing more than 75% of their total income. This share is between 50% and 75% for 27.5% of households. Consequently, agriculture is the main source of income for 67.4% of households. In contrast, agriculture accounts for less than 50.0% of total income for nearly a third (32.5%) of households.

Depending on the HOH gender, agricultural income is dominant in households with a male HOH (more than 50% for 68.9% of these households) compared with a female HOH (more than 50% for 50.9% of these households). There are no major disparities across VCs by region.

Table 3.6   Distribution of households by share of agricultural income in total income by value chain and region (%)

Value chain	Region	Male			Female			Total		
		Less than 50% of the total	50-75%	75-100%	Less than 50% of the total	50-75%	75-100%	Less than 50% of the total	50-75%	75-100%
Dooleel Mbay area		31.2	28.1	40.8	49.1	21.1	29.8	32.5	27.5	39.9
Irrigated rice	Matam	66.4	29.4	4.2	36.9	54.3	8.9	65.7	29.9	4.3
	Saint-Louis	28.9	30.7	40.4	43.0	33.1	23.9	30.3	31.0	38.8
	Total irrigated rice	**41.9**	**30.3**	**27.8**	**42.4**	**35.2**	**22.4**	**41.9**	**30.6**	**27.4**
Rainfed rice	Sedhiou	54.9	23.7	21.4	48.7	51.3	0.0	54.6	25.2	20.2
	Kolda	17.8	18.3	63.9	100.0	0.0	0.0	18.1	18.2	63.6
	Ziguinchor	59.2	17.0	23.9	38.2	3.8	58.0	53.0	13.1	33.9
	Total rainfed rice	**42.9**	**18.4**	**38.7**	**53.0**	**6.7**	**40.3**	**44.2**	**16.9**	**38.9**
Millet	Fatick	16.6	42.2	41.1	25.6	0.0	74.4	16.7	41.7	41.5
	Kaolack	23.7	36.7	39.6	66.7	24.0	9.4	26.3	35.9	37.8
	Kaffrine	21.7	30.2	48.1	0.0	54.5	45.5	21.0	30.9	48.0
	Total millet	**26.7**	**33.1**	**40.2**	**52.0**	**27.4**	**20.6**	**27.6**	**32.9**	**39.5**

Value chain	Region	Male			Female			Total		
		Less than 50% of the total	50-75%	75-100%	Less than 50% of the total	50-75%	75-100%	Less than 50% of the total	50-75%	75-100%
Corn	Fatick	17.6	40.7	41.7	100.0	0.0	0.0	24.4	37.3	38.3
	Kaolack	14.5	42.6	42.9	100.0	0.0	0.0	17.1	41.3	41.6
	Kaffrine	15.5	31.9	52.6	0.0	0.0	100.0	15.5	31.8	52.7
	Sedhiou	52.3	32.3	15.4	0.0	0.0	0.0	52.3	32.3	15.4
	Kolda	14.1	20.6	65.3	0.0	100.0	0.0	14.0	21.2	64.8
	Ziguinchor	50.0	0.0	50.0	0.0	0.0	0.0	50.0	0.0	50.0
	Total corn	**20.2**	**27.1**	**52.6**	**71.3**	**17.9**	**10.8**	**21.4**	**26.9**	**51.7**
Total cereal		**29.9**	**27.9**	**42.1**	**53.3**	**17.0**	**29.8**	**31.2**	**27.3**	**41.5**
Total ATV		**36.4**	**28.2**	**35.4**	**44.4**	**25.8**	**29.8**	**37.7**	**27.8**	**34.5**
Total mango		**30.6**	**29.3**	**40.1**	**35.1**	**2.5**	**62.4**	**31.0**	**26.7**	**42.3**
Total livestock		**31.6**	**29.9**	**38.5**	**61.9**	**24.1**	**14.0**	**33.5**	**29.5**	**37.0**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Agriculture is the main source of household income in the project's area of influence

The results presented in Table 3.7 confirm the important weight of agricultural income in the overall income of households, regardless of their VC and the HOH gender. In general, agriculture (in the broad sense) represents more than 60% of overall household income. This trend remains in all VCs and according to the gender of the HOH.

Table 3.7   Share of different income sources in overall household income by value chain and region (%)

Value chain	Region	HOH gender	Agriculture	Livestock	Fishing	Hunting/ Gathering	Handicraft	Transport	Salaries	Migrant transfers	Other income
Dooleel Mbay area		Male	64.4	8.3	0.9	0.8	1.8	1.2	2.6	8.2	11.8
		Female	55.3	6.8	1.2	1.3	1.0	4.0	2.4	16.7	11.4
		Total	**63.7**	**8.2**	**1.0**	**0.8**	**1.8**	**1.4**	**2.6**	**8.9**	**11.8**
Irrigated rice	Matam	Male	42.3	24.1	0.5	0.0	0.2	1.1	0.5	16.1	15.3
		Female	51.0	6.3	0.1	0.0	17.7	0.0	0.0	20.6	4.3
		Total	**42.5**	**23.7**	**0.5**	**0.0**	**0.6**	**1.0**	**0.5**	**16.2**	**15.0**
	Saint-Louis	Male	65.2	9.6	1.8	0.0	1.1	1.2	0.6	9.9	10.6
		Female	54.4	4.9	0.0	0.7	4.6	0.0	0.0	12.3	23.1
		Total	**64.1**	**9.2**	**1.7**	**0.1**	**1.4**	**1.1**	**0.6**	**10.1**	**11.8**
	Total	Male	57.1	14.2	1.3	0.0	0.8	1.3	1.2	11.9	12.2
		Female	54.0	5.0	0.0	0.7	6.0	0.0	0.0	13.1	21.2
		Total	**56.9**	**13.6**	**1.2**	**0.0**	**1.1**	**1.2**	**1.1**	**12.0**	**12.9**
Rainfed rice	Sedhiou	Male	51.7	4.9	0.8	12.0	4.2	0.5	4.5	7.8	13.6
		Female	48.0	0.0	0.0	3.6	0.0	0.0	27.5	1.9	18.9
		Total	**51.5**	**4.7**	**0.7**	**11.6**	**4.0**	**0.4**	**5.7**	**7.5**	**13.9**
	Kolda	Male	77.0	3.8	0.0	0.4	0.9	0.1	0.8	9.3	7.7
		Female	21.2	14.7	0.0	0.0	7.4	0.0	0.0	53.5	3.2
		Total	**76.8**	**3.9**	**0.0**	**0.4**	**0.9**	**0.1**	**0.8**	**9.5**	**7.6**
	Ziguinchor	Male	48.8	10.3	6.7	0.4	1.3	0.7	6.1	4.7	21.0
		Female	62.1	0.5	4.4	5.3	0.0	2.1	0.0	20.5	5.0
		Total	**52.7**	**7.4**	**6.0**	**1.9**	**0.9**	**1.1**	**4.3**	**9.4**	**16.3**
	Total	Male	59.7	6.6	1.8	2.4	1.4	0.3	5.0	9.6	13.1
		Female	55.3	1.4	3.1	4.0	0.1	1.8	1.9	27.4	5.1
		Total	**59.2**	**5.9**	**1.9**	**2.6**	**1.3**	**0.5**	**4.6**	**11.9**	**12.1**
Millet	Fatick	Male	70.7	3.5	0.0	0.0	1.3	2.9	0.1	5.9	15.5
		Female	74.7	0.0	0.0	0.0	0.0	0.0	0.0	17.9	7.4
		Total	**70.8**	**3.5**	**0.0**	**0.0**	**1.3**	**2.9**	**0.1**	**6.0**	**15.4**
	Kaolack	Male	63.5	6.9	0.4	0.0	2.1	0.7	1.7	8.2	16.5
		Female	55.2	12.6	0.0	0.0	0.0	0.0	7.5	5.5	19.1
		Total	**63.0**	**7.2**	**0.4**	**0.0**	**2.0**	**0.6**	**2.0**	**8.0**	**16.7**
	Kaffrine	Male	72.6	10.9	0.0	0.0	0.6	2.6	2.7	4.0	6.5
		Female	70.0	7.3	0.0	0.0	0.0	0.0	0.0	22.7	0.0
		Total	**72.5**	**10.8**	**0.0**	**0.0**	**0.6**	**2.5**	**2.6**	**4.6**	**6.3**
	Total	Male	66.0	9.5	0.4	0.1	1.4	1.6	1.7	6.4	12.8
		Female	58.1	10.7	0.0	0.1	0.0	0.0	4.6	13.7	12.9
		Total	**65.7**	**9.5**	**0.4**	**0.1**	**1.4**	**1.5**	**1.8**	**6.6**	**12.8**
Corn	Fatick	Male	73.1	1.6	0.0	0.0	0.9	0.2	9.8	5.0	9.4
		Female	30.6	0.0	0.0	0.0	0.0	0.0	0.0	59.5	9.8
		Total	**69.6**	**1.4**	**0.0**	**0.0**	**0.8**	**0.2**	**9.0**	**9.5**	**9.4**

Value chain	Region	HOH gender	Agriculture	Livestock	Fishing	Hunting/ Gathering	Handicraft	Transport	Salaries	Migrant transfers	Other income
	Kaolack	Male	66.0	6.5	0.1	0.0	0.5	1.6	1.0	10.6	13.7
		Female	45.5	7.7	0.0	0.0	0.0	0.0	0.0	46.8	0.0
		Total	**65.3**	**6.5**	**0.1**	**0.0**	**0.4**	**1.6**	**1.0**	**11.7**	**13.3**
	Kaffrine	Male	72.4	6.7	0.0	0.1	1.1	2.9	0.4	4.2	12.0
		Female	80.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	10.0
		Total	**72.4**	**6.7**	**0.0**	**0.1**	**1.1**	**2.9**	**0.4**	**4.2**	**12.0**
	Sedhiou	Male	52.3	9.6	2.3	11.7	0.8	0.0	0.5	8.5	14.2
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**52.3**	**9.6**	**2.3**	**11.7**	**0.8**	**0.0**	**0.5**	**8.5**	**14.2**
	Kolda	Male	78.7	4.7	0.1	0.0	0.9	0.8	0.6	8.1	6.0
		Female	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0
		Total	**78.6**	**4.6**	**0.1**	**0.0**	**0.9**	**0.8**	**0.6**	**8.0**	**6.3**
	Ziguinchor	Male	71.2	14.7	0.0	1.7	0.0	0.0	0.0	0.0	12.4
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**71.2**	**14.7**	**0.0**	**1.7**	**0.0**	**0.0**	**0.0**	**0.0**	**12.4**
	Total	Male	71.9	6.0	0.3	1.0	0.9	1.2	1.2	8.5	9.0
		Female	46.5	14.9	1.8	0.0	0.0	0.0	0.0	25.2	11.6
		Total	**71.4**	**6.2**	**0.3**	**1.0**	**0.9**	**1.1**	**1.1**	**8.9**	**9.1**
Total cereals		**Male**	**65.4**	**8.4**	**0.7**	**0.8**	**1.2**	**1.2**	**2.2**	**8.4**	**11.7**
		Female	**54.8**	**5.6**	**1.8**	**2.1**	**0.9**	**0.9**	**2.0**	**21.9**	**10.0**
		Total	**64.8**	**8.2**	**0.8**	**0.9**	**1.2**	**1.1**	**2.2**	**9.1**	**11.6**
Total ATV		**Male**	**60.1**	**9.0**	**1.7**	**0.6**	**3.0**	**1.5**	**3.8**	**8.7**	**11.8**
		Female	**55.9**	**8.1**	**0.5**	**0.3**	**1.0**	**7.5**	**2.8**	**10.9**	**12.9**
		Total	**59.4**	**8.8**	**1.5**	**0.6**	**2.6**	**2.5**	**3.6**	**9.0**	**12.0**
Total mango		**Male**	**64.5**	**4.7**	**1.3**	**2.1**	**5.1**	**1.7**	**2.6**	**6.0**	**12.1**
		Female	**65.5**	**0.8**	**0.5**	**4.5**	**0.0**	**15.1**	**5.1**	**5.1**	**3.4**
		Total	**64.6**	**4.3**	**1.2**	**2.3**	**4.6**	**3.0**	**2.8**	**5.9**	**11.2**
Total small ruminants		**Male**	**63.4**	**9.8**	**0.7**	**0.7**	**1.1**	**1.3**	**2.5**	**8.8**	**11.6**
		Female	**48.4**	**10.6**	**1.3**	**0.1**	**1.6**	**6.0**	**2.1**	**18.6**	**11.3**
		Total	**62.5**	**9.8**	**0.7**	**0.7**	**1.2**	**1.6**	**2.5**	**9.4**	**11.6**

<u>Source</u>: IPAR, *Baseline Dooleel Mbay, 2022.*

3.1.3 Household credit and savings

Loan contracting is frequent, especially in cash

The implementation of innovative strategies to reduce the gap between the supply of credit and demand for it is one of the major challenges in the rural world. In the framework of this study, the results obtained show a considerable loan contracting. Indeed, more than half of the households have received loans. According to the nature of these loans, 46.3% of households have taken out loans in cash. Loans in kind concern only 9.3% of the households and this form of loan is mainly located in Saint-Louis and Kaolack in all VCs, and in Matam in irrigated rice production (**Table 3.8**).

In terms of the gender of the HOH, female-headed households took out relatively more cash loans (49% vs. 46.1%) than male-headed households. This was more common among female-headed households in the cereal value chain, particularly in the groundnut basin (corn and millet), and in Matam in rice production.

However, at the regional VC level, for corn in Kolda, irrigated rice in Sédhiou, and market gardening in Matam, the respective proportions of households with loans are less than 25%, and almost nonexistent in Kolda (Appendix Table 0.13).

Table 3.8   Distribution (%) of households with access to credit by HOH gender by region and value chain

Value chain	Region	Male			Female			Total		
		Credit (cash and/or kind)	Cash credit	Credit in kind	Credit (cash and/or kind)	Cash credit	Credit in kind	Credit (cash and/or kind)	Cash credit	Credit in kind
Dooleel Mbay area		51.0	46.1	9.5	55.1	49.0	7.0	51.3	46.3	9.3
Irrigated rice	Matam	50.9	28.2	23.1	61.7	61.7	8.9	51.1	29.0	22.8
	Saint-Louis	58.9	46.3	21.1	57.4	29.1	31.1	58.7	44.6	22.1
	Total irrigated rice	**55.4**	**39.6**	**21.4**	**57.8**	**32.4**	**28.9**	**55.5**	**39.1**	**21.9**
Rainfed rice	Sedhiou	20.7	19.7	0.9	42.3	11.8	30.6	21.8	19.3	2.5
	Kolda	44.6	42.7	2.6	19.8	19.8	0.0	44.5	42.6	2.6

Value chain	Region	Male			Female			Total		
		Credit (cash and/or kind)	Cash credit	Credit in kind	Credit (cash and/or kind)	Cash credit	Credit in kind	Credit (cash and/or kind)	Cash credit	Credit in kind
	Ziguinchor	20.6	19.8	0.8	55.4	53.5	2.0	30.9	29.7	1.2
	Total rainfed rice	**33.7**	**32.4**	**1.6**	**60.3**	**55.4**	**4.9**	**37.1**	**35.3**	**2.1**
Millet	Fatick	71.6	67.8	12.2	74.4	74.4	0.0	71.7	67.8	12.1
	Kaolack	68.8	57.7	16.5	66.7	64.4	2.3	68.7	58.1	15.7
	Kaffrine	61.0	59.9	12.0	90.9	90.9	0.0	61.9	60.8	11.6
	Total millet	**59.4**	**53.4**	**12.1**	**68.1**	**65.4**	**2.6**	**59.7**	**53.8**	**11.7**
Corn	Fatick	95.9	95.9	0.0	69.6	69.6	0.0	93.7	93.7	0.0
	Kaolack	85.3	80.1	34.8	100.0	100.0	0.0	85.7	80.7	33.8
	Kaffrine	59.0	48.2	12.5	100.0	100.0	0.0	59.1	48.4	12.4
	Sedhiou	41.9	39.1	2.8				41.9	39.1	2.8
	Kolda	34.9	32.7	4.0	0.0	0.0	0.0	34.6	32.4	4.0
	Ziguinchor	20.7	20.7	0.0				20.7	20.7	0.0
	Total corn	**49.0**	**45.3**	**9.6**	**56.8**	**56.8**	**0.0**	**49.2**	**45.5**	**9.4**
Total cereal		**50.5**	**45.0**	**10.3**	**61.3**	**54.4**	**7.4**	**51.1**	**45.5**	**10.1**
Total ATV		**47.8**	**44.8**	**8.2**	**47.9**	**42.8**	**6.5**	**47.8**	**44.5**	**7.9**
Total mango		**50.2**	**45.3**	**7.5**	**41.1**	**38.8**	**2.3**	**49.3**	**44.7**	**7.0**
Total livestock		**53.4**	**48.1**	**10.3**	**57.0**	**52.3**	**5.6**	**53.6**	**48.3**	**10.0**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Households take out loans from a variety of formal and informal actors

The duality between formal and informal institutions characterizes the financing of agricultural activities. In this study, the distribution of access to credit according to the type of financial service reveals a plurality of both formal and informal actors without a clear domination of one of them. As a result, it appears that households mainly access credit through friends and relatives (17.9%), banks (16%), or informal lenders (12.4%) (**Table 3.9**).

There is a clear difference in the gender distribution of the HOHs. Male-headed households are more likely to obtain credit from friends and family (19%) or banks (16.6%), whereas female-headed households are more likely to obtain loans through tontines (31.2%), especially in the groundnut basin, and also from microfinance schemes (12.5%). In addition, it is important to note that female-headed households receive more credit from non-governmental organizations (NGOs) (11.5% vs. 1.5%) than male-headed households.

In the regions, this heterogeneity of credit services still exists but with very variable characteristics from one region to another. In the groundnut basin, the granting of credit is more considerable with banks, microcredit structures, informal lenders, and friends or family members. In contrast, the southern zone is marked by a monotony of types of actors granting credit, with a low percentage of households having taken out credit. This is confirmed by the low proportions of households in the Ziguinchor region that have taken out loans, regardless of the VC or source of the loan (Appendix Table 0.15 and Table 0.16).

Table 3.9   Distribution of households with access to credit by type of financial service by region and value chain (%)

Value chain	Region	HOH gender	NGO	Formal lender (bank/ financial institution)	Informal lender	Friends or family	Microfinance facility	Tontine and others	Other credit
Dooleel Mbay area		Male	1.5	16.6	13.1	19.0	11.0	9.1	1.9
		Female	11.5	9.0	3.2	5.4	12.5	31.2	1.3
		Total	**2.3**	**16.0**	**12.4**	**17.9**	**11.1**	**10.8**	**1.8**
Irrigated rice	Matam	Male	0.5	21.2	20.9	6.3	2.5	0.7	0.4
		Female	0.0	0.0	52.9	8.9	8.9	0.0	0.0
		Total	**0.5**	**20.7**	**21.6**	**6.3**	**2.6**	**0.7**	**0.4**
	Saint-Louis	Male	3.4	30.0	16.7	20.1	10.2	6.2	0.0
		Female	3.6	17.7	14.3	17.3	14.6	24.0	0.0

Value chain	Region	HOH gender	NGO	Formal lender (bank/financial institution)	Informal lender	Friends or family	Microfinance facility	Tontine and others	Other credit
		Total	**3.4**	**28.8**	**16.5**	**19.9**	**10.6**	**7.9**	**0.0**
	Total	Male	2.4	26.3	17.7	15.6	7.3	4.2	0.3
		Female	3.2	15.9	18.2	16.5	14.0	21.5	0.0
		Total	**2.4**	**25.5**	**17.7**	**15.6**	**7.8**	**5.4**	**0.2**
Rainfed rice	Sedhiou	Male	0.6	5.4	5.0	6.7	3.7	1.1	2.5
		Female	0.0	11.8	0.0	0.0	0.0	0.0	30.6
		Total	**0.5**	**5.7**	**4.7**	**6.3**	**3.5**	**1.0**	**4.0**
	Kolda	Male	2.3	20.0	0.5	18.6	18.6	3.9	1.3
		Female	0.0	0.0	0.0	19.8	0.0	0.0	0.0
		Total	**2.3**	**20.0**	**0.5**	**18.6**	**18.5**	**3.8**	**1.3**
	Ziguinchor	Male	0.0	11.4	0.0	2.0	5.9	6.8	0.0
		Female	53.5	0.0	0.0	0.0	26.7	26.7	2.0
		Total	**15.8**	**8.0**	**0.0**	**1.4**	**12.1**	**12.7**	**0.6**
	Total	Male	1.1	14.6	1.1	11.0	10.7	5.7	1.0
		Female	37.2	0.8	1.5	0.3	22.9	35.8	3.4
		Total	**5.7**	**12.9**	**1.2**	**9.6**	**12.2**	**9.5**	**1.3**
Mil	Fatick	Male	0.0	31.5	17.5	35.2	0.0	7.3	0.5
		Female	0.0	0.0	0.0	0.0	0.0	74.4	0.0
		Total	**0.0**	**31.1**	**17.3**	**34.8**	**0.0**	**8.1**	**0.5**
	Kaolack	Male	0.5	18.3	28.1	23.4	6.3	13.7	2.0
		Female	2.3	59.2	0.0	2.8	0.0	0.0	2.4
		Total	**0.6**	**20.7**	**26.4**	**22.1**	**5.9**	**12.8**	**2.0**
	Kaffrine	Male	3.4	19.8	16.7	26.8	23.3	12.1	2.8
		Female	0.0	45.5	0.0	0.0	0.0	90.9	0.0
		Total	**3.3**	**20.6**	**16.2**	**26.0**	**22.6**	**14.4**	**2.7**
	Total	Male	1.9	17.8	19.2	24.4	9.5	11.1	2.0
		Female	1.4	45.9	1.3	4.8	0.0	23.2	1.5
		Total	**1.9**	**18.8**	**18.6**	**23.7**	**9.2**	**11.5**	**2.0**
Corn	Fatick	Male	0.0	23.7	26.4	52.0	5.7	22.5	0.0
		Female	0.0	0.0	0.0	0.0	0.0	69.6	0.0
		Total	**0.0**	**21.7**	**24.2**	**47.7**	**5.2**	**26.4**	**0.0**
	Kaolack	Male	5.4	25.1	42.0	41.0	16.3	27.1	0.0
		Female	0.0	0.0	0.0	22.7	0.0	100.0	0.0
		Total	**5.3**	**24.3**	**40.7**	**40.5**	**15.8**	**29.4**	**0.0**
	Kaffrine	Male	0.0	13.2	20.4	27.1	11.0	10.6	3.0
		Female	0.0	100.0	0.0	100.0	0.0	0.0	0.0
		Total	**0.0**	**13.5**	**20.3**	**27.4**	**10.9**	**10.5**	**2.9**
	Sedhiou	Male	0.0	2.6	9.2	24.9	3.0	1.0	4.4
		Female							
		Total	**0.0**	**2.6**	**9.2**	**24.9**	**3.0**	**1.0**	**4.4**
	Kolda	Male	0.5	9.1	4.0	9.9	13.3	4.1	1.3
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**0.5**	**9.0**	**4.0**	**9.8**	**13.2**	**4.0**	**1.3**
	Ziguinchor	Male	0.0	0.0	0.0	0.0	0.0	20.7	0.0
		Female							
		Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**20.7**	**0.0**
	Total	Male	1.2	12.0	13.6	20.1	11.8	9.4	1.5
		Female	0.0	2.1	0.0	24.4	0.0	46.0	0.0
		Total	1.2	11.8	13.3	20.2	11.5	10.2	1.4
Total cereals		**Male**	**1.6**	**16.4**	**13.6**	**19.3**	**10.2**	**8.7**	**1.4**
		Female	**19.7**	**13.5**	**3.8**	**6.4**	**13.8**	**31.9**	**2.1**
		Total	**2.6**	**16.3**	**13.1**	**18.6**	**10.4**	**10.0**	**1.5**
Total ATV		**Male**	**1.6**	**17.1**	**11.8**	**17.5**	**10.5**	**12.1**	**1.4**
		Female	**2.1**	**3.9**	**2.4**	**4.2**	**11.1**	**30.4**	**0.3**
		Total	**1.7**	**14.9**	**10.3**	**15.3**	**10.6**	**15.1**	**1.2**
Total mango		**Male**	**1.6**	**12.9**	**12.5**	**16.7**	**10.2**	**6.5**	**3.7**
		Female	**0.7**	**0.9**	**0.0**	**0.0**	**0.0**	**37.9**	**1.6**
		Total	**1.5**	**11.8**	**11.3**	**15.1**	**9.2**	**9.6**	**3.5**
Total small ruminants		**Male**	**1.4**	**16.3**	**14.7**	**20.4**	**10.4**	**10.1**	**2.0**
		Female	**1.3**	**11.3**	**5.1**	**7.3**	**7.6**	**35.8**	**1.2**
		Total	**1.4**	**16.0**	**14.1**	**19.6**	**10.3**	**11.6**	**1.9**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

The average amount of credit taken out is higher among male-headed households

Households that took out loans received an average of 273,168 FCFA (**Table 3.10**). These results highlight that households in the mango VC received a larger average loan (292,257 FCFA). However, the fairly high standard deviation of the credit amount (723,097 FCFA) reflects the existence of strong disparities between households in this same VC. By way of illustration, the amounts of credit received by mango-producing households in Ziguinchor vary between 2,500 FCFA and 5,000,000 FCFA (Appendix Table 0.17 and Table 0.18).

The amount of credit granted to households practicing market gardening is estimated at 254,612 FCFA, the lowest average amount observed among the types of VCs. In contrast, for small ruminants, the Saint-Louis region has an average amount of credit that is higher than the overall average with 388,147 FCFA. However, the Ziguinchor region is characterized by the lowest average amount of credit received by pastoral households (78,430 FCFA).

Households with a male HOH received more credit on average with 287,815 FCFA compared with 109,010 FCFA for households with a female HOH (**Table 3.10**). This situation whereby male-headed households have more credit is seen in all VCs except for small ruminants (528,978 FCFA for female-headed households vs. 265,092 FCFA for male-headed households).

Table 3.10   Average amount of credit received per household by HOH gender by region and value chain

Value chain	Region	Gender HOH	Total amount of credit (in FCFA)			
			Mean	Standard deviation	Minimum	Maximum
Dooleel Mbay area		Male	287 815	530 936	1 000	8 600 000
		Female	109010	118965	2000	1023000
		Total	**273168**	**512216**	**1000**	**8600000**
Irrigated rice	Matam	Male	274 353	363 409	1 000	1 000 000
		Female	62 917	31 739	50 000	140 000
		Total	**268 938**	**360 311**	**1 000**	**1 000 000**
	Saint-Louis	Male	428 018	512 792	15 000	3 750 000
		Female	239 050	194 867	30 000	585 000
		Total	**412 196**	**496 842**	**15 000**	**3 750 000**
	Total	Male	378 556	477 618	1 000	3 750 000
		Female	220 097	192 280	30 000	585 000
		Total	**368 003**	**465 774**	**1 000**	**3 750 000**
Rainfed rice	Sedhiou	Male	254 360	356 092	7 000	1 000 000
		Female	53 768	28 768	36 000	100 000
		Total	**237 382**	**345 327**	**7 000**	**1 000 000**
	Kolda	Male	194 225	162 586	15 000	600 000
		Female	20 000	-	20 000	20 000
		Total	**193 899**	**162 608**	**15 000**	**600 000**
	Ziguinchor	Male	176 094	86 817	10 000	250 000
		Female	96 649	52 158	5 000	150 000
		Total	**134 858**	**81 311**	**5 000**	**250 000**
	Total	Male	274 827	430 690	7 000	2 000 000
		Female	94 580	48 533	5 000	250 000
		Total	**239 397**	**393 223**	**5 000**	**2 000 000**
Millet	Fatick	Male	239 166	422 007	2 000	5 050 000
		Female	25 000	-	25 000	25 000
		Total	**236 602**	**420 119**	**2 000**	**5 050 000**
	Kaolack	Male	287224	751557	5000	8600000
		Female	276581	75877	45000	303500
		Total	**286601**	**729467**	**5000**	**8600000**
	Kaffrine	Male	318 439	396 076	1 500	2 100 000
		Female	127 500	112 634	15 000	240 000
		Total	**310 010**	**389 933**	**1 500**	**2 100 000**
	Total	Male	277266	559068	1500	8600000
		Female	204536	124958	10000	303500

Value chain	Region	Gender HOH	Total amount of credit (in FCFA)			
			Mean	Standard deviation	Minimum	Maximum
		Total	274426	548777	1500	8600000
Corn	Fatick	Male	189 466	119 981	30 000	400 000
		Female	35 449	1 434	35 000	40 000
		Total	180 032	121 975	30 000	400 000
	Kaolack	Male	274 416	329 833	3 000	5 000 000
		Female	12 266	4 195	10 000	20 000
		Total	265 147	327 548	3 000	5 000 000
	Kaffrine	Male	219 687	269 294	15 000	1 150 000
		Female	120 000	-	120 000	120 000
		Total	219 057	268 558	15 000	1 150 000
	Sedhiou	Male	144 696	153 197	15 000	1 000 000
		Female				
		Total	144 696	153 197	15 000	1 000 000
	Kolda	Male	237 699	582 419	5 000	3 525 000
		Female				
		Total	237 699	582 419	5 000	3 525 000
	Ziguinchor	Male	10 000	-	10 000	10 000
		Female				
		Total	10 000	-	10 000	10 000
	Total	Male	230 618	417 965	3 000	5 000 000
		Female	25 811	23 471	2 500	120 000
		Total	225 422	413 901	2 500	5 000 000
Total cereals		Male	277745	495653	1000	8600000
		Female	132505	120759	2500	585000
		Total	268173	481394	1000	8600000
Total ATV		Male	289 899	323 125	2 000	2 750 000
		Female	74 379	107 279	2 000	1 023 000
		Total	254 612	309 125	2 000	2 750 000
Total mango		Male	314 315	750 756	2 000	5 050 000
		Female	46 957	62 939	5 000	200 000
		Total	292 257	723 097	2 000	5 050 000
Total small ruminants		Male	265 092	472 184	1 000	8 600 000
		Female	528 978	1 134 205	2 000	3 500 000
		Total	281 704	542 218	1 000	8 600 000

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Households tend to save via their mobile money account

The analysis of the Table 3.11 reveals that about 30%of households have savings. Households whose HOH is a woman save slightly more than those whose HOH is a man (36.2 vs. 29.7%). The proportion of households saving varies slightly by VC, and only ATV-producing households save less than the average observed for all agricultural households (26.6). In addition, the proportion of female-headed households that save is relatively higher in cereals, particularly in Kaffrine for corn (100%) and in Ziguinchor for rainfed rice (87.4%), but also for mango in Sédhiou (100%) and Ziguinchor (86.1%). Among households that raise small ruminants, a significant proportion have savings (30.2%), especially in the Kaolack region (49.4%).

According to the results, these mobilized savings are mainly available in mobile accounts and concern 24% of households. Savings mobilized through Orange Money, Wave, Free Money, etc., are more prevalent among cereal-producing households, particularly in Kaolack for millet (44.5%) and corn (44.5%), but also in Ziguinchor for corn (41.4%) and rainfed rice (35.9%).

Other forms of savings mobilization (post offices, insurance companies, cooperatives, and hoarding) are rarely used, although banks and hoarding are observed at 7.6% and 3.2%, respectively. Banks are used by relatively more households with a male HOH, especially for millet in Fatick (24.5%) and mango in Ziguinchor (20.4%). In contrast, hoarding is more common in households with a female HOH who

are mango producers in Sédhiou (100%) and ATV producers in Fatick (70.6%) (Appendix Table 0.19 and Table 0.20).

Table 3.11   Percentage of households with savings by source, value chain, and region (%)

Value chain	Region	HOH gender	Mean	Post Office/ National Savings Office	Bank/ microfinance institution	Insurance company	Mobile banking	Cooperative	Hoarding	Other
Dooleel Mbay area		Male	29.7	0.6	7.8	0.6	23.6	0.7	2.9	0.9
		Female	36.2	0.3	5.6	0.0	29.0	0.2	6.9	0.7
		Total	**30.2**	**0.6**	**7.6**	**0.6**	**24.0**	**0.7**	**3.2**	**0.9**
Irrigated rice	Matam	Male	13.3	0.0	1.2	0.4	12.3	0.4	4.0	0.0
		Female	52.9	0.0	0.0	0.0	52.9	0.0	0.0	0.0
		Total	**14.2**	**0.0**	**1.2**	**0.4**	**13.2**	**0.4**	**3.9**	**0.0**
	Saint-Louis	Male	30.6	0.0	7.5	0.6	23.0	0.0	9.7	0.4
		Female	30.5	0.0	0.0	0.0	26.0	0.0	5.6	0.0
		Total	**30.6**	**0.0**	**6.8**	**0.5**	**23.3**	**0.0**	**9.3**	**0.4**
	Total	Male	25.1	0.0	5.4	0.5	19.7	0.1	7.5	0.3
		Female	32.8	0.0	0.0	0.0	28.7	0.0	5.0	0.0
		Total	**25.6**	**0.0**	**5.0**	**0.5**	**20.3**	**0.1**	**7.4**	**0.2**
Rainfed rice	Sedhiou	Male	31.8	0.0	12.3	0.0	22.9	0.0	7.3	0.6
		Female	11.8	0.0	0.0	0.0	0.0	0.0	11.8	0.0
		Total	**30.7**	**0.0**	**11.6**	**0.0**	**21.7**	**0.0**	**7.6**	**0.5**
	Kolda	Male	26.6	1.3	5.1	0.0	24.3	2.8	0.8	0.0
		Female	19.8	0.0	0.0	0.0	19.8	0.0	0.0	0.0
		Total	**26.6**	**1.3**	**5.1**	**0.0**	**24.3**	**2.7**	**.8**	**0.0**
	Ziguinchor	Male	31.8	0.0	16.9	0.0	15.7	0.0	1.6	1.3
		Female	87.4	0.0	26.7	0.0	84.3	0.0	3.1	0.0
		Total	**48.2**	**0.0**	**19.8**	**0.0**	**35.9**	**0.0**	**2.0**	**0.9**
	Total	Male	28.9	0.6	8.6	0.0	22.4	1.3	2.0	0.4
		Female	65.6	0.0	18.6	0.0	62.6	0.0	3.0	0.0
		Total	**33.6**	**0.5**	**9.8**	**0.0**	**27.5**	**1.1**	**2.2**	**0.4**
Millet	Fatick	Male	35.6	0.0	24.7	0.0	15.2	0.0	5.3	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**35.1**	**0.0**	**24.4**	**0.0**	**15.1**	**0.0**	**5.2**	**0.0**
	Kaolack	Male	47.1	0.1	9.3	0.0	43.3	1.3	0.5	0.7
		Female	64.2	0.0	0.0	0.0	64.2	2.3	0.0	0.0
		Total	**48.1**	**0.1**	**8.7**	**0.0**	**44.5**	**1.4**	**0.5**	**0.6**
	Kaffrine	Male	17.1	0.0	1.0	0.0	12.7	.8	2.7	0.3
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**16.5**	**0.0**	**1.0**	**0.0**	**12.3**	**.7**	**2.7**	**0.3**
	Total	Male	32.7	0.2	8.5	0.1	24.8	1.1	2.7	0.3
		Female	40.3	0.0	0.0	0.0	40.3	1.4	0.0	0.0
		Total	**33.0**	**0.2**	**8.2**	**0.1**	**25.4**	**1.1**	**2.6**	**0.3**
Corn	Fatick	Male	6.7	0.0	1.0	0.0	5.7	0.0	5.7	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**6.2**	**0.0**	**0.9**	**0.0**	**5.3**	**0.0**	**5.3**	**0.0**
	Kaolack	Male	49.0	0.3	15.3	1.6	45.8	4.6	0.4	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**47.5**	**0.3**	**14.9**	**1.6**	**44.5**	**4.5**	**0.4**	**0.0**
	Kaffrine	Male	16.2	0.0	3.0	0.0	13.2	0.0	0.0	0.0
		Female	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
		Total	**16.5**	**0.0**	**3.0**	**0.0**	**13.5**	**0.0**	**0.0**	**0.0**
	Sedhiou	Male	32.7	0.0	1.6	0.0	30.7	0.0	1.6	0.0
		Female		0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**32.7**	**0.0**	**1.6**	**0.0**	**30.7**	**0.0**	**1.6**	**0.0**
	Kolda	Male	25.0	0.0	10.0	0.0	23.5	0.0	0.5	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**24.8**	**0.0**	**10.0**	**0.0**	**23.3**	**0.0**	**0.5**	**0.0**
	Ziguinchor	Male	70.7	0.0	0.0	0.0	41.4	0.0	29.3	0.0
		Female		0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**70.7**	**0.0**	**0.0**	**0.0**	**41.4**	**0.0**	**29.3**	**0.0**
	Total	Male	27.4	0.0	8.4	.2	25.1	0.7	1.4	0.0
		Female	10.8	0.0	0.0	0.0	10.8	0.0	8.8	0.0
		Total	**27.0**	**0.0**	**8.2**	**0.2**	**24.8**	**0.7**	**1.5**	**0.0**
Total cereals		**Male**	**29.4**	**0.2**	**8.1**	**0.2**	**23.8**	**0.9**	**2.7**	**0.2**
		Female	**48.7**	**0.0**	**9.5**	**0.0**	**46.6**	**0.3**	**3.3**	**0.0**

Value chain	Region	HOH gender	Mean	Post Office/ National Savings Office	Bank/ microfinance institution	Insurance company	Mobile banking	Cooperative	Hoarding	Other
		Total	30.5	0.2	8.2	0.2	25.1	0.9	2.7	0.2
Total ATV		Male	27.6	0.4	5.9	0.1	19.3	0.2	3.1	3.5
		Female	22.0	0.5	1.3	0.0	9.1	0.0	11.1	1.4
		Total	26.6	0.4	5.1	0.1	17.6	0.1	4.4	3.2
Total mango		Male	39.7	2.1	13.7	2.7	32.1	1.0	3.9	1.2
		Female	54.3	0.0	0.0	0.0	28.4	0.7	23.5	2.5
		Total	41.1	1.9	12.4	2.5	31.8	1.0	5.8	1.3
Total small ruminants		Male	30.6	0.6	8.9	.8	24.4	0.9	2.8	1.0
		Female	23.2	0.4	1.0	0.0	19.8	0.3	3.1	1.0
		Total	30.2	0.6	8.4	0.7	24.1	0.9	2.8	1.0

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.1.4 Household poverty level

Greater purchasing power among female-headed households

To obtain an estimate of the average daily per capita consumption for the household, the average daily consumption of the household is divided by its size (the number of its members). The results in Table 3.12 reveal that an inhabitant of the catchment area has an average daily expenditure of 665 FCFA. Female-headed households have a higher average per capita expenditure per day (774 FCFA) compared with male-headed households (655 FCFA).

The analysis by VC shows that households producing vegetables have the highest average daily per capita consumption expenditure (803 FCFA), whereas those involved in mango VCs have lower daily consumption expenditure (676 FCFA).

According to the type of cereal, the irrigated rice value chain in Matam (923 FCFA), the corn value chain in Kaolack (827 FCFA), and the rainfed rice value chain in Sédhiou (739 FCFA) have the highest average daily per capita expenditures. While the lowest average daily per capita expenditures are found in the Fatick corn (433 FCFA), Kolda rainfed rice (450 FCFA), and Kaffrine corn (451 FCFA) value chains.

For ATVs (Appendix Table 0.21), the regions of Saint-Louis (1043 FCFA), Matam (913 FCFA), and Kaolack (845 FCFA) dominate in average per capita daily expenditures, whereas the regions of Kolda (492 FCFA) and Sédhiou (607 FCFA) are at the bottom. The mango VC has the highest average per capita daily expenditure in the Sédhiou region (792 FCFA), followed by Ziguinchor (606 FCFA) and Kolda (537 FCFA).

For the small ruminant VC (Appendix Table 0.22), the regions of Matam (853 FCFA) and Saint-Louis (814 FCFA) dominate in terms of average per capita daily expenditure, in contrast to the regions of Ziguinchor (563 FCFA) and Fatick (535 FCFA).

Table 3.12   Average daily per capita consumption expenditure (FCFA) by gender and household type by region and value chain

Value chain	Region	HOH gender	M&F	FNM	Set
Dooleel Mbay area		Male	655		655
		Female	664	1,269	774
		Total	656	1,269	665
Irrigated rice	Matam	Male	927		927
		Female	755		755
		Total	923		923
	Saint-Louis	Male	697		697
		Female	518	535	518
		Total	681	535	680
	Total	Male	774		774

Value chain	Region	HOH gender	M&F	FNM	Set
		Female	543	535	542
		Total	**758**	**535**	**758**
Rainfed rice	Sedhiou	Male	757		757
		Female	450	333	411
		Total	**746**	**333**	**739**
	Kolda	Male	449		449
		Female	511	1,521	636
		Total	**450**	**1,521**	**450**
	Ziguinchor	Male	521		521
		Female	541	435	510
		Total	**526**	**435**	**518**
	Total	Male	568		568
		Female	589	438	533
		Total	**570**	**438**	**564**
Millet	Fatick	Male	552		552
		Female	385		385
		Total	**550**		**550**
	Kaolack	Male	622		622
		Female	1,318	621	1,266
		Total	**661**	**621**	**661**
	Kaffrine	Male	576		576
		Female	1,135		1,135
		Total	**593**		**593**
	Total	Male	600		600
		Female	1,106	621	1,084
		Total	**617**	**621**	**617**
Corn	Fatick	Male	401		401
		Female	781		781
		Total	**433**		**433**
	Kaolack	Male	829		829
		Female	750	750	750
		Total	**827**	**750**	**827**
	Kaffrine	Male	450		450
		Female	750		750
		Total	**451**		**451**
	Sedhiou	Male	709		709
		Female			
		Total	**709**		**709**
	Kolda	Male	630		630
		Female	345	1,562	978
		Total	**629**	**1,562**	**632**
	Ziguinchor	Male	471		471
		Female			
		Total	**471**		**471**
	Total	Male	633		633
		Female	576	915	653
		Total	**632**	**915**	**634**
Total cereals		**Male**	**624**		**624**
		Female	**725**	**503**	**674**
		Total	**628**	**503**	**627**
Total ATV		**Male**	**786**		**786**
		Female	**603**	**2,898**	**887**
		Total	**759**	**2,898**	**803**
Total mango		**Male**	**696**		**696**
		Female	**532**	**394**	**496**
		Total	**684**	**394**	**676**
Total small ruminants		**Male**	**652**		**652**
		Female	**745**	**1,922**	**939**
		Total	**657**	**1,922**	**669**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Slightly more than half of the people in the intervention area are poor, with poverty slightly less prevalent in female-headed households than in male-headed households, but more pronounced in households with only adult women

The poverty line of $1.90/day in 2014 purchasing power parity (PPP) was used to measure poverty. This threshold was converted into local currency units at the 2014 PPP exchange rate, estimated at 243.62 FCFA according to World Bank data, and then increased using the Harmonized Index of Consumer Prices (HICP, base 2014) at the survey period (2021) corresponding to 112. This gives a poverty line of 518.4 FCFA per person per day.

Thus, the results of Table 3.13 show that slightly more than one person in two is poor in the project intervention zone (PIZ), or 50.2%. This is close to the poverty rate for people living in rural areas (53.6%), according to the ANSD's Harmonized Household Living Conditions Survey (EHCVM) report (September 2021). This poverty situation is more sustained for people living in households headed by men (50.2%) than for those headed by women (49.4%). In addition, poverty is more prevalent in female-only households (64.3%) than in households with both men and women (50.0%).

Overall, there is not much variation in the level of poverty across VC types. However, the corn VC in Kaffrine (69.8%), the corn VC in Fatick (68.9%), and the rainfed rice VC in Ziguinchor (63.6%), the corn VC in Kolda (57.8%), and the rainfed rice VC in Kolda (57.7%) stand out for their high level of poverty. Virtually all the same regions cited above in the cereal VC also have more people living in poverty in the vegetable VC and in the small ruminants VC (Appendix Table 0.23 and Table 0.24). This finding assumes that poverty levels are not related to household VC types.

Table 3.13   Incidence of poverty (%) by gender and household type by region and value chain

Value chain	Region	HOH gender	M&F	FNM	Set
Dooleel Mbay area		Male	50.2	0.0	50.2
		Female	46.2	64.3	49.4
		Total	**50.0**	**64.3**	**50.2**
Irrigated rice	Matam	Male	18.0	0.0	18.0
		Female	8.9	0.0	8.9
		Total	**17.8**	**0.0**	**17.8**
	Saint-Louis	Male	42.6	0.0	42.6
		Female	50.2	74.5	51.4
		Total	**43.3**	**74.5**	**43.4**
	Total	Male	35.2	0.0	35.2
		Female	45.8	74.5	47.1
		Total	**35.9**	**74.5**	**36.0**
Rainfed rice	Sedhiou	Male	41.2	0.0	41.2
		Female	63.3	100.0	75.5
		Total	**42.0**	**100.0**	**43.0**
	Kolda	Male	57.9	0.0	57.9
		Female	22.5	0.0	19.8
		Total	**57.7**	**0.0**	**57.7**
	Ziguinchor	Male	63.0	0.0	63.0
		Female	53.2	93.3	64.9
		Total	**60.8**	**93.3**	**63.6**
	Total	Male	53.2	0.0	53.2
		Female	46.5	91.9	63.3
		Total	**52.7**	**91.9**	**54.5**
Millet	Fatick	Male	53.4	0.0	53.4
		Female	74.4	0.0	74.4
		Total	**53.6**	**0.0**	**53.6**
	Kaolack	Male	45.1	0.0	45.1
		Female	10.1	36.9	12.1
		Total	**43.1**	**36.9**	**43.1**
	Kaffrine	Male	55.8	0.0	55.8
		Female	9.1	0.0	9.1

Value chain	Region	HOH gender	M&F	FNM	Set
		Total	**54.4**	**0.0**	**54.4**
	Total	Male	51.3	0.0	51.3
		Female	22.8	36.9	23.4
		Total	**50.3**	**36.9**	**50.3**
Corn	Fatick	Male	75.1	0.0	75.1
		Female	0.0	0.0	0.0
		Total	**68.9**	**0.0**	**68.9**
	Kaolack	Male	49.3	0.0	49.3
		Female	0.0	0.0	0.0
		Total	**48.1**	**0.0**	**47.8**
	Kaffrine	Male	70.1	0.0	70.1
		Female	0.0	0.0	0.0
		Total	**69.8**	**0.0**	**69.8**
	Sedhiou	Male	48.8	0.0	48.8
		Female	0.0	0.0	0.0
		Total	**48.8**	**0.0**	**48.8**
	Kolda	Male	57.9	0.0	57.9
		Female	100.0	0.0	48.0
		Total	**58.0**	**0.0**	**57.8**
	Ziguinchor	Male	50.0	0.0	50.0
		Female	0.0	0.0	0.0
		Total	**50.0**	**0.0**	**50.0**
	Total	Male	56.8	0.0	56.8
		Female	46.3	38.3	44.5
		Total	**56.6**	**38.3**	**56.6**
Total cereals		**Male**	**51.4**	**0.0**	**51.4**
		Female	**39.6**	**82.9**	**49.6**
		Total	**50.9**	**82.9**	**51.3**
Total ATV		**Male**	**45.7**	**0.0**	**45.7**
		Female	**52.7**	**24.6**	**49.3**
		Total	**46.8**	**24.6**	**46.3**
Total mango		**Male**	**47.5**	**0.0**	**47.5**
		Female	**56.5**	**100.0**	**67.9**
		Total	**48.2**	**100.0**	**49.6**
Total small ruminants		**Male**	**50.2**	**0.0**	**50.2**
		Female	**37.2**	**47.0**	**38.8**
		Total	**49.5**	**47.0**	**49.5**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Average daily consumption deficit of the poor at 192 FCFA per capita

To fully appreciate the level of poverty, it is important to understand the trends noted for the average deficit. This gap between the average consumption of the poor and the poverty line (Table 3.14, Table 0.25, and Table 0.26) is 192 FCFA per person. This gap is larger for people living in male-headed households (193 FCFA) compared with female-headed households (172 FCFA). The same is true for households with both male and female adults (192 FCFA) compared with households with only female adults (146 FCFA). The differences are most notable in the rainfed rice VC in Kolda (263 FCFA), corn in Kolda (251 FCFA), corn in Sédhiou (250 FCFA), corn in Fatick (197 FCFA), rainfed rice in Ziguinchor (195 FCFA), and millet in Fatick (195 FCFA), which have differences above the overall average (192 FCFA). The smallest differences are noted in the corn VCs of Ziguinchor (107 FCFA) and Kaolack (99 FCFA).

Table 3.14   Average daily per capita consumption deficit of the poor in relation to the poverty line (FCFA) by gender and household type by region and value chain

Value chain	Region	HOH gender	M&F	FNM	Set
Dooleel Mbay area		Male	-193		-193
		Female	-180	-146	-172
		Total	**-192**	**-146**	**-192**
Irrigated rice	Matam	Male	-168		-168
		Female	-102		-102
		Total	**-168**		**-168**
	Saint-Louis	Male	-147		-147
		Female	-88	-122	-90
		Total	**-141**	**-122**	**-141**
	Total	Male	-154		-154
		Female	-88	-122	-90
		Total	**-149**	**-122**	**-149**
Rainfed rice	Sedhiou	Male	-192		-192
		Female	-298	-185	-249
		Total	**-198**	**-185**	**-197**
	Kolda	Male	-263		-263
		Female	-161		-161
		Total	**-263**		**-263**
	Ziguinchor	Male	-192		-192
		Female	-265	-120	-204
		Total	**-206**	**-120**	**-195**
	Total	Male	-226		-226
		Female	-268	-137	-198
		Total	**-229**	**-137**	**-222**
Millet	Fatick	Male	-195		-195
		Female	-206		-206
		Total	**-195**		**-195**
	Kaolack	Male	-119		-119
		Female	-240	-102	-208
		Total	**-121**	**-102**	**-121**
	Kaffrine	Male	-168		-168
		Female	-72		-72
		Total	**-168**		**-168**
	Total	Male	-179		-179
		Female	-235	-102	-225
		Total	**-179**	**-102**	**-179**
Corn	Fatick	Male	-197		-197
		Female			
		Total	**-197**		**-197**
	Kaolack	Male	-99		-99
		Female			
		Total	**-99**		**-99**
	Kaffrine	Male	-196		-196
		Female			
		Total	**-196**		**-196**
	Sedhiou	Male	-250		-250
		Female			
		Total	**-250**		**-250**
	Kolda	Male	-252		-252
		Female	-173		-173
		Total	**-251**		**-251**
	Ziguinchor	Male	-107		-107
		Female			
		Total	**-107**		**-107**
	Total	Male	-218		-218
		Female	-165	-201	-172
		Total	**-217**	**-201**	**-217**
Total cereals		**Male**	**-200**		**-200**
		Female	**-210**	**-139**	**-183**

Value chain	Region	HOH gender	M&F	FNM	Set
		Total	**-200**	**-139**	**-199**
Total ATV		Male	-189		-189
		Female	-158	-198	-161
		Total	**-184**	**-198**	**-184**
Total mango		Male	-153		-153
		Female	-111	-124	-116
		Total	**-149**	**-124**	**-148**
Total small ruminants		Male	-183		-183
		Female	-176	-160	-172
		Total	**-183**	**-160**	**-183**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

The proportion of the deficit in relation to the poverty line is almost the same according to the HOH gender or the type of household

The level of poverty corresponds to the depth of poverty for people who are poor. It measures the extent to which those classified as poor are below the poverty line of 518.4 FCFA per person per day. The results in Table 3.15 show that the average percentage gap that people who are poor need to fill to reach the poverty line is 36.8. It varies very slightly according to the HOH gender or the type of household, as well as according to the types of VCs. Depending on the VC, the deficit is practically greater in the same regions identified above as poorer. For example, the average percentage of the deficit in relation to the threshold is more severe for corn producers in Kolda (49.9%), rainfed rice producers in Kolda (49.6%), corn producers in Sédhiou (49.3%), rainfed rice producers in Sédhiou (42.4%), corn producers in Kaffrine (39.9%), and corn producers in Fatick (39.1%). The Sédhiou and Kolda regions have the highest deficits for both market gardening and small ruminant breeding (Appendix Table 0.27 and Table 0.28).

Table 3.15   Average percentage of average daily consumption gap per capita of the poor in relation to the poverty line (%) by gender and household type by region and value chain

Value chain	Region	HOH gender	M&F	FNM	Set
Dooleel Mbay area		Male	-37.0		-37.0
		Female	-33.6	-29.5	-32.9
		Total	**-36.9**	**-29.5**	**-36.8**
Irrigated rice	Matam	Male	-31.7		-31.7
		Female	-19.6		-19.6
		Total	**-31.6**		**-31.6**
	Saint-Louis	Male	-28.5		-28.5
		Female	-19.4	-23.5	-19.6
		Total	**-27.6**	**-23.5**	**-27.6**
	Total	Male	-29.9		-29.9
		Female	-19.4	-23.5	-19.6
		Total	**-29.0**	**-23.5**	**-29.0**
Rainfed rice	Sedhiou	Male	-41.6		-41.6
		Female	-66.8	-35.7	-57.2
		Total	**-42.5**	**-35.7**	**-42.4**
	Kolda	Male	-49.7		-49.7
		Female	-31.1		-31.1
		Total	**-49.6**		**-49.6**
	Ziguinchor	Male	-34.8		-34.8
		Female	-51.8	-23.1	-40.3
		Total	**-36.8**	**-23.1**	**-35.8**
	Total	Male	-43.3		-43.3
		Female	-53.9	-27.5	-37.8
		Total	**-43.7**	**-27.5**	**-42.8**
Millet	Fatick	Male	-32.3		-32.3
		Female	-39.7		-39.7
		Total	**-32.4**		**-32.4**

Value chain	Region	HOH gender	M&F	FNM	Set
	Kaolack	Male	-24.8		-24.8
		Female	-44.9	-19.6	-43.7
		Total	**-25.2**	**-19.6**	**-25.2**
	Kaffrine	Male	-32.4		-32.4
		Female	-13.9		-13.9
		Total	**-32.3**		**-32.3**
	Total	Male	-33.4		-33.4
		Female	-46.0	-19.6	-45.4
		Total	**-33.6**	**-19.6**	**-33.6**
Corn	Fatick	Male	-39.1		-39.1
		Female			
		Total	**-39.1**		**-39.1**
	Kaolack	Male	-20.4		-20.4
		Female			
		Total	**-20.4**		**-20.4**
	Kaffrine	Male	-39.8		-39.8
		Female			
		Total	**-39.8**		**-39.8**
	Sedhiou	Male	-49.3		-49.3
		Female			
		Total	**-49.3**		**-49.3**
	Kolda	Male	-50.0		-50.0
		Female	-32.5		-32.5
		Total	**-49.9**		**-49.9**
	Ziguinchor	Male	-23.7		-23.7
		Female			
		Total	**-23.7**		**-23.7**
	Total	Male	-41.4		-41.4
		Female	-30.2	-38.8	-32.1
		Total	**-41.3**	**-38.8**	**-41.3**
Total cereals		**Male**	**-37.6**		**-37.6**
		Female	**-38.4**	**-28.1**	**-34.8**
		Total	**-37.7**	**-28.1**	**-37.5**
Total ATV		**Male**	**-36.4**		**-36.4**
		Female	**-30.6**	**-44.0**	**-31.1**
		Total	**-35.5**	**-44.0**	**-35.5**
Total mango		**Male**	**-31.9**		**-31.9**
		Female	**-18.4**	**-23.8**	**-19.4**
		Total	**-30.6**	**-23.8**	**-30.5**
Total small ruminants		**Male**	**-35.4**		**-35.4**
		Female	**-38.3**	**-30.6**	**-36.9**
		Total	**-35.5**	**-30.6**	**-35.4**

Source: IPAR, *Baseline Dooleel Mbay, 2022*

3.1.5 *Characteristics of the producers*

The majority of producers are men, although women are more active in market gardening

The results show that overall, more than half of the producers are men. In fact, 55.2% of plot managers are men. This situation is more pronounced among mango producers (83.5%) and cereal producers (82.8%). In contrast, women are relatively more represented in vegetable production (72.5% of vegetable producers).

Almost all irrigated rice, millet, and corn producers are male, regardless of the region considered. In contrast, almost all rainfed rice producers in the Sédhiou (97.8%) and Kolda (52.4%) regions are women (Table 3.16); in the Ziguinchor region, most rainfed rice producers are men (61.7%).

The preponderance of women in vegetable production is evident in all of the project's regions of influence, with the exception of Saint-Louis, where more than half of the vegetable producers are men

(53.2%). The proportion of female mango producers is higher in the Ziguinchor region (30.2%) than in the Kolda (6.6%) and Sédhiou (5.2%) regions, where it is very low.

Table 3.16   Distribution of producers by gender by region and value chain

Value chain	Region	Gender		
		Male	Female	Total
Dooleel Mbay area		55.2	44.8	100.0
Irrigated rice	Matam	94.0	6.0	100.0
	Saint-Louis	90.2	9.8	100.0
	Total irrigated rice	**88.8**	**11.2**	**100.0**
Rainfed rice	Sedhiou	2.2	97.8	100.0
	Kolda	47.6	52.4	100.0
	Ziguinchor	61.7	38.3	100.0
	Total rainfed rice	**50.0**	**50.0**	**100.0**
Millet	Fatick	98.8	1.2	100.0
	Kaolack	91.9	8.1	100.0
	Kaffrine	92.4	7.6	100.0
	Total millet	**92.3**	**7.7**	**100.0**
Corn	Fatick	100.0	0.0	100.0
	Kaolack	98.5	1.5	100.0
	Kaffrine	95.1	4.9	100.0
	Sedhiou	98.8	1.2	100.0
	Kolda	96.6	3.4	100.0
	Ziguinchor	100.0	0.0	100.0
	Total corn	**96.5**	**3.5**	**100.0**
Total cereal		**82.8**	**17.2**	**100.0**
Total ATV		**27.5**	**72.5**	**100.0**
Total mango		**83.5**	**16.5**	**100.0**
Total livestock		**53.6**	**46.4**	**100.0**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

The majority of producers are between 30 and 64 years old

In general, producers have an average age of 43 years, with male producers having an average age of 46 years, which is slightly older than female producers, who have an average age of 40 years. The average age is higher for mango producers (53 years) and cereal producers (52 years) than for vegetable producers (47 years) and livestock producers (44 years). These average ages hide disparities with a standard deviation of 15 years, a minimum age of 15 years, and a maximum of 98 years.

Most producers are between 30 and 64 years of age (78.0%) (Table 3.17). Young people (older than 30 years of age) constitute only 12.9% of the producers in the ZOI. However, the proportion of young women producers (19.6%) is greater than the proportion of young men (7.4%). This situation does not vary much according to the type of VC (cereals, vegetables, mangoes, and small ruminants) (Appendix Table 0.31). However, corn producers in the Fatick region are on average age of 61 years old, i.e., 51.6% of them are 65 years old or older. The proportion of producers younger than 30 years of age is highest among rainfed rice producers in the Kolda region (20.5%), followed by rainfed rice producers in the Sédhiou region (12.8%) and millet producers in the Kaffrine region (10.3%).

Table 3.17   Distribution of producers by gender and age by region and value chain (%)

Value chain	Region	Gender	Age group		
			15–29 years old	30–64 years old	65 years and older
Dooleel Mbay area		Male	7.4	79.1	13.4
		Female	19.6	76.6	3.7
		Total	**12.9**	**78.0**	**9.1**
Irrigated rice	Matam	Male	1.1	69.4	29.5
		Female	6.8	75.0	18.1
		Total	**1.4**	**69.8**	**28.8**
	Saint-Louis	Male	2.3	75.3	22.4
		Female	7.1	78.2	14.7
		Total	**2.8**	**75.5**	**21.7**
	Total	Male	1.8	74.5	23.7
		Female	10.6	78.7	10.8
		Total	**2.8**	**75.0**	**22.2**
Rainfed rice	Sedhiou	Male	9.3	78.5	12.3
		Female	12.9	83.5	3.7
		Total	**12.8**	**83.3**	**3.9**
	Kolda	Male	26.3	49.6	24.1
		Female	15.2	81.1	3.7
		Total	**20.5**	**66.1**	**13.4**
	Ziguinchor	Male	11.1	61.7	27.1
		Female	0.6	83.4	16.0
		Total	**7.1**	**70.0**	**22.9**
	Total	Male	13.6	61.9	24.5
		Female	10.3	83.1	6.6
		Total	**11.9**	**72.5**	**15.6**
Millet	Fatick	Male	3.2	81.8	15.0
		Female	0.0	100.0	0.0
		Total	**3.2**	**82.0**	**14.8**
	Kaolack	Male	2.7	88.7	8.6
		Female	8.1	43.2	48.6
		Total	**3.1**	**85.0**	**11.9**
	Kaffrine	Male	9.9	81.0	9.1
		Female	15.9	52.4	31.7
		Total	**10.3**	**78.8**	**10.8**
	Total	Male	5.4	81.0	13.5
		Female	13.4	56.7	29.8
		Total	**6.0**	**79.2**	**14.8**
Corn	Fatick	Male	6.1	42.2	51.6
		Female	0.0	0.0	0.0
		Total	**6.1**	**42.2**	**51.6**
	Kaolack	Male	5.6	74.7	19.8
		Female	0.0	100.0	0.0
		Total	**5.5**	**75.0**	**19.5**
	Kaffrine	Male	1.0	84.1	14.8
		Female	0.0	79.2	20.8
		Total	**1.0**	**83.9**	**15.1**
	Sedhiou	Male	3.4	65.6	31.0
		Female	0.0	100.0	0.0
		Total	**3.4**	**66.1**	**30.6**
	Kolda	Male	6.8	70.7	22.5
		Female	30.9	66.5	2.6
		Total	**7.6**	**70.5**	**21.9**
	Ziguinchor	Male	9.3	64.6	26.0
		Female	0.0	0.0	0.0
		Total	**9.3**	**64.6**	**26.0**
	Total	Male	6.5	70.3	23.2
		Female	17.2	74.0	8.8
		Total	**6.8**	**70.5**	**22.7**
Total cereals		**Male**	**6.5**	**73.6**	**19.8**
		Female	**11.2**	**78.2**	**10.6**

Value chain	Region	Gender	Age group		
			15–29 years old	30–64 years old	65 years and older
		Total	7.3	74.4	18.2
Total ATV		Male	8.1	83.9	8.0
		Female	21.6	72.8	5.6
		Total	17.9	75.8	6.3
Total mango		Male	2.3	78.3	19.4
		Female	8.4	76.9	14.7
		Total	3.3	78.1	18.6
Total small ruminants		Male	5.4	84.2	10.4
		Female	19.5	77.8	2.7
		Total	12.0	81.3	6.8

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

The producers have generally studied the Koran

Producers have mostly attended Daaras or Koranic apprenticeships (Table 3.18, Appendix Table 0.32). There is also a large proportion of producers who have no formal education. Indeed, nearly 40% of producers attended Koranic school and 30.7% are not educated. Those who have attended "French" school have generally not gone beyond the primary level. More specifically, 14.3% of producers have a primary level of education and 7.1% have an intermediate level. Producers who have access to secondary and higher education are very rare.

Further, Arabic and Koranic schools were attended mainly by male producers (44.7%) compared with a lower level of attendance by female producers (33.5%). It also appears that more than a third of women have no education (36.3%).

Table 3.18   Distribution of producers by education level by region and value chain (%)

Value chain	Region	Gender	Education level of the producer						
			Mean	Koranic school/ Daara	Literate in national language	Elementary	Middle school/ college	Secondary	Higher education
Dooleel Mbay area		Male	25.9	44.7	2.8	13.3	7.1	3.9	2.4
		Female	36.3	33.5	3.5	15.5	7.1	2.9	1.2
		Total	30.5	39.7	3.1	14.3	7.1	3.5	1.8
Irrigated rice	Matam	Male	53.6	27.7	11.1	4.0	1.8	1.8	0.0
		Female	63.2	17.3	13.0	6.5	0.0	0.0	0.0
		Total	54.2	27.1	11.2	4.1	1.7	1.7	0.0
	Saint-Louis	Male	19.9	43.5	2.4	25.5	3.4	3.8	1.6
		Female	51.0	4.3	14.5	30.2	0.0	0.0	0.0
		Total	23.0	39.6	3.6	25.9	3.1	3.4	1.4
	Total	Male	30.9	35.9	4.9	17.5	6.9	2.9	1.0
		Female	44.7	17.7	12.8	21.3	3.4	0.0	0.0
		Total	32.5	33.8	5.8	17.9	6.5	2.6	0.9
Rainfed rice	Sedhiou	Male	17.1	13.3	0.0	60.4	9.3	0.0	0.0
		Female	51.4	22.1	1.5	22.3	2.6	0.2	0.0
		Total	50.6	21.9	1.4	23.1	2.7	0.2	0.0
	Kolda	Male	33.4	33.0	3.4	25.8	1.2	0.8	2.4
		Female	55.9	20.3	10.4	10.1	2.6	0.6	0.0
		Total	45.1	26.4	7.1	17.6	1.9	0.7	1.2
	Ziguinchor	Male	3.8	5.3	0.0	42.4	23.2	11.8	13.5
		Female	22.4	16.4	0.6	44.7	1.1	14.9	0.0
		Total	10.9	9.5	0.2	43.3	14.7	13.0	8.3
	Total	Male	19.5	30.0	1.1	28.5	9.7	5.0	6.2
		Female	47.4	19.3	4.4	22.7	2.1	4.0	0.0
		Total	33.5	24.7	2.8	25.6	5.9	4.5	3.1
Millet	Fatick	Male	2.2	94.5	0.0	1.5	1.2	0.6	0.0
		Female	69.8	30.2	0.0	0.0	0.0	0.0	0.0
		Total	3.0	93.8	0.0	1.5	1.2	0.6	0.0
	Kaolack	Male	2.5	82.4	0.2	10.5	1.5	2.1	0.8
		Female	28.9	23.1	0.0	12.2	35.8	0.0	0.0
		Total	4.6	77.7	0.2	10.7	4.2	1.9	0.7
	Kaffrine	Male	23.0	56.3	4.1	8.6	4.4	2.3	1.3

Value chain	Region	Gender	Mean	Koranic school/ Daara	Literate in national language	Elementary	Middle school/ college	Secondary	Higher education
		Education level of the producer							
		Female	34.9	49.2	0.0	15.9	0.0	0.0	0.0
		Total	**23.9**	**55.8**	**3.8**	**9.2**	**4.1**	**2.1**	**1.2**
	Total	Male	14.1	68.1	2.3	9.2	3.0	2.3	1.0
		Female	49.5	27.8	0.0	9.4	13.4	0.0	0.0
		Total	**16.8**	**65.0**	**2.2**	**9.2**	**3.8**	**2.1**	**0.9**
Corn	Fatick	Male	1.7	93.1	0.0	5.2	0.0	0.0	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**1.7**	**93.1**	**0.0**	**5.2**	**0.0**	**0.0**	**0.0**
	Kaolack	Male	.8	83.6	0.6	6.3	6.7	1.9	0.1
		Female	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**2.2**	**82.4**	**0.6**	**6.2**	**6.6**	**1.9**	**0.1**
	Kaffrine	Male	21.2	65.6	3.0	6.1	0.6	3.4	0.0
		Female	0.0	100.0	0.0	0.0	0.0	0.0	0.0
		Total	**20.2**	**67.3**	**2.9**	**5.8**	**0.5**	**3.3**	**0.0**
	Sedhiou	Male	28.7	33.4	.2	9.1	19.3	3.1	6.3
		Female	76.1	23.9	0.0	0.0	0.0	0.0	0.0
		Total	**29.3**	**33.3**	**.2**	**9.0**	**19.0**	**3.1**	**6.2**
	Kolda	Male	55.0	16.8	4.5	11.6	8.7	1.7	1.8
		Female	40.6	14.9	8.0	21.6	14.9	0.0	0.0
		Total	**54.5**	**16.7**	**4.6**	**11.9**	**8.9**	**1.6**	**1.8**
	Ziguinchor	Male	5.5	27.4	0.0	16.5	9.3	31.9	9.3
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**5.5**	**27.4**	**0.0**	**16.5**	**9.3**	**31.9**	**9.3**
	Total	Male	37.6	35.8	3.1	10.0	9.0	2.6	1.8
		Female	46.2	26.9	4.4	12.0	10.4	0.0	0.0
		Total	**37.9**	**35.5**	**3.2**	**10.1**	**9.0**	**2.5**	**1.8**
Total cereals		**Male**	**25.2**	**47.2**	**2.7**	**13.3**	**6.6**	**2.9**	**2.1**
		Female	**47.4**	**21.0**	**4.4**	**19.9**	**4.4**	**2.8**	**0.0**
		Total	**29.0**	**42.7**	**3.0**	**14.5**	**6.2**	**2.9**	**1.7**
Total ATV		**Male**	**11.2**	**37.9**	**2.1**	**20.4**	**8.7**	**12.2**	**7.6**
		Female	**38.3**	**19.8**	**5.6**	**22.1**	**6.8**	**5.3**	**2.1**
		Total	**30.9**	**24.8**	**4.6**	**21.6**	**7.3**	**7.2**	**3.6**
Total mango		**Male**	**9.7**	**44.9**	**0.6**	**17.3**	**12.9**	**12.2**	**2.4**
		Female	**25.9**	**27.8**	**3.2**	**17.0**	**13.1**	**13.0**	**0.0**
		Total	**12.4**	**42.1**	**1.0**	**17.2**	**13.0**	**12.3**	**2.0**
Total small ruminants		**Male**	**25.6**	**47.5**	**3.6**	**11.0**	**6.6**	**3.9**	**1.8**
		Female	**35.7**	**39.2**	**2.7**	**11.4**	**8.5**	**1.7**	**0.8**
		Total	**30.3**	**43.6**	**3.2**	**11.2**	**7.5**	**2.9**	**1.4**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Producers are not usually members of a producer network

The level of membership in a producers' network concerns a small proportion of producers in the activity's area of influence. Only 12.2% of producers are members of a network (Table 3.19). It varies very slightly according to the gender of the producers. The same trend can be seen when considering the VCs (cereals, vegetables, mango, and small ruminants).

The highest levels of membership in producer networks are found among irrigated rice producers in the Saint-Louis region (61.5%) and Matam (30.3%). However, levels are lower among corn producers in the Fatick region (1.4%).

For vegetable producers and small ruminant producers, the Saint-Louis region stands out with 61.5% and 36.8% of producers belonging to a network, respectively (Appendix

Table 0.34).

The proportions of mango producers in the southern zone who are members of a network are also low. They represent 17.6, 13.7, and 5.8%, respectively in the Ziguinchor, Sédhiou, and Kolda regions (Appendix Table 0.33).

Table 3.19   Distribution of producers by network membership by region and value chain (%)

Value chain	Region	Gender		
		Male	**Female**	**Total**
Dooleel Mbay area		12.4	11.9	12.2
Irrigated rice	Matam	32.3	21.4	30.3
	Saint-Louis	62.1	55.6	61.5
	Total irrigated rice	**54.2**	**25.9**	**49.2**
Rainfed rice	Sedhiou	0.0	8.1	7.8
	Kolda	8.9	5.0	5.9
	Ziguinchor	6.9	10.3	7.6
	Total rainfed rice	**9.6**	**8.0**	**8.6**
Millet	Fatick	7.3	0.0	7.1
	Kaolack	6.2	11.1	6.5
	Kaffrine	5.9	12.5	6.2
	Total millet	**5.8**	**7.8**	**5.9**
Corn	Fatick	15.0	0.0	15.0
	Kaolack	5.4	0.0	5.3
	Kaffrine	1.4	0.0	1.4
	Sedhiou	8.2	0.0	8.1
	Kolda	8.5	0.0	8.0
	Ziguinchor	0.0	0.0	0.0
	Total corn	**8.0**	**14.8**	**8.3**
Total cereal		**13.4**	**10.4**	**12.8**
Total ATV		**32.0**	**14.0**	**18.8**
Total mango		**14.8**	**18.0**	**15.2**
Total livestock		**11.6**	**12.2**	**11.9**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Most producers have not received any project support

Overall, producers report that they have not received support from any project (Table 3.20, Appendix Table 0.35 and Table 0.36). In fact, 94% of the producers stated that they had not received support from a project. Producers who received support from the Naatal Mbay project represent 1.7% and those who received support from Economic Growth Project (Projet Croissance Economique, PCE) represent an estimated 0.1% of producers. The proportion of producers benefiting from Naatal Mbay varies according to region and VC. It is highest for rainfed rice producers in the Kolda region (11.4%), followed by irrigated rice producers in the Saint-Louis region (15%) and corn producers in the Kolda region (10%).

Table 3.20   Distribution of project beneficiary producers by region and value chain (%)

Value chain	Region	Did the producer receive support	Support for a project or program				
			PCE	**CLUSA**	**PAFA**	**NM**	**Other**
Dooleel Mbay area		5.9	0.1	0.5	1.4	1.7	5.8
Irrigated rice	Matam	5.3	0.0	0.0	0.0	1.4	4.1
	Saint-Louis	15.0	0.0	0.0	0.0	8.2	6.6
	Total irrigated rice	**11.8**	**0.0**	**0.0**	**0.0**	**6.1**	**5.4**
Rainfed rice	Sedhiou	4.5	0.0	0.0	0.0	0.0	4.5
	Kolda	11.4	0.6	0.0	0.0	5.6	5.1
	Ziguinchor	5.3	0.0	0.0	0.0	0.0	2.6
	Total rainfed rice	**7.8**	**0.2**	**0.0**	**0.4**	**2.1**	**4.9**
Millet	Fatick	10.7	0.0	0.0	4.3	2.1	4.3
	Kaolack	11.6	0.0	0.0	1.5	0.4	9.9
	Kaffrine	13.5	0.0	3.9	6.2	0.0	5.1

Value chain	Region	Did the producer receive support	Support for a project or program				
			PCE	CLUSA	PAFA	NM	Other
	Total millet	**9.4**	**0.0**	**0.8**	**2.4**	**0.8**	**5.9**
	Fatick	10.0	0.0	0.0	0.0	0.0	0.0
	Kaolack	12.8	0.0	1.1	3.4	0.0	8.0
	Kaffrine	16.4	0.0	7.1	2.9	0.0	5.7
	Sedhiou	10.1	0.0	0.0	0.0	0.0	7.8
	Kolda	10.0	0.9	1.3	0.0	5.4	4.9
	Ziguinchor	0.0	0.0	0.0	0.0	0.0	0.0
Corn	**Total corn**	**11.0**	**0.4**	**1.7**	**1.1**	**2.5**	**5.9**
Total cereal		**9.7**	**0.1**	**0.8**	**1.3**	**2.3**	**5.6**
Total ATV		**7.9**	**0.1**	**0.0**	**1.6**	**0.3**	**6.4**
Total mango		**12.1**					
Total livestock		**5.0**	**0.2**	**0.8**	**1.4**	**2.0**	**6.5**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.2 USE OF LAND CAPITAL

3.2.1 Characteristics of household land capital

A large dominance of rainfed lands

The distribution of plots according to their nature shows that four out of five plots are rainfed. Irrigated perimeters represent 14.1% of the plots held by producers. However, the other types of plots, particularly lowland and floodplain plots, are very rarely observed (**Table 3.21**).

Depending on the VC, this structure of plots changes substantially, except for market gardening, where irrigated perimeters constitute nearly 30% of plots.

An analysis based on the gender of the HOH shows a reality that follows the same trend as the overall results. It is true that rainfed land is still fairly common, but this is true to a lesser extent in market gardening for households with a female HOH. In other words, 30.4% of the plots held by producers living in female-headed households in the market gardening VC are irrigated. The importance of irrigated perimeters in market gardening is even more apparent in Saint-Louis, where they constitute nearly 80% of plots, which is by far the dominant type of plot, as well as in Matam (37.5%) and Ziguinchor (32.9%) (Appendix Table 0.37).

Table 3.21   Distribution of plots by type and HOH gender by region and value chain (%)

Value chain	Region	HOH gender	Irrigated perimeter	Rainfed lands	Bottom	Decrease	Other
Dooleel Mbay area		Male	13.6	80.9	4.6	0.4	0.5
		Female	20.4	71.5	7.7	0.3	0.0
		Total	**14.1**	**80.3**	**4.8**	**0.4**	**0.4**
Irrigated rice	Matam	Male	28.7	45.7	15.2	2.1	8.3
		Female	63.2	1.0	35.7	0.0	0.0
		Total	**29.0**	**45.3**	**15.4**	**2.1**	**8.2**
	Saint-Louis	Male	75.4	6.5	7.4	10.7	0.0
		Female	81.0	3.3	7.7	8.0	0.0
		Total	**75.8**	**6.3**	**7.4**	**10.5**	**0.0**
	Total	Male	58.3	21.1	10.3	7.6	2.7
		Female	79.9	3.2	9.3	7.6	0.0
		Total	**59.5**	**20.1**	**10.3**	**7.6**	**2.6**
Rainfed rice	Sedhiou	Male	6.4	88.1	5.6	0.0	0.0
		Female	15.7	29.9	54.4	0.0	0.0
		Total	**6.7**	**85.7**	**7.5**	**0.0**	**0.0**
	Kolda	Male	7.0	89.4	3.6	0.0	0.0
		Female	0.0	64.4	35.6	0.0	0.0
		Total	**7.0**	**89.4**	**3.6**	**0.0**	**0.0**
	Ziguinchor	Male	10.9	74.3	14.8	0.0	0.0
		Female	5.1	93.4	1.5	0.0	0.0
		Total	**8.6**	**81.9**	**9.5**	**0.0**	**0.0**
	Total	Male	9.3	81.7	7.3	0.0	1.7
		Female	9.9	85.3	4.7	0.0	0.0
		Total	**9.4**	**82.3**	**6.9**	**0.0**	**1.4**
Millet	Fatick	Male	11.7	86.2	2.2	0.0	0.0
		Female	0.0	100.0	0.0	0.0	0.0
		Total	**11.6**	**86.3**	**2.1**	**0.0**	**0.0**
	Kaolack	Male	3.1	96.2	0.5	0.0	0.2
		Female	0.0	99.2	0.8	0.0	0.0
		Total	**3.0**	**96.3**	**0.5**	**0.0**	**0.2**
	Kaffrine	Male	2.3	95.5	2.1	0.0	0.0
		Female	0.0	100.0	0.0	0.0	0.0
		Total	**2.3**	**95.7**	**2.1**	**0.0**	**0.0**
	Total	Male	5.4	91.9	2.6	0.0	0.1
		Female	2.0	97.5	0.5	0.0	0.0

Value chain	Region	HOH gender	Irrigated perimeter	Rainfed lands	Bottom	Decrease	Other
		Total	**5.3**	**92.1**	**2.5**	**0.0**	**0.1**
Corn	Fatick	Male	1.2	98.5	0.4	0.0	0.0
		Female	0.0	96.5	3.5	0.0	0.0
		Total	**1.1**	**98.3**	**0.6**	**0.0**	**0.0**
	Kaolack	Male	2.0	97.6	0.5	0.0	0.0
		Female	0.0	100.0	0.0	0.0	0.0
		Total	**1.9**	**97.6**	**0.5**	**0.0**	**0.0**
	Kaffrine	Male	2.2	95.8	1.9	0.0	0.1
		Female	0.0	100.0	0.0	0.0	0.0
		Total	**2.2**	**95.8**	**1.8**	**0.0**	**0.1**
	Sedhiou	Male	5.0	87.8	7.2	0.0	0.0
		Female	0.0	0.0	0.0	0.0	0.0
		Total	**5.0**	**87.8**	**7.2**	**0.0**	**0.0**
	Kolda	Male	4.0	94.9	0.9	0.0	0.2
		Female	26.8	73.2	0.0	0.0	0.0
		Total	**4.1**	**94.8**	**0.9**	**0.0**	**0.2**
	Ziguinchor	Male	11.9	88.1	0.0	0.0	0.0
		Female	0.0	0.0	0.0	0.0	0.0
		Total	**11.9**	**88.1**	**0.0**	**0.0**	**0.0**
	Total	Male	3.5	94.6	1.8	0.0	0.1
		Female	4.9	82.0	13.1	0.0	0.0
		Total	**3.5**	**94.4**	**2.0**	**0.0**	**0.1**
Total cereals		**Male**	**9.5**	**85.6**	**3.8**	**0.6**	**0.6**
		Female	**13.3**	**81.2**	**4.9**	**0.6**	**0.0**
		Total	**9.7**	**85.4**	**3.9**	**0.6**	**0.5**
Total ATV		**Male**	**29.7**	**61.8**	**8.3**	**0.1**	**0.1**
		Female	**30.4**	**57.9**	**11.7**	**0.0**	**0.0**
		Total	**29.8**	**61.3**	**8.8**	**0.1**	**0.1**
Total mango		**Male**	**9.3**	**86.3**	**3.8**	**0.6**	**0.0**
		Female	**17.9**	**68.5**	**13.6**	**0.0**	**0.0**
		Total	**10.2**	**84.4**	**4.9**	**0.5**	**0.0**
Total small ruminants		**Male**	**11.8**	**83.1**	**3.9**	**0.6**	**0.6**
		Female	**31.2**	**54.1**	**13.9**	**0.8**	**0.0**
		Total	**12.6**	**81.8**	**4.3**	**0.6**	**0.6**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Individual ownership is in the majority and increases in male-headed households

The results show that 61.4% of the plots are individually owned and 31.9% of them are family owned. The other types of ownership (collective outside the family and owned by another person) are very uncommon (**Table 3.22**).

In the different VCs targeted, the same trend is observed everywhere, with six out of 10 plots being individually owned. Collective (family) ownership remains slightly dominant among households with a female HOH (nearly 4 family plots for every 10 in total), especially in cereal and mango crops. In fact, market gardening in Kaolack (42.4), corn and mango in Sédhiou (51.1% and 59.9%, respectively), and corn in Ziguinchor (59.2%) have more family-owned plots (Appendix Table 0.38).

Table 3.22   Distribution (%) of plots by type of ownership and HOH gender by region and value chain

Value chain	Region	HOH gender	Individual (own)	Family	Collective outside the family	Other
Dooleel Mbay area		Male	61.8	31.8	2.9	3.6
		Female	55.8	33.3	7.9	2.9
		Total	**61.4**	**31.9**	**3.2**	**3.5**
Irrigated rice	Matam	Male	67.4	24.9	2.8	4.9
		Female	0.0	91.1	0.0	8.9
		Total	**66.8**	**25.5**	**2.8**	**4.9**
	Saint-Louis	Male	48.8	30.2	13.0	8.0
		Female	50.3	31.0	0.7	18.0
		Total	**48.9**	**30.3**	**12.0**	**8.8**
	Total	Male	55.3	28.7	9.3	6.8
		Female	47.4	34.5	0.6	17.5
		Total	**54.9**	**29.0**	**8.8**	**7.3**
Rainfed rice	Sedhiou	Male	43.6	49.2	2.3	4.9
		Female	100.0	0.0	0.0	0.0
		Total	**45.9**	**47.3**	**2.2**	**4.7**
	Kolda	Male	74.1	23.7	0.3	1.9
		Female	56.9	15.8	0.0	27.2
		Total	**74.1**	**23.7**	**0.3**	**2.0**
	Ziguinchor	Male	58.3	37.3	2.7	1.6
		Female	37.9	46.5	15.6	0.0
		Total	**50.2**	**41.0**	**7.8**	**1.0**
	Total	Male	62.9	32.5	2.4	2.3
		Female	38.9	47.3	13.6	.2
		Total	**59.1**	**34.8**	**4.1**	**2.0**
Millet	Fatick	Male	64.5	28.9	5.3	1.2
		Female	100.0	0.0	0.0	0.0
		Total	**64.8**	**28.7**	**5.3**	**1.2**
	Kaolack	Male	64.6	27.9	1.0	6.5
		Female	95.0	4.2	0.0	0.8
		Total	**65.8**	**26.9**	**1.0**	**6.3**
	Kaffrine	Male	62.2	33.6	0.9	3.2
		Female	28.6	71.4	0.0	0.0
		Total	**61.4**	**34.5**	**0.9**	**3.2**
	Total	Male	63.5	31.2	1.6	3.7
		Female	72.3	27.2	0.0	0.5
		Total	**63.7**	**31.1**	**1.5**	**3.7**
Corn	Fatick	Male	47.7	34.5	3.8	14.1
		Female	42.7	55.6	1.7	0.0
		Total	**47.4**	**35.9**	**3.6**	**13.1**
	Kaolack	Male	47.5	47.3	0.6	4.6
		Female	69.0	31.0	0.0	0.0
		Total	**47.9**	**47.0**	**0.6**	**4.5**
	Kaffrine	Male	57.1	39.1	0.0	3.8
		Female	60.0	40.0	0.0	0.0
		Total	**57.1**	**39.1**	**0.0**	**3.8**
	Sedhiou	Male	42.5	51.1	5.9	0.4
		Female	0.0	0.0	0.0	0.0
		Total	**42.5**	**51.1**	**5.9**	**0.4**
	Kolda	Male	73.4	25.9	0.4	0.3
		Female	100.0	0.0	0.0	0.0
		Total	**73.5**	**25.8**	**0.4**	**0.3**
	Ziguinchor	Male	40.8	59.2	0.0	0.0
		Female	0.0	0.0	0.0	0.0
		Total	**40.8**	**59.2**	**0.0**	**0.0**
	Total	Male	60.3	35.9	1.2	2.7
		Female	54.3	38.7	7.0	0.0
		Total	**60.2**	**35.9**	**1.2**	**2.6**
Total cereals		**Male**	**61.7**	**32.8**	**2.2**	**3.4**

Value chain	Region	HOH gender	Individual (own)	Family	Collective outside the family	Other
		Female	47.7	41.5	9.3	1.6
		Total	**61.0**	**33.2**	**2.5**	**3.3**
Total ATV		Male	60.3	29.5	5.6	4.6
		Female	67.3	21.8	6.0	4.9
		Total	**61.2**	**28.5**	**5.6**	**4.6**
Total mango		Male	66.7	29.1	2.0	2.2
		Female	56.4	43.0	0.4	0.2
		Total	**65.6**	**30.6**	**1.8**	**2.0**
Total small ruminants		Male	62.7	31.8	2.1	3.4
		Female	64.9	26.6	5.7	2.8
		Total	**62.8**	**31.6**	**2.2**	**3.4**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

The exploitation of the plots is almost entirely based on direct farming

As for the mode of exploitation of the plots, it appears that direct farming is the dominant mode. Thus, nearly 97% of the plots are farmed by their owners. In addition, tenant farming, sharecropping, and borrowing are very negligible (Table 3.23).

The analysis by VC for each region and the HOH gender shows the same trends, with the exception of the Matam region, where sharecropping is relatively common. In this region, 20.7% of the plots are exploited by sharecropping (Appendix Table 0.39).

Table 3.23   Distribution (%) of plots by type of operation and HOH gender by region and value chain

Value chain	Region	HOH gender	Mode of operation				
			Own occupation	Farming	Sharecropping	Borrowing for free	Unused
Dooleel Mbay area		Male	97.0	1.1	1.3	0.1	0.5
		Female	92.0	0.5	6.6	0.3	0.5
		Total	**96.6**	**1.1**	**1.7**	**0.1**	**0.5**
Irrigated rice	Matam	Male	66.6	4.3	20.3	0.0	8.8
		Female	37.8	0.0	62.2	0.0	0.0
		Total	**66.3**	**4.3**	**20.7**	**0.0**	**8.7**
	Saint-Louis	Male	93.3	1.8	4.0	0.0	1.0
		Female	73.7	8.0	10.2	8.0	0.0
		Total	**91.8**	**2.2**	**4.4**	**0.6**	**0.9**
	Total	Male	84.4	2.8	9.2	0.0	3.6
		Female	71.6	7.6	13.2	7.6	0.0
		Total	**83.7**	**3.0**	**9.4**	**0.4**	**3.4**
Rainfed rice	Sedhiou	Male	97.9	1.2	0.5	0.4	0.0
		Female	100.0	0.0	0.0	0.0	0.0
		Total	**98.0**	**1.2**	**0.4**	**0.4**	**0.0**
	Kolda	Male	99.6	0.0	0.0	0.4	0.0
		Female	100.0	0.0	0.0	0.0	0.0
		Total	**99.6**	**0.0**	**0.0**	**0.4**	**0.0**
	Ziguinchor	Male	99.5	0.0	0.5	0.0	0.0
		Female	84.6	0.0	15.4	0.0	0.0
		Total	**93.6**	**0.0**	**6.4**	**0.0**	**0.0**
	Total	Male	96.4	0.5	1.8	0.3	1.1
		Female	86.5	0.0	13.5	0.0	0.0
		Total	**94.8**	**0.4**	**3.6**	**0.2**	**0.9**
Millet	Fatick	Male	98.5	0.4	1.1	0.0	0.0
		Female	100.0	0.0	0.0	0.0	0.0
		Total	**98.5**	**0.4**	**1.1**	**0.0**	**0.0**
	Kaolack	Male	98.5	1.1	0.1	0.0	0.2
		Female	92.7	0.0	0.0	0.0	7.3
		Total	**98.3**	**1.0**	**0.1**	**0.0**	**0.5**

Value chain	Region	HOH gender	Mode of operation				
			Own occupation	Farming	Sharecropping	Borrowing for free	Unused
	Kaffrine	Male	95.8	2.8	1.1	0.0	0.4
		Female	100.0	0.0	0.0	0.0	0.0
		Total	**95.9**	**2.7**	**1.1**	**0.0**	**0.4**
	Total	Male	97.8	1.4	0.7	0.0	0.2
		Female	95.7	0.0	0.0	0.0	4.3
		Total	**97.7**	**1.3**	**0.6**	**0.0**	**0.3**
Corn	Fatick	Male	94.0	0.0	6.0	0.0	0.0
		Female	100.0	0.0	0.0	0.0	0.0
		Total	**94.4**	**0.0**	**5.6**	**0.0**	**0.0**
	Kaolack	Male	97.2	2.6	0.0	0.1	0.1
		Female	100.0	0.0	0.0	0.0	0.0
		Total	**97.3**	**2.5**	**0.0**	**0.1**	**0.1**
	Kaffrine	Male	97.0	0.3	2.6	0.0	0.1
		Female	100.0	0.0	0.0	0.0	0.0
		Total	**97.0**	**0.3**	**2.6**	**0.0**	**0.1**
	Sedhiou	Male	99.8	0.2	0.0	0.0	0.0
		Female	0.0	0.0	0.0	0.0	0.0
		Total	**99.8**	**0.2**	**0.0**	**0.0**	**0.0**
	Kolda	Male	99.0	1.0	0.0	0.0	0.0
		Female	100.0	0.0	0.0	0.0	0.0
		Total	**99.0**	**1.0**	**0.0**	**0.0**	**0.0**
	Ziguinchor	Male	100.0	0.0	0.0	0.0	0.0
		Female	0.0	0.0	0.0	0.0	0.0
		Total	**100.0**	**0.0**	**0.0**	**0.0**	**0.0**
	Total	Male	98.0	1.0	0.9	0.0	0.0
		Female	100.0	0.0	0.0	0.0	0.0
		Total	**98.1**	**1.0**	**0.9**	**0.0**	**0.0**
Total cereals		**Male**	**96.6**	**1.2**	**1.6**	**0.1**	**0.6**
		Female	**88.4**	**0.6**	**9.6**	**0.6**	**0.9**
		Total	**96.2**	**1.2**	**2.0**	**0.1**	**0.6**
Total ATV		**Male**	**98.0**	**1.0**	**0.8**	**0.1**	**0.1**
		Female	**97.2**	**0.3**	**2.5**	**0.0**	**0.0**
		Total	**97.9**	**0.9**	**1.0**	**0.1**	**0.0**
Total mango		**Male**	**99.2**	**0.3**	**0.1**	**0.3**	**0.1**
		Female	**100.0**	**0.0**	**0.0**	**0.0**	**0.0**
		Total	**99.2**	**0.3**	**0.1**	**0.3**	**0.1**
Total small ruminants		**Male**	**97.0**	**1.1**	**1.2**	**0.2**	**0.6**
		Female	**93.2**	**1.1**	**3.7**	**0.8**	**1.2**
		Total	**96.8**	**1.1**	**1.3**	**0.2**	**0.6**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

A land capital of 1.9 plots per producer and 3.6 plots per household

Average number of plots per producer and household by gender by region and value chain shows that the average number of plots held by producers is 1.9 (Table 3.24). There is no great variation in the types of VCs in terms of average numbers of plots, which range from 1.5 to 2.7. In addition, men own more plots on average than women (2.3 vs. 1.3%), regardless of the VC. At the regional level, the average number of plots sometimes exceeds the standards observed overall. In Ziguinchor, rainfed rice producers own an average of more than 2.0 plots, and mango producers own an average of 2.7 in Sédhiou (Appendix Table 0.40).

Table 3.24   Average number of plots per producer and household by gender by region and value chain

Value chain	Region	Gender of producer			Gender of head of household		
		Male	Female	Total	Male	Female	Total
Dooleel Mbay area		2.3	1.3	1.9	3.6	3.0	3.6
Irrigated rice	Matam	1.6	1.1	1.5	2.3	1.0	2.2
	Saint-Louis	2.0	1.4	1.9	2.1	1.8	2.1
	Total irrigated rice	**1.8**	**1.3**	**1.8**	**2.2**	**1.7**	**2.2**
Rainfed rice	Sedhiou	2.6	1.8	2.2	3.9	2.9	3.9
	Kolda	2.1	1.2	1.8	3.2	1.9	3.2
	Ziguinchor	2.5	2.8	2.6	3.3	5.2	3.9
	Total rainfed rice	**2.2**	**1.8**	**2.1**	**3.2**	**4.2**	**3.4**
Millet	Fatick	2.5	1.1	2.2	3.8	3.0	3.8
	Kaolack	2.6	1.2	2.0	4.5	2.9	4.4
	Kaffrine	2.8	1.3	2.2	4.7	3.8	4.7
	Total millet	**2.5**	**1.2**	**2.0**	**4.0**	**3.0**	**4.0**
Corn	Fatick	3.0	1.1	2.0	4.7	3.6	4.6
	Kaolack	2.7	1.1	2.0	5.0	3.2	5.0
	Kaffrine	3.6	1.1	2.5	5.2	5.0	5.2
	Sedhiou	3.0	1.9	2.6	4.4		4.4
	Kolda	1.9	1.2	1.7	3.3	2.2	3.3
	Ziguinchor	2.4	2.1	2.3	3.5		3.5
	Total corn	**2.4**	**1.2**	**2.0**	**3.9**	**2.5**	**3.9**
Total cereal		**2.3**	**1.4**	**2.0**	**3.6**	**3.4**	**3.6**
Total ATV		**2.2**	**1.3**	**1.7**	**3.6**	**2.7**	**3.5**
Total mango		**2.8**	**2.1**	**2.7**	**3.0**	**3.3**	**3.0**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.2.2 Areas under cultivation

Average planted area under one hectare per targeted value chain

The analysis of areas under cultivation shows an average of 0.92 hectare (ha) per household across all VCs (Table 3.25 Area planted per household (ha) by value chain).

However, a description according to the VCs will make it possible to better understand the totality of the characteristics while taking into account the specificity of each crop.

Table 3.25   Area planted per household (ha) by value chain

Type of value chain	Total area under cultivation per household			
	Mean	Standard deviation	Minimum	Maximum
Dooleel Mbay zone	0.9201	1.2425	0.0030	30.0000
Cereal	1.2054	1.3211	0.0100	22.0000
ATV	0.3264	0.7764	0.0030	30.0000
Mango	0.8600	2.3100	0.0000	19.9600

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Most households have small areas, whereas millet-producing households have the largest planted areas

In the cereal VCs, the largest areas under cultivation are observed in millet-producing households located in the groundnut basin: 2.41 ha in Kaffrine, 2.18 ha in Fatick, and 1.98 ha in Kaolack.

In the other types of cereals (irrigated rice, rainfed rice, and corn), the average cultivated area is less than 1 ha, with the exception of corn in Kaffrine (1.25 ha), rainfed rice in Kolda (1.01 ha), and irrigated rice in Saint-Louis (0.74 ha).

The analysis by HOH gender reveals that households headed by men have on average a larger area than those of female HOH (1.21 ha vs. 1.10 ha). This pattern is observed everywhere except in rainfed rice in Ziguinchor and irrigated rice in Saint-Louis.

The distribution of areas under cultivation is shown in **Table 3.27.**

At the same time, there is a clear disparity between rice (irrigated and rainfed) and corn. Indeed, more than half of the areas under cultivation are less than 0.5 ha in the rice VC at a time when the corn VC records nearly 70% of the average areas under cultivation that are more than 1 ha.

Table 3.26   Area sown per household in cereals (ha) by HOH Gender by region

Value chain	Region	HOH Gender	Total agricultural area per household			
			Mean	Standard deviation	Minimum	Maximum
Total cereals		Male	1.21	1.31	0.01	22.00
		Female	1.10	1.52	0.01	7.96
		Total	**1.21**	**1.32**	**0.01**	**22.00**
Irrigated rice	Matam	Male	0.37	0.33	0.01	2.49
		Female	0.42	0.33	0.05	1.00
		Total	**0.37**	**0.33**	**0.01**	**2.49**
	Saint-Louis	Male	0.68	1.25	0.05	22.00
		Female	1.33	2.58	0.06	7.96
		Total	**0.74**	**1.44**	**0.05**	**22.00**
	Total	Male	0.56	1.00	0.01	22.00
		Female	1.17	2.37	0.05	7.96
		Total	**0.60**	**1.15**	**0.01**	**22.00**
Rainfed rice	Sedhiou	Male	0.75	0.84	0.02	4.20
		Female	1.01	0.68	0.25	2.00
		Total	**0.76**	**0.83**	**0.02**	**4.20**
	Kolda	Male	1.01	1.01	0.04	4.50
		Female	0.33	0.32	0.10	1.00
		Total	**1.01**	**1.01**	**0.04**	**4.50**
	Ziguinchor	Male	0.82	0.93	0.04	8.08
		Female	1.31	1.73	0.02	4.60
		Total	**0.97**	**1.26**	**0.02**	**8.08**
	Total	Male	0.84	0.91	0.01	8.08
		Female	1.12	1.59	0.02	4.60
		Total	**0.87**	**1.02**	**0.01**	**8.08**
Millet	Fatick	Male	2.19	1.40	0.21	11.03
		Female	1.86	1.06	0.42	3.00
		Total	**2.18**	**1.39**	**0.21**	**11.03**
	Kaolack	Male	2.01	1.35	0.21	10.50
		Female	1.58	0.87	0.33	3.00
		Total	**1.98**	**1.33**	**0.21**	**10.50**
	Kaffrine	Male	2.44	1.76	0.20	12.00
		Female	1.29	1.05	0.42	5.63
		Total	**2.41**	**1.75**	**0.20**	**12.00**
	Total	Male	1.94	1.54	0.02	12.00
		Female	1.44	0.97	0.13	5.63
		Total	**1.92**	**1.53**	**0.02**	**12.00**
Corn	Fatick	Male	0.67	0.56	0.12	5.00
		Female	0.16	0.14	0.08	0.38
		Total	**0.65**	**0.56**	**0.08**	**5.00**
	Kaolack	Male	0.84	0.63	0.11	5.00
		Female	0.85	0.28	0.02	1.00
		Total	**0.84**	**0.61**	**0.02**	**5.00**
	Kaffrine	Male	1.26	1.56	0.01	10.17
		Female	1.04	1.48	0.56	5.65
		Total	**1.25**	**1.56**	**0.01**	**10.17**
	Sedhiou	Male	0.78	0.77	0.02	4.00
		Female	0.50	0.00	0.50	0.50
		Total	**0.78**	**0.76**	**0.02**	**4.00**

Value chain	Region	HOH Gender	Total agricultural area per household			
			Mean	Standard deviation	Minimum	Maximum
	Kolda	Male	0.89	0.92	0.08	7.50
		Female	0.27	0.28	0.01	0.75
		Total	**0.89**	**0.91**	**0.01**	**7.50**
	Ziguinchor	Male	0.42	0.36	0.06	2.11
		Female	0.40	0.22	0.15	0.75
		Total	**0.41**	**0.34**	**0.06**	**2.11**
	Total	Male	0.90	0.96	0.01	10.17
		Female	0.58	0.58	0.01	5.65
		Total	**0.89**	**0.96**	**0.01**	**10.17**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Table 3.27   Breakdown (%) of areas sown by HOH gender and area class in cereals

Value chain	Region	HOH gender	Area class				
			Less than 0.5 ha	0.5–1 ha	1–3 ha	More than 3 ha	Total
Total cereals		Male	37.6	29.1	25.9	7.3	100.0
		Female	60.0	16.2	10.7	13.2	100.0
		Total	**38.8**	**28.4**	**25.1**	**7.6**	**100.0**
Irrigated rice	Matam	Male	85.9	11.0	3.1	0.0	100.0
		Female	79.7	20.3	0.0	0.0	100.0
		Total	**85.7**	**11.3**	**3.0**	**0.0**	**100.0**
	Saint-Louis	Male	56.8	30.2	11.1	2.0	100.0
		Female	75.0	9.5	2.1	13.3	100.0
		Total	**58.4**	**28.3**	**10.2**	**3.0**	**100.0**
	Total	Male	68.2	21.9	8.7	1.2	100.0
		Female	75.8	11.4	1.7	11.0	100.0
		Total	**68.7**	**21.2**	**8.2**	**1.8**	**100.0**
Rainfed rice	Sedhiou	Male	55.6	26.4	14.6	3.3	100.0
		Female	44.8	24.7	30.5	0.0	100.0
		Total	**55.3**	**26.4**	**15.1**	**3.2**	**100.0**
	Kolda	Male	36.7	41.3	13.9	8.0	100.0
		Female	84.3	15.7	0.0	0.0	100.0
		Total	**36.8**	**41.3**	**13.9**	**8.0**	**100.0**
	Ziguinchor	Male	53.6	26.7	17.1	2.6	100.0
		Female	69.8	0.5	0.0	29.7	100.0
		Total	**58.6**	**18.6**	**11.9**	**10.9**	**100.0**
	Total	Male	49.4	32.7	13.2	4.7	100.0
		Female	73.0	1.8	1.9	23.4	100.0
		Total	**52.1**	**29.1**	**11.9**	**6.9**	**100.0**
Millet	Fatick	Male	9.3	18.0	53.7	19.0	100.0
		Female	4.0	48.2	47.7	0.0	100.0
		Total	**9.1**	**18.8**	**53.6**	**18.5**	**100.0**
	Kaolack	Male	6.9	17.8	61.3	14.1	100.0
		Female	16.9	21.9	61.2	0.0	100.0
		Total	**7.4**	**18.0**	**61.3**	**13.3**	**100.0**
	Kaffrine	Male	6.4	15.9	55.4	22.3	100.0
		Female	30.3	30.3	36.3	3.1	100.0
		Total	**7.2**	**16.3**	**54.8**	**21.7**	**100.0**
	Total	Male	15.8	21.3	47.9	15.0	100.0
		Female	23.6	29.4	45.4	1.7	100.0
		Total	**16.0**	**21.6**	**47.8**	**14.6**	**100.0**
Corn	Fatick	Male	53.5	29.1	16.7	0.8	100.0
		Female	100.0	0.0	0.0	0.0	100.0
		Total	**55.5**	**27.8**	**16.0**	**0.8**	**100.0**
	Kaolack	Male	39.3	41.1	18.8	0.8	100.0
		Female	24.9	75.1	0.0	0.0	100.0
		Total	**38.5**	**43.0**	**17.8**	**0.7**	**100.0**
	Kaffrine	Male	36.2	33.6	24.1	6.1	100.0
		Female	0.0	90.7	0.0	9.3	100.0
		Total	**35.6**	**34.6**	**23.7**	**6.2**	**100.0**

Value chain	Region	HOH gender	Area class				
			Less than 0.5 ha	0.5–1 ha	1–3 ha	More than 3 ha	Total
	Sedhiou	Male	54.1	25.0	20.7	0.2	100.0
		Female	100.0	0.0	0.0	0.0	100.0
		Total	**54.2**	**24.9**	**20.7**	**0.2**	**100.0**
	Kolda	Male	41.8	41.4	12.9	3.9	100.0
		Female	82.5	17.5	0.0	0.0	100.0
		Total	**42.1**	**41.3**	**12.8**	**3.9**	**100.0**
	Ziguinchor	Male	78.4	19.4	2.2	0.0	100.0
		Female	77.6	22.4	0.0	0.0	100.0
		Total	**78.2**	**19.9**	**1.8**	**0.0**	**100.0**
	Total	Male	43.3	37.1	16.7	2.9	100.0
		Female	55.4	43.8	0.0	0.8	100.0
		Total	**43.6**	**37.3**	**16.2**	**2.8**	**100.0**

<u>Source</u>: IPAR, *Baseline Dooleel Mbay, 2022.*

Vegetables planted in small areas

For ATVs, the previous results showed that households grow vegetables in small areas (0.33 ha). This specificity of the market gardening could arise from the fact that it is an activity usually practiced by women close to the houses and even sometimes indoors in vegetable gardens. Further, the most extensive areas are recorded in the Kaolack region through the okra (0.77 ha) and tomato (0.84 ha) VCs. (**Table 3.28**).

It should also be noted that male-headed households have almost the same area (0.33 ha vs. 0.32 ha) as female-headed households. However, this situation is not valid for certain speculations. Indeed, in Saint-Louis for all the speculations produced (onion, tomato, and sweet eggplant), in Kolda and Sédhiou for okra, and Ziguinchor for tomato, the average area sown by female-headed households is higher than it is for male-headed households.

The distribution of planted areas under cultivation by class for vegetables shows a very large dominance in areas of less than 0.5 ha. Areas of less than 0.5 ha are estimated at 87.4% at the household level, which is active in market gardening. This clear dominance regardless of speculation confirms the exploitation of small areas in market gardening (**Table 3.29**).

Table 3.28   Area under cultivation per household in vegetables (ha) by HOH gender and by region

Value chain	Region	HOH gender	Area per household			
			Mean	Standard deviation	Minimum	Maximum
ATV		Male	0.3258	0.7853	0.0030	300.00
		Female	0.3302	0.7172	0.0100	50.400
		Total	**0.3264**	**0.7764**	**0.0030**	**300.00**
Onion	Saint-Louis	Male	0.1811	0.5091	0.0100	6.0000
		Female	0.6435	1.0704	0.0333	4.0000
		Total	**0.2373**	**0.6242**	**0.0100**	**6.0000**
	Ziguinchor	Male	0.2341	0.7619	0.0100	6.0000
		Female	0.0851	0.0467	0.0100	0.1500
		Total	**0.2096**	**0.6989**	**0.0100**	**6.0000**
	Total	Male	0.2802	1.3313	0.0100	30.000
		Female	0.4239	0.8900	0.0100	4.0000
		Total	**0.2936**	**1.2971**	**0.0100**	**30.000**
Tomato	Kaolack	Male	0.8427	1.4287	0.0063	7.5000
		Female				
		Total	**0.8427**	**1.4287**	**0.0063**	**7.5000**
	Saint-Louis	Male	0.1784	0.3716	0.0100	6.0000
		Female	0.4150	0.6765	0.0125	4.0000
		Total	**0.1919**	**0.3991**	**0.0100**	**6.0000**
	Ziguinchor	Male	0.2203	0.2203	0.0030	0.7000

| Value chain | Region | HOH gender | Area per household | | | |
			Mean	Standard deviation	Minimum	Maximum
		Female	0.1167	0.1722	0.0100	0.7400
		Total	**0.1941**	**0.2140**	**0.0030**	**0.7400**
	Total	Male	0.3127	0.6689	0.0030	7.5000
		Female	0.2071	0.4932	0.0100	4.0000
		Total	**0.2999**	**0.6510**	**0.0030**	**7.5000**
Okra	Kaolack	Male	0.5595	1.2639	0.0090	7.5000
		Female	3.2379	1.2870	0.0193	3.7500
		Total	**0.7776**	**1.4623**	**0.0090**	**7.5000**
	Kolda	Male	0.2343	0.2235	0.0050	0.5230
		Female	0.3306	0.1992	0.0115	0.5000
		Total	**0.2357**	**0.2235**	**0.0050**	**0.5230**
	Matam	Male	0.2059	0.5842	0.0100	8.0000
		Female	0.5947	0.9779	0.0100	4.0000
		Total	**0.2550**	**0.6598**	**0.0100**	**8.0000**
	Sedhiou	Male	0.0406	0.0552	0.0100	0.2500
		Female	0.3364	0.3428	0.0230	0.7500
		Total	**0.0487**	**0.0918**	**0.0100**	**0.7500**
	Ziguinchor	Male	0.1919	0.2023	0.0100	1.1000
		Female	0.2229	0.2063	0.0100	0.5000
		Total	**0.1996**	**0.2038**	**0.0100**	**1.1000**
	Total	Male	0.2158	0.5158	0.0050	8.0000
		Female	0.3783	0.7127	0.0100	4.0000
		Total	**0.2418**	**0.5553**	**0.0050**	**8.0000**
Sweet eggplant	Saint-Louis	Male	0.2988	0.6675	0.0100	5.0000
		Female	0.5919	1.2724	0.0100	5.4000
		Total	**0.3801**	**0.8875**	**0.0100**	**5.4000**
	Total	Male	0.2078	0.4331	0.0100	5.0000
		Female	0.3813	0.8411	0.0100	5.4000
		Total	**0.2435**	**0.5471**	**0.0100**	**5.4000**
Bitter eggplant	Ziguinchor	Male	0.2688	0.3075	0.0100	1.0100
		Female	0.0887	0.1230	0.0100	0.5000
		Total	**0.2444**	**0.2959**	**0.0100**	**1.0100**
	Total	Male	0.2276	0.3024	0.0100	2.4000
		Female	0.1417	0.4193	0.0100	4.0000
		Total	**0.2179**	**0.3190**	**0.0100**	**4.0000**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Table 3.29 Breakdown (in %) of areas planted by HOH gender and area class in market gardening

| Value chain | Region | HOH gender | Area class | | | | |
			Less than 0.5 ha	0.5–1 ha	1–3 ha	More than 3 ha	Total
ATV		Male	87.2	6.9	4.6	1.3	100.0
		Female	88.8	6.3	1.7	3.2	100.0
		Total	**87.4**	**6.8**	**4.2**	**1.6**	**100.0**
Onion	Saint-Louis	Male	94.6	3.6	1.1	0.7	100.0
		Female	66.0	23.8	1.9	8.4	100.0
		Total	**91.1**	**6.1**	**1.2**	**1.7**	**100.0**
	Ziguinchor	Male	95.4	3.0	0.0	1.7	100.0
		Female	100.0	0.0	0.0	0.0	100.0
		Total	**96.1**	**2.5**	**0.0**	**1.4**	**100.0**
	Total	Male	94.8	2.2	1.4	1.5	100.0
		Female	80.4	12.6	2.6	4.4	100.0
		Total	**93.5**	**3.2**	**1.5**	**1.8**	**100.0**
Tomato	Kaolack	Male	70.1	10.2	14.2	5.5	100.0
		Female	0.0	0.0	0.0	0.0	0.0
		Total	**70.1**	**10.2**	**14.2**	**5.5**	**100.0**
	Saint-Louis	Male	97.9	0.9	0.9	0.4	100.0
		Female	61.5	35.4	0.0	3.1	100.0

Value chain	Region	HOH gender	Area class				
			Less than 0.5 ha	0.5–1 ha	1–3 ha	More than 3 ha	Total
		Total	**95.8**	**2.9**	**0.8**	**0.5**	**100.0**
	Ziguinchor	Male	80.3	19.7	0.0	0.0	100.0
		Female	95.0	5.0	0.0	0.0	100.0
		Total	**84.0**	**16.0**	**0.0**	**0.0**	**100.0**
	Total	Male	87.4	9.4	2.1	1.1	100.0
		Female	88.7	9.0	1.8	0.4	100.0
		Total	**87.5**	**9.4**	**2.0**	**1.1**	**100.0**
Okra	Kaolack	Male	86.4	2.0	5.1	6.5	100.0
		Female	13.7	0.0	0.0	86.3	100.0
		Total	**80.5**	**1.8**	**4.6**	**13.0**	**100.0**
	Kolda	Male	92.6	7.4	0.0	0.0	100.0
		Female	100.0	0.0	0.0	0.0	100.0
		Total	**92.7**	**7.3**	**0.0**	**0.0**	**100.0**
	Matam	Male	89.0	4.6	6.0	0.4	100.0
		Female	78.2	0.0	18.4	3.5	100.0
		Total	**87.7**	**4.0**	**7.5**	**0.8**	**100.0**
	Sedhiou	Male	100.0	0.0	0.0	0.0	100.0
		Female	53.9	46.1	0.0	0.0	100.0
		Total	**98.7**	**1.3**	**0.0**	**0.0**	**100.0**
	Ziguinchor	Male	98.7	0.7	0.7	0.0	100.0
		Female	100.0	0.0	0.0	0.0	100.0
		Total	**99.0**	**0.5**	**0.5**	**0.0**	**100.0**
	Total	Male	95.7	2.4	1.1	0.8	100.0
		Female	89.7	5.7	1.1	3.4	100.0
		Total	**94.7**	**2.9**	**1.1**	**1.2**	**100.0**
Sweet eggplant	Saint-Louis	Male	84.5	10.9	3.0	1.6	100.0
		Female	77.9	12.0	0.0	10.0	100.0
		Total	**82.7**	**11.2**	**2.2**	**4.0**	**100.0**
	Total	Male	87.3	10.1	2.1	0.5	100.0
		Female	90.8	5.0	0.0	4.2	100.0
		Total	**88.0**	**9.1**	**1.7**	**1.2**	**100.0**
Bitter eggplant	Ziguinchor	Male	83.1	11.9	5.0	0.0	100.0
		Female	100.0	0.0	0.0	0.0	100.0
		Total	**85.4**	**10.3**	**4.3**	**0.0**	**100.0**
	Total	Male	86.9	9.5	3.6	0.0	100.0
		Female	99.0	0.0	0.0	1.0	100.0
		Total	**88.3**	**8.4**	**3.2**	**0.1**	**100.0**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Mango orchards are generally less than one hectare in size

It appears that on average a little less than 1 ha of area is planted (0.92 ha) for permanent mango cultivation. The largest areas of mango planted are noted in Kolda with 1.63 ha and the smallest areas planted in Sedhiou with 0.78 ha. But the standard deviation of 1.47, the minimum area of 0.004 ha, and the maximum area of 10 ha highlight a great variability of areas, especially in Kolda (**Table 3.30**).

In the case of mango, the distribution of areas under 0.5 ha shows a proportion of 68.6%, 14.5% from 0.5 to 1 ha and 12.6% from 1 to 3 ha. Despite a small proportion of areas planted above 3 ha (4.2%), they are more often observed in Sédhiou with 11.5% (Table 3.31).

Table 3.30   Area sown per household in mangoes (ha) by HOH gender by region

Region	Gender HOH	Area of household plantations			
		Mean	Standard deviation	Minimum	Maximum
Total Mango	Male	0.92	2.41	0.001	19.96
	Female	0.23	0.44	0.001	1.50
	Total	**0.86**	**2.31**	**0.001**	**19.96**
Kolda	Male	1.63	4.69	0.001	19.96
	Female				
	Total	**1.63**	**4.69**	**0.001**	**19.96**
Sedhiou	Male	0.82	1.17	0.001	5.00
	Female	0.00		0.001	0.00
	Total	**0.78**	**1.16**	**0.001**	**5.00**
Ziguinchor	Male	0.93	2.18	0.001	9.98
	Female	0.26	0.45	0.001	1.50
	Total	**0.82**	**2.02**	**0.001**	**9.98**

Source: IPAR, *Baseline Dooleel Mbay, 2022*

Table 3.31   Distribution (%) of areas sown by HOH gender and size class in mango

Value chain	Region	HOH gender	Area class				
			Less than 0.5 ha	0.5–1ha	1–3ha	More than 3 ha	Total
Total mango		Male	67.4	16.6	11.0	5.0	100
		Female	75.0	3.9	21.1	0.0	100
		Total	**68.6**	**14.5**	**12.6**	**4.2**	**100**
Mango	Sedhiou	Male	48.7	27.3	11.9	12.1	100
		Female	80.1	19.9	0.0	0.0	100
		Total	**50.1**	**27.0**	**11.3**	**11.5**	**100**
	Kolda	Male	52.6	21.6	25.8	0.0	100
		Female	33.2	0.0	66.8	0.0	100
		Total	**51.2**	**20.0**	**28.8**	**0.0**	**100**
	Ziguinchor	Male	73.3	15.9	7.9	2.9	100
		Female	97.2	2.8	0.0	0.0	100
		Total	**79.2**	**12.7**	**5.9**	**2.2**	**100**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.3 INPUT USE, CULTIVATION PRACTICES, AND STORAGE

The use of manual equipment dominates in soil preparation

Analysis of Table 3.32 shows that, in general, manual equipment is used most often for soil preparation (54.5% of plots). This situation is even more prevalent for rainfed rice in Ziguinchor (95.9%) and vegetables (79.3%). However, animal traction is used extensively by corn producers in Sédhiou (nearly 80% of plots). For millet and corn plots, the use of manual equipment is often associated with animal traction (more than 75% of plots), except for corn plots in Kaffrine and Fatick, where the level of tractor use varies between 28% and 34%. Irrigated rice producers in Saint-Louis and Matam stand out from the others with a high level of tractor use, at 94.8% and 65.9% of plots, respectively. We could also mentioned in St-Louis, the high level of tractor use in Tomato at 85.6% and Onion at 64.6%.

Table 3.32   Distribution of land used (%) by land preparation method by value chain and region

Value chain	Region	Soil preparation method			
		Manual	Animal traction	Tractor	None
Dooleel Mbay area		54.5	22.1	19.5	3.9
Irrigated rice	Matam	21.7	5.4	65.9	6.9
	Saint-Louis	4.7	0.5	94.8	0.0
	Total irrigated rice	**13.6**	**3.6**	**80.7**	**2.2**
Rainfed rice	Sedhiou	57.0	12.9	29.8	0.3
	Kolda	42.0	11.2	45.6	1.2
	Ziguinchor	95.9	1.4	2.2	0.5
	Total rainfed rice	**63.3**	**7.8**	**27.6**	**1.3**
Millet	Fatick	77.4	14.9	6.8	0.9
	Kaolack	15.7	60.5	7.4	16.4
	Kaffrine	48.8	36.4	1.0	13.8
	Total millet	**40.4**	**42.9**	**6.8**	**9.9**
Corn	Fatick	29.6	26.0	43.6	0.8
	Kaolack	8.4	44.5	41.0	6.1
	Kaffrine	27.0	64.6	7.5	0.9
	Sedhiou	8.0	81.7	10.2	0.1
	Kolda	50.3	29.5	19.2	1.0
	Ziguinchor	54.0	33.5	0.0	12.5
	Total corn	**34.4**	**40.6**	**22.3**	**2.7**
Total cereal		**42.2**	**28.9**	**24.1**	**4.7**
Onion	Saint-Louis	35.2	0.2	64.6	0.0
	Ziguinchor	100.0	0.0	0.0	0.0
	Total	**65.9**	**3.5**	**29.8**	**0.8**
Tomato	Kaolack	35.0	58.1	6.2	0.7
	Saint-Louis	14.4	0.0	85.6	0.0
	Ziguinchor	98.1	0.0	0.0	1.9
	Total	**67.1**	**9.5**	**22.5**	**0.9**
Okra	Kaolack	78.6	16.4	1.2	3.7
	Kolda	98.4	1.6	0.0	0.0
	Matam	88.8	0.0	9.0	2.2
	Sedhiou	84.5	4.7	10.0	0.7
	Ziguinchor	100.0	0.0	0.0	0.0
	Total	**91.0**	**3.5**	**2.6**	**2.8**
Sweet eggplant	Saint-Louis	93.5	0.0	6.5	0.0
	Total	**87.1**	**9.5**	**3.4**	**0.0**
Bitter eggplant	Ziguinchor	100.0	0.0	0.0	0.0
	Total	**91.9**	**6.7**	**1.0**	**0.3**
ATV		79.3	8.3	10.2	2.1

<u>Source</u>: IPAR, *Baseline Dooleel Mbay, 2022*.

Ploughing and offsetting are practiced on nearly two-thirds of the plots

In general, ploughing is the main type of soil preparation observed in the ZOI; it is used in 59.6% of plots. As shown in Table 3.33, this proportion is even higher among rainfed rice farmers in Ziguinchor, and corn farmers in Ziguinchor, Sédhiou, and Kaolack, with more than 80% of plots using this method. Irrigated rice farmers in Saint-Louis are more likely to adopt offsetting, with 58.3% of plots compared to 40.8% for plowing, Among irrigated rice farmers in Matam, there is a greater dispersion, with 74.8% plowing and 2.8% using offsetting. Conservation farming, or ripping, is almost nonexistent in all the target regions.

There is also a relatively large proportion of plots where none of these practices is applied, such as millet plots in Fatick, Kaolack, and Kaffrine, and corn plots in Fatick. These producers who still use traditional methods use simple brush cutting (58% for millet plots in Fatick) or at times do not apply any practices (18.2% of millet plots in Kaolack).

Table 3.33   Distribution of harvested plots (%) by way of soil preparation by value chains and region

Value chain	Region	Soil preparation						
		Ploughing	Offsetting	Ripping	Scraping	Simple clearing	Billings	None
Dooleel Mbay area		59.6	6.5	0.0	6.8	17.9	4.6	4.6
Irrigated rice	Matam	74.8	2.8	0.0	12.2	1.9	0.2	8.0
	Saint-Louis	40.8	58.3	0.3	0.3	0.0	0.3	0.0
	Total irrigated rice	**54.1**	**36.9**	**0.2**	**4.8**	**1.1**	**0.2**	**2.7**
Rainfed rice	Sedhiou	70.7	21.6	0.0	1.8	5.6	0.4	0.0
	Kolda	64.3	10.6	0.0	2.7	14.5	2.6	5.2
	Ziguinchor	84.5	0.0	0.0	0.0	0.9	14.1	0.5
	Total rainfed rice	**75.6**	**7.5**	**0.0**	**1.5**	**6.2**	**6.6**	**2.5**
Millet	Fatick	41.0	0.0	0.0	0.6	58.0	0.0	0.3
	Kaolack	55.3	0.1	0.0	6.3	18.9	1.0	18.2
	Kaffrine	26.4	3.3	0.0	11.6	45.5	1.1	12.0
	Total millet	**49.9**	**1.1**	**0.0**	**7.9**	**29.4**	**1.1**	**10.7**
	Fatick	68.1	0.0	0.0	9.5	22.4	0.0	0.0
	Kaolack	86.4	0.4	0.0	3.3	2.3	0.0	7.6
	Kaffrine	61.4	6.2	0.0	6.3	23.8	1.5	0.9
	Sedhiou	87.8	0.2	0.0	3.1	1.2	7.1	0.6
	Kolda	61.9	1.5	0.1	8.9	26.3	0.4	0.9
	Ziguinchor	82.4	0.0	0.0	0.0	1.5	3.6	12.5
Corn	**Total corn**	**69.3**	**1.9**	**0.0**	**6.9**	**17.6**	**1.1**	**3.2**
Total cereal		**62.9**	**6.5**	**0.0**	**5.6**	**16.9**	**2.5**	**5.5**
Onion	Saint-Louis	42.2	31.2	0.0	15.6	0.6	9.2	1.2
	Ziguinchor	50.5	0.0	0.0	18.3	12.4	18.0	0.9
	Total	**47.4**	**16.8**	**0.0**	**13.2**	**13.5**	**7.9**	**1.1**
Tomato	Kaolack	78.0	6.2	0.9	12.6	1.6	0.0	0.8
	Saint-Louis	19.1	49.1	0.0	0.0	4.2	27.6	0.0
	Ziguinchor	66.6	0.9	0.0	9.8	4.6	16.2	1.9
	Total	**49.2**	**14.0**	**0.1**	**6.5**	**16.1**	**13.2**	**0.9**
Okra	Kaolack	50.6	2.4	0.0	40.7	2.0	0.0	4.4
	Kolda	16.0	2.3	0.0	2.1	56.1	23.6	0.0
	Matam	31.0	1.4	0.0	0.6	46.6	0.0	20.3
	Sedhiou	52.0	20.8	0.0	6.8	16.6	0.0	3.7
	Ziguinchor	67.8	0.7	0.0	8.4	7.2	15.9	0.1
	Total	**49.4**	**2.8**	**0.0**	**8.9**	**22.6**	**11.5**	**4.9**
Sweet eggplant	Saint-Louis	82.1	0.0	0.0	1.2	12.3	0.0	4.4
	Total	**73.6**	**1.6**	**0.0**	**11.6**	**11.2**	**0.7**	**1.4**
Bitter eggplant	Ziguinchor	77.1	0.0	0.0	4.9	3.2	14.6	0.1
	Total	**67.4**	**1.2**	**0.0**	**9.6**	**10.0**	**11.4**	**0.4**
ATV		52.9	6.3	.0	9.3	19.9	9.0	2.6

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Households adopt recommended seed rates despite low use of certified seeds

The amount of seed used varies according to the crop, the sowing method, and sometimes the variety of the crop. Table 4.2 shows that farm households use about 140 kg of irrigated rice seed per hectare, whereas the recommended seed rate for this crop varies between 100 and 160 kg. For rainfed rice, the amount of seed used is slightly lower in Ziguinchor (89.7 kg) than in Kolda (109.3 kg) and Sédhiou (107%). For this crop as well, producers respect the seed rate, which is between 80 and 120 kg per hectare. For millet plots, the quantities of seed used per hectare are around 5 kg per hectare, whereas for corn they vary between 14 and 17 kg per hectare. Compared with other regions, households in Kaffrine use less seed on average for these two crops but still remain close to the recommended rate (4–5 kg for millet and 16–20 kg for corn). The quantities of seed used for market garden crops are much lower; they are in the order of 4 to 5 kg for onions, 2 kg for tomatoes, 5 kg for okra, 0.3 kg for sweet eggplant, and 6 kg for bitter eggplant.

With regard to the type of seed, it appears that seed use is still low: it concerns only 27.6% of households (Table 3.34). However, there are significant disparities between crops and sometimes between regions in terms of seed use. In general, certified seed is often used in crops such as irrigated rice, vegetables, and, to a lesser extent, corn. Irrigated rice plots use the most certified seed, at 40.1% in the Matam region and 53% in the Saint-Louis region. The percentages of certified seed are low for rainfed rice (13.1% in Sédhiou, 19.0% in Kolda, and 11% in Ziguinchor), for millet (2.1% in Fatick, 9.9% in Kaolack, and 7.6% in Kaffrine), and for corn, only in Kaolack is the use of certified seed quite high (36.8%); otherwise, in all other areas, the percentages observed are much lower. The use of certified seed for ATVs is quite pronounced, ranging from 36.9% in the Kaolack region to 69.1% in the Matam region, i.e., a percentage of 48.2% of the total quantity of seed used. The same trend is observed in the regions concerned.

Table 3.34   Distribution of plots by seed use (%)

Value chain	Region	Quantity of seeds used per hectare	Proportion of producers using certified seeds	Proportion of certified seeds in the total quantity used
Dooleel Mbay area		433.0	27.6	26.6
Irrigated rice	Matam	141.1	40.1	39.8
	Saint-Louis	136.0	53.0	51.1
	Total irrigated rice	**136.3**	**46.4**	**45.1**
Rainfed rice	Sedhiou	107.4	13.1	10.9
	Kolda	109.3	19.0	18.2
	Ziguinchor	89.7	11.0	11.3
	Total rainfed rice	**99.3**	**16.0**	**15.7**
Millet	Fatick	5.4	2.1	2.1
	Kaolack	5.5	9.9	9.5
	Kaffrine	5.0	7.6	7.5
	Total millet	**5.2**	**10.4**	**10.0**
Corn	Fatick	16.8	2.9	2.9
	Kaolack	15.9	36.8	33.3
	Kaffrine	13.9	10.8	9.3
	Sedhiou	15.1	18.7	17.5
	Kolda	14.0	10.6	10.5
	Ziguinchor	14.1	7.1	5.5
	Total corn	**14.7**	**17.1**	**15.4**
Total cereal		**46.3**	**17.4**	**16.5**
Onion	Saint-Louis	5.3	80.3	80.1
	Ziguinchor	4.2	47.4	51.8
	Total	**4.4**	**71.7**	**73.0**
Tomato	Kaolack	1.9	21.8	21.8
	Saint-Louis	2.1	81.9	81.9
	Ziguinchor	2.7	60.7	60.7

Value chain	Region	Quantity of seeds used per hectare	Proportion of producers using certified seeds	Proportion of certified seeds in the total quantity used
	Total	**2.3**	**58.6**	**58.6**
Okra	Kaolack	5.0	56.3	57.2
	Kolda	5.1	34.5	34.5
	Matam	5.0	54.3	54.1
	Sedhiou	5.0	33.4	33.4
	Ziguinchor	5.0	22.8	22.8
	Total	**5.0**	**34.5**	**34.1**
Sweet eggplant	Saint-Louis	0.3	52.4	52.4
	Total	**0.3**	**45.8**	**45.8**
Bitter eggplant	Ziguinchor	6.0	42.8	43.2
	Total	**6.0**	**40.2**	**40.5**
ATV		1,220.0	48.2	47.1

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

The most common method of sowing is by machine (in line) and transplanting (nursery)

Seeding technologies are applied in fairly high proportions. Indeed, we note that the use of the seeder machine is fairly widespread, especially for corn and millet cultivation, and represents 42.3% of the seeding methods applied by producers. The method is used extensively by millet and corn producers in the central regions (Kaolack, Fatick, and Kaffrine), i.e., more than 95%, and by some corn producers in Kolda and Sédhiou. In contrast to what is observed in these areas, there is an absence of seed drill use in the regions of Matam and Saint-Louis, where irrigated rice is grown. In addition, the most common practice for growing ATVs is transplanting (53.5%). Transplanting rainfed rice is also a fairly common practice in Ziguinchor (92.8%), as is on-the-fly seeding without presprouting (52.4%) for irrigated rice in the Matam region.

Table 3.35   Distribution of producers by method of sowing by value chain and region

Value chain	Region	Sowing method					
		Transplanting (nursery)	On the fly with presprouting	Regrowths	Seeder machine (in line)	Other	On the fly without presprouting
Dooleel Mbay area		29.2	5.0	3.9	42.3	8.8	10.7
Irrigated rice	Matam	47.0	0.2	0.0	0.0	0.3	52.4
	Saint-Louis	33.5	19.2	0.2	0.0	0.0	47.0
	Total irrigated rice	**38.0**	**12.1**	**1.0**	**1.3**	**0.1**	**47.5**
Rainfed rice	Sedhiou	2.4	0.3	8.1	8.9	4.8	75.4
	Kolda	6.4	20.1	1.6	20.5	34.6	16.7
	Ziguinchor	92.8	0.0	0.2	0.2	4.4	2.4
	Total rainfed rice	**46.1**	**6.6**	**2.6**	**8.3**	**13.7**	**22.7**
Millet	Fatick	0.0	0.0	0.0	100.0	0.0	0.0
	Kaolack	0.7	0.0	0.0	99.3	0.1	0.0
	Kaffrine	3.0	0.0	0.0	96.5	0.1	0.3
	Total millet	**2.2**	**0.2**	**3.1**	**88.9**	**4.0**	**1.6**
Corn	Fatick	0.0	0.0	0.0	99.8	0.2	0.0
	Kaolack	0.9	0.0	0.0	98.8	0.4	0.0
	Kaffrine	3.1	0.0	0.0	95.5	0.0	1.4
	Sedhiou	5.5	0.0	10.1	58.7	17.1	8.7
	Kolda	0.3	0.0	1.2	89.2	8.3	0.9
	Ziguinchor	4.1	0.0	3.5	8.7	71.1	12.5
	Total corn	**1.3**	**0.2**	**2.4**	**86.4**	**7.2**	**2.4**
Total cereal		**17.3**	**3.1**	**2.5**	**57.9**	**7.2**	**12.0**

Value chain	Region	Sowing method					
		Transplanting (nursery)	On the fly with presprouting	Regrowths	Seeder machine (in line)	Other	On the fly without presprouting
Onion	Saint-Louis	94.8	0.0	4.7	0.0	0.0	0.4
	Ziguinchor	89.2	0.4	0.0	0.0	9.2	1.3
	Total	**89.0**	**0.9**	**2.9**	**.8**	**5.1**	**1.3**
Tomato	Kaolack	42.0	52.2	0.0	3.5	2.3	0.0
	Saint-Louis	95.7	0.0	3.8	0.5	0.0	0.0
	Ziguinchor	84.8	0.9	0.3	0.0	2.0	12.0
	Total	**75.3**	**13.6**	**2.4**	**1.6**	**1.5**	**5.6**
Okra	Kaolack	1.0	1.1	27.7	16.8	52.1	1.2
	Kolda	6.2	22.9	0.0	40.4	12.2	18.3
	Matam	6.0	0.0	14.0	18.0	30.6	31.4
	Sedhiou	22.6	0.0	10.6	1.8	55.3	9.8
	Ziguinchor	17.3	1.8	7.9	7.0	42.5	23.5
	Total	**12.5**	**5.1**	**10.9**	**20.3**	**32.5**	**18.6**
Sweet eggplant	Saint-Louis	92.2	0.0	4.0	3.7	0.0	0.0
	Total	**84.3**	**3.8**	**4.2**	**5.6**	**1.1**	**1.0**
Bitter eggplant	Ziguinchor	97.1	0.2	0.0	0.2	2.4	0.0
	Total	**87.4**	**0.2**	**3.1**	**3.5**	**3.6**	**2.3**
ATV		53.5	9.0	6.7	10.7	12.1	8.1

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

The seeds used come mainly from the producers' personal reserves.

Analysis of the table below (**Table 3.36**) shows that the seeds used on most plots come from personal reserves, which is true for 60% of plots. After personal reserves, producers most often obtain their supplies from local markets (31.6%). For cereals, even though some producers obtain supplies from projects and NGOs (2.7%), local markets (14.1%), and networks (2.1%), the overwhelming majority of producers (78.7%) use their personal reserves for seed. In the cereal VC, producers essentially use their own reserves, i.e., 87% for rainfed rice, 88% for millet, and 79% for corn. This result corroborates the low rates of improved seeds used in these areas. ATVs generally obtain their seed from local markets at 67.3% and from personal reserves at 24.3%. The same pattern is observed in all other regions.

Table 3.36   Distribution of producers by main source of seeds used by value chain and by region (%)

Value chain	Region	Main source of seeds used					
		Personal reserves	Program	Government Farm Program	Projects/ NGOs	Networks	Local market/APS
Dooleel Mbay area		60.7	1.1	1.6	2.6	2.3	31.6
Irrigated rice	Matam	32.0	1.3	0.0	16.7	12.5	37.6
	Saint-Louis	30.3	5.7	0.7	2.5	4.3	56.4
	Total irrigated rice	**35.2**	**3.9**	**0.5**	**6.8**	**6.7**	**46.8**
Rainfed rice	Sedhiou	93.7	0.3	2.1	1.0	0.0	3.0
	Kolda	81.6	0.0	1.1	7.7	0.9	8.8
	Ziguinchor	87.4	0.3	5.6	2.5	0.3	3.9
	Total rainfed rice	**82.2**	**0.3**	**3.0**	**5.2**	**2.2**	**7.0**
Mil	Fatick	92.4	0.0	0.0	0.6	1.0	6.0
	Kaolack	84.7	0.0	0.7	2.6	0.8	11.2
	Kaffrine	87.9	0.0	2.1	0.9	1.3	7.8
	Total millet	**86.0**	**0.0**	**0.8**	**1.2**	**1.0**	**11.0**
Corn	Fatick	78.1	0.0	0.0	1.7	0.0	20.2
	Kaolack	64.9	0.0	8.0	0.7	3.6	22.8
	Kaffrine	73.0	0.0	3.9	0.0	2.1	21.1
	Sedhiou	80.1	0.0	4.3	1.1	1.7	12.8
	Kolda	95.1	0.0	0.6	0.6	1.1	2.6
	Ziguinchor	87.7	0.0	3.7	1.8	0.0	6.9

Value chain	Region	Main source of seeds used					
		Personal reserves	Program	Government Farm Program	Projects/ NGOs	Networks	Local market/AP S
	Total corn	**81.4**	**0.2**	**2.8**	**0.7**	**1.7**	**13.3**
Total cereal		**78.7**	**0.5**	**2.0**	**2.7**	**2.1**	**14.1**
Onion	Saint-Louis	5.6	4.0	0.0	0.4	12.7	77.3
	Ziguinchor	7.1	6.9	0.0	3.3	4.2	78.5
	Total	**4.5**	**3.9**	**0.3**	**4.9**	**7.1**	**79.2**
Tomato	Kaolack	26.6	1.3	4.2	4.0	1.8	62.1
	Saint-Louis	1.0	11.7	0.0	2.5	10.0	74.9
	Ziguinchor	18.1	0.4	0.0	0.9	4.1	76.5
	Total	**16.3**	**3.9**	**0.7**	**2.2**	**4.3**	**72.6**
Okra	Kaolack	19.1	0.0	7.8	20.6	3.9	48.5
	Kolda	31.7	0.0	0.0	0.0	0.0	68.3
	Matam	2.3	1.9	0.6	2.0	0.0	93.2
	Sedhiou	43.2	0.0	0.0	0.0	3.7	53.1
	Ziguinchor	46.0	1.5	0.0	0.2	1.7	50.6
	Total	**31.7**	**1.3**	**1.0**	**2.3**	**1.7**	**62.0**
Sweet eggplant	Saint-Louis	0.0	0.0	0.0	9.7	0.6	89.7
	Total	**32.1**	**2.6**	**1.2**	**4.6**	**2.1**	**57.4**
Bitter eggplant	Ziguinchor	33.1	2.2	0.0	0.5	1.5	62.7
	Total	**30.7**	**2.4**	**0.5**	**1.8**	**1.8**	**62.9**
ATV		24.3	2.2	0.9	2.5	2.9	67.3

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Mineral fertilizers use is moderate among producers

The analysis of Table 3.37 shows that NPK fertilizer is used by 39.1% of producers. In addition, 66.7% of them apply it in a single application and the average quantity used is 179.7kg/ha. The average amount of NPK used per hectare exceeds 100kg/ha and is more pronounced among cereal producers (193.1kg/ha) for all regions except for corn in the Ziguinchor region (84kg/ha). Comparing cereals, it appears that irrigated rice and corn are the crops that use the highest doses of NPK. For irrigated rice, more than 200 kg/ha of NPK is used per hectare, whereas the recommended doses are between 150 kg/ha and 250 kg/ha. Rainfed rice plots receive less NPK, with amounts ranging from 91 to 143 kg/ha compared with a recommended rate of 200 kg.

ATV producers use less NPK than cereal producers (26.1% vs. 45.5%), and this percentage varies slightly from one region to another (around 20%), except for the Kaolack region, where 60% of vegetable producers use this type of fertilizer.

As for the method used for the application of NPK, it is generally applied in at least two applications for most ATVs (62.7%) and in a single application for cereals (75.2%).

Table 3.37 NKP distribution and method of application by value chain and by region (%)

Value chain	Region	NPK user (%)	Quantity of NPK used per hectare	NPK Application Mode (%)			
				One application	Two sprays	Three or more applications	Deep placement
Dooleel Mbay area		39.1	179.7	66.7	14.1	14.8	4.4
Irrigated rice	Matam	73.1	263.4	59.5	38.4	2.0	0.0
	Saint-Louis	20.4	234.4	66.9	20.3	12.8	0.0
	Total irrigated rice	**36.5**	**254.5**	**63.1**	**31.2**	**5.7**	**0.0**
Rainfed rice	Sedhiou	31.0	92.8	74.5	9.2	16.3	0.0
	Kolda	42.7	145.4	44.3	20.9	33.4	1.4
	Ziguinchor	1.9	143.3	100.0	0.0	0.0	0.0
	Total rainfed rice	**27.0**	**141.4**	**54.6**	**24.5**	**20.0**	**0.8**
Millet	Fatick	70.4	186.5	92.2	7.4	0.0	0.4

Value chain	Region	NPK user (%)	Quantity of NPK used per hectare	NPK Application Mode (%)			
				One application	Two sprays	Three or more applications	Deep placement
	Kaolack	82.0	192.7	88.0	0.6	1.5	10.0
	Kaffrine	50.9	145.2	83.8	2.9	7.8	5.5
	Total millet	**55.2**	**174.8**	**84.5**	**4.1**	**3.7**	**7.7**
	Fatick	96.8	231.9	99.2	0.8	0.0	0.0
	Kaolack	90.0	262.6	89.0	0.3	0.0	10.7
	Kaffrine	53.1	190.3	85.7	9.9	4.4	0.0
	Sedhiou	30.8	119.9	51.2	19.1	29.7	0.0
	Kolda	46.1	224.3	60.2	28.1	4.3	7.3
	Ziguinchor	5.4	83.9	65.8	34.2	0.0	0.0
Corn	**Total corn**	**54.4**	**225.0**	**76.4**	**13.6**	**3.8**	**6.2**
Total cereal		**45.5**	**193.1**	**75.2**	**12.8**	**6.5**	**5.5**
	Saint-Louis	32.3	233.4	19.2	60.0	20.0	0.9
Onion	Ziguinchor	2.2	266.5	100.0	0.0	0.0	0.0
	Total	**31.2**	**202.8**	**32.2**	**48.2**	**18.6**	**0.9**
	Kaolack	87.1	60.3	42.9	16.3	39.5	1.3
Tomato	Saint-Louis	37.3	67.8	12.0	49.9	38.1	0.0
	Ziguinchor	23.1	74.8	0.0	6.3	93.7	0.0
	Total	**35.8**	**68.6**	**24.6**	**22.6**	**52.4**	**0.5**
	Kaolack	45.8	110.2	62.2	8.2	29.6	0.0
	Kolda	15.4	97.4	39.0	26.8	30.1	4.1
	Matam	7.6	110.5	63.5	36.5	0.0	0.0
Okra	Sedhiou	14.7	78.1	65.3	11.6	13.8	9.3
	Ziguinchor	13.6	57.3	32.8	4.9	62.3	0.0
	Total	**17.0**	**74.9**	**51.6**	**13.7**	**33.6**	**1.2**
Sweet eggplant	Saint-Louis	0.0		0.0	0.0	0.0	0.0
	Total	**19.9**	**91.1**	**42.3**	**9.3**	**48.4**	**0.0**
Bitter eggplant	Ziguinchor	40.3	289.4	1.7	1.4	96.9	0.0
	Total	**38.2**	**250.1**	**15.7**	**5.5**	**78.9**	**0.0**
ATV		26.1	132.3	37.3	18.4	43.7	0.6

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Urea is applied by nearly one-third of producers (31.2%), with an average dose per hectare of 183.1 kg. For cereals, the central and northern regions use this type of fertilizer the most. As with NPK, irrigated rice and corn are the two cereals that use more urea. The average amount applied per hectare is around 303.5 kg/ha for irrigated rice in the regions of Saint-Louis (308 kg/ha) and Matam (308 kg/ha) compared with a recommended dose of about 350 kg. The most frequent method of application is single application (48%). The use of urea is also important in the regions of Fatick (70.9%) and Kaolack (71.9%) among corn producers. In contrast, in the Ziguinchor region, urea use is very low at 3.4% (for rainfed rice) and 8.9% (for corn). (Table 3.38)

For ATVs, 32.1% of producers use urea as a fertilizer, with an average quantity of 161 kg/ha in the areas concerned, where it is often applied in two or more applications.

Table 3.38   Urea distribution and mode of application by value chains and by region (%)

Value chain	Region	Use of urea (%)	Quantity of urea used per hectare	Urea application mode			
				One application	Two applications	Three or more applications	Deep placement
Dooleel Mbay area		31.2	183.1	48.0	33.6	16.8	1.6
	Matam	85.7	308.0	20.9	71.6	7.5	0.0
Irrigated rice	Saint-Louis	94.5	303.5	6.0	70.5	23.3	0.1
	Total irrigated rice	**85.6**	**305.1**	**11.0**	**70.9**	**18.1**	**0.1**

Value chain	Region	Use of urea (%)	Quantity of urea used per hectare	Urea application mode			
				One application	Two applications	Three or more applications	Deep placement
Rainfed rice	Sedhiou	34.3	112.6	48.9	22.3	28.8	0.0
	Kolda	28.0	121.0	70.2	27.0	2.7	0.1
	Ziguinchor	3.4	108.0	8.9	91.1	0.0	0.0
	Total rainfed rice	**24.4**	**138.3**	**44.8**	**38.2**	**16.9**	**0.1**
Millet	Fatick	10.8	63.8	92.8	4.6	0.0	2.6
	Kaolack	20.5	86.3	98.1	1.0	0.0	0.9
	Kaffrine	8.4	70.3	96.5	3.5	0.0	0.0
	Total millet	**13.8**	**81.3**	**86.9**	**9.0**	**3.0**	**1.1**
Corn	Fatick	70.9	243.3	87.9	12.1	0.0	0.0
	Kaolack	71.9	217.5	97.4	0.2	0.0	2.4
	Kaffrine	25.2	173.2	92.7	5.2	2.1	0.0
	Sedhiou	37.1	156.8	45.7	28.1	26.2	0.0
	Kolda	26.9	172.8	80.5	9.8	6.3	3.4
	Ziguinchor	8.9	84.6	79.3	20.7	0.0	0.0
	Total corn	**38.1**	**192.7**	**84.5**	**8.3**	**5.2**	**2.0**
Total cereal		**30.8**	**194.6**	**56.2**	**32.0**	**10.9**	**0.9**
Onion	Saint-Louis	72.5	238.6	16.5	51.6	31.9	0.0
	Ziguinchor	0.0		0.0	0.0	0.0	0.0
	Total	**39.9**	**227.3**	**23.5**	**46.5**	**29.5**	**0.5**
Tomato	Kaolack	70.9	46.8	68.2	15.2	16.5	0.0
	Saint-Louis	72.5	278.2	14.9	64.4	20.7	0.0
	Ziguinchor	37.9	163.7	30.5	9.0	60.5	0.0
	Total	**47.4**	**182.2**	**34.1**	**34.1**	**31.8**	**0.0**
Okra	Kaolack	14.9	137.4	90.1	0.0	9.9	0.0
	Kolda	21.1	134.4	70.5	17.8	11.7	0.0
	Matam	9.7	118.6	13.1	29.7	57.2	0.0
	Sedhiou	26.1	92.1	43.2	21.3	30.2	5.3
	Ziguinchor	31.9	116.9	30.4	51.1	4.7	13.7
	Total	**24.8**	**116.2**	**39.4**	**39.5**	**13.0**	**8.0**
Sweet eggplant	Saint-Louis	19.7	60.4	34.9	54.5	10.6	0.0
	Total	**38.6**	**82.1**	**16.5**	**65.8**	**17.7**	**0.0**
Bitter eggplant	Ziguinchor	56.2	172.0	11.4	34.5	53.1	1.0
	Total	**44.2**	**166.9**	**15.8**	**33.3**	**50.0**	**.9**
ATV		32.1	160.8	32.0	36.6	28.4	2.9

Source: IPAR, *Baseline Dooleel Mbay, 2022*

DAP virtually unused by producers

DAP is the mineral fertilizer least used by producers, at 5.5%. For cereals, the use of DAP is 6% and it is mainly used for irrigated rice in the regions of Saint-Louis (62.3%) and Matam (11.9%). DAP is mostly applied in a single application in Saint-Louis and in two or more applications in Matam. DAP is almost nonexistent in the other regions. (Table 3.39)

The use of DAP by ATV producers is also very low, at 4.3% overall, and is mainly applied in the Saint-Louis (24.5%) and Matam (2.4%) regions, in one or two applications.

Table 3.39   DAP distribution and method of application by value chains and by region (%)

Value chain	Region	DAP User	Quantity of DAP used per hectare	DAP application mode			
				One application	Two applications	Three or more applications	Deep placement
Dooleel Mbay area		5.5	183.9	51.9	20.9	9.8	17.3
Irrigated rice	Matam	11.9	226.2	39.4	42.3	18.3	0.0
	Saint-Louis	62.3	181.6	67.1	18.9	5.7	8.3
	Total irrigated rice	**42.3**	**185.5**	**64.7**	**21.0**	**6.8**	**7.6**
Rainfed rice	Sedhiou	0.0		0.0	0.0	0.0	0.0
	Kolda	6.2	250.0	0.0	0.0	0.0	100.0
	Ziguinchor	0.0		0.0	0.0	0.0	0.0
	Total rainfed rice	**3.5**	**226.5**	**37.5**	**2.0**	**0.0**	**60.5**
Millet	Fatick	0.0		0.0	0.0	0.0	0.0
	Kaolack	0.0		0.0	0.0	0.0	0.0
	Kaffrine	0.3	150.0	100.0	0.0	0.0	0.0
	Total millet	**0.7**	**295.5**	**34.6**	**65.4**	**0.0**	**0.0**
Corn	Fatick	0.0		0.0	0.0	0.0	0.0
	Kaolack	0.0		0.0	0.0	0.0	0.0
	Kaffrine	0.0		0.0	0.0	0.0	0.0
	Sedhiou	0.7	218.5	50.0	50.0	0.0	0.0
	Kolda	4.0	197.6	1.1	0.0	0.0	98.9
	Ziguinchor	0.0		0.0	0.0	0.0	0.0
	Total corn	**2.3**	**185.9**	**12.5**	**5.1**	**2.6**	**79.9**
Total cereal		**6.0**	**196.6**	**53.5**	**18.1**	**5.0**	**23.4**
Onion	Saint-Louis	35.9	141.9	47.0	21.3	31.6	0.0
	Ziguinchor	0.0		0.0	0.0	0.0	0.0
	Total	**14.1**	**141.7**	**47.0**	**21.4**	**31.7**	**0.0**
Tomato	Kaolack	0.0		0.0	0.0	0.0	0.0
	Saint-Louis	30.0	207.3	31.5	44.7	23.8	0.0
	Ziguinchor	0.0		0.0	0.0	0.0	0.0
	Total	**7.4**	**214.5**	**30.9**	**45.7**	**23.4**	**0.0**
Okra	Kaolack	0.0		0.0	0.0	0.0	0.0
	Kolda	0.9	29.8	100.0	0.0	0.0	0.0
	Matam	3.6	72.3	45.0	7.5	47.5	0.0
	Sedhiou	0.0		0.0	0.0	0.0	0.0
	Ziguinchor	0.0		0.0	0.0	0.0	0.0
	Total	**2.2**	**103.6**	**73.1**	**17.4**	**9.5**	**0.0**
Sweet eggplant	Saint-Louis	22.5	30.0	54.3	28.8	16.9	0.0
	Total	5.7	30.5	54.2	28.8	17.0	0.0
Bitter eggplant	Ziguinchor	0.0		0.0	0.0	0.0	0.0
	Total	**0.7**	**85.8**	**87.1**	**0.0**	**12.9**	**0.0**
ATV		4.3	147.6	47.7	28.7	23.6	0.0

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Manure is more widely used by horticultural producers

In terms of the rate of manure use, 35.3% of producers use manure as a fertilizer. This proportion is higher among vegetable producers (54.5%) than among cereal producers (25.9%). In the groundnut basin, the use of manure is fairly common among millet producers: 40.4% in the Kaolack region, 67.6% in Fatick, and 19.5% in the Kaffrine region. Its use among corn producers is as follows: 37.5% in the Fatick region, 32% in Kaolack, and 26.2% in Kaffrine. In the southern and northern regions, the proportion of producers using manure is relatively low. Among market gardeners, more than half of producers use manure. This trend is observed in Ziguinchor (84.3%) and in the regions of Fatick and Kaolack, with its use at 51.2% and 56.9%, respectively. (Table 3.40)

With regard to the method of use, single application is more frequent for all VCs with some regional disparities. It should also be noted that deep placement of organic manure is widely practiced by irrigated rice producers in Saint-Louis

Table 3.40   Percentage distribution of manure and method of application by value chain and region

Value chain	Region	Manure use	Manure application mode			
			One application	Two applications	Three or more applications	Deep placement
Dooleel Mbay area		35.3	48.1	11.9	28.8	11.2
Irrigated rice	Matam	2.2	91.8	0.0	8.2	0.0
	Saint-Louis	0.4	44.9	0.0	0.0	55.1
	Total irrigated rice	**3.9**	**86.5**	**0.0**	**10.3**	**3.2**
Rainfed rice	Sedhiou	8.1	80.3	19.7	0.0	0.0
	Kolda	6.3	92.5	0.4	7.1	0.0
	Ziguinchor	71.2	60.7	18.2	15.6	5.5
	Total rainfed rice	**33.4**	**64.2**	**16.8**	**14.1**	**4.8**
Millet	Fatick	67.6	72.3	2.7	25.1	0.0
	Kaolack	40.4	41.5	0.7	48.0	9.7
	Kaffrine	19.5	58.2	8.2	33.6	0.0
	Total millet	**32.0**	**57.4**	**2.7**	**34.5**	**5.5**
Corn	Fatick	37.7	70.1	9.6	20.3	0.0
	Kaolack	32.0	19.5	0.2	63.7	16.6
	Kaffrine	26.2	76.7	12.3	11.0	0.0
	Sedhiou	13.0	55.3	23.1	0.0	21.6
	Kolda	8.0	61.9	23.5	8.8	5.7
	Ziguinchor	72.7	74.2	6.1	2.5	17.2
	Total corn	**19.2**	**53.1**	**9.9**	**26.3**	**10.6**
Total cereal		**25.9**	**59.3**	**9.1**	**25.3**	**6.3**
Onion	Saint-Louis	22.3	46.0	29.0	3.7	21.3
	Ziguinchor	98.7	24.6	10.0	61.2	4.2
	Total	**50.7**	**33.0**	**16.3**	**35.6**	**15.1**
Tomato	Kaolack	44.8	42.5	5.7	51.5	0.3
	Saint-Louis	8.6	8.2	0.0	0.0	91.8
	Ziguinchor	96.2	27.3	16.9	33.1	22.6
	Total	**52.4**	**31.4**	**14.7**	**32.5**	**21.4**
Okra	Kaolack	69.4	54.2	22.1	13.9	9.8
	Kolda	38.5	46.8	6.0	46.5	0.8
	Matam	7.3	47.4	0.0	32.9	19.7
	Sedhiou	43.0	83.7	4.3	3.9	8.0
	Ziguinchor	71.8	33.7	24.6	35.7	6.1
	Total	**54.6**	**39.0**	**20.2**	**30.2**	**10.7**
Sweet eggplant	Saint-Louis	72.7	24.1	15.4	8.0	52.5
	Total	**75.4**	**38.6**	**5.5**	**21.3**	**34.6**
Bitter eggplant	Ziguinchor	89.5	27.1	11.6	61.3	0.0
	Total	**76.3**	**28.6**	**12.0**	**53.4**	**6.0**
ATV		54.5	37.3	14.6	32.1	16.0

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Herbicides are rarely used

Analysis of the table below (**Table 3.41**) reveals that herbicide use remains quite low overall, at 8.8%. In addition, herbicides are used on 60.9% of the plots in the Saint-Louis region and 33.1% of the plots in Kolda for irrigated rice and 19.1% for corn. In the central zone, herbicide use is almost nonexistent, affecting less than 9% of plots in all VCs. In the Ziguinchor region, there is no use of herbicides for the corn VC.

In terms of weed control, the use of hands is the most common practice in all plots (73%), followed by the hoe (18%). This trend is more pronounced among corn producers in Ziguinchor and Sédhiou, and irrigated rice producers in Matam. In contrast, millet farmers in Kaolack are more likely to use the hoe to control weeds. The use of these two methods dominates in the central zone of the country with the millet and corn VCs showing the same trends. For ATVs, 87.6% of producers weed by hand.

This trend is observed in all regions except for the Kaffrine region, where the hoe represents 57% of weed control practices, compared with 48.3% who control weeds by hand.

Table 3.41   Distribution of producers by main method of weed control by value chain and by region (%)

Value chain	Region	Herbicide user	Main mode of weed control		
			Hoe	By hand	Herbicides
Dooleel Mbay area		12.8	18.3	73.0	8.8
Irrigated rice	Matam	9.6	0.0	90.7	9.3
	Saint-Louis	60.9	0.1	39.1	60.9
	Total irrigated rice	**41.1**	**1.2**	**57.8**	**41.0**
Rainfed rice	Sedhiou	5.9	1.5	92.6	5.9
	Kolda	33.1	10.3	58.4	31.3
	Ziguinchor	9.1	0.2	99.4	0.3
	Total rainfed rice	**15.5**	**3.8**	**84.9**	**11.3**
Millet	Fatick	1.7	30.3	68.0	1.7
	Kaolack	0.2	50.9	49.0	0.2
	Kaffrine	3.8	52.0	47.9	0.1
	Total millet	**4.5**	**39.7**	**58.0**	**2.4**
Corn	Fatick	7.7	37.2	55.1	7.7
	Kaolack	0.2	42.7	57.3	0.0
	Kaffrine	7.5	51.0	49.0	0.0
	Sedhiou	7.5	10.1	82.4	7.5
	Kolda	19.1	27.6	55.2	17.2
	Ziguinchor	0.0	1.5	98.5	0.0
	Total corn	**11.0**	**30.9**	**60.0**	**9.1**
Total cereal		**13.0**	**23.7**	**65.8**	**10.5**
Onion	Saint-Louis	34.0	0.0	66.0	34.0
	Ziguinchor	0.0	1.3	98.7	0.0
	Total	**14.2**	**1.6**	**84.7**	**13.7**
Tomato	Kaolack	0.0	5.7	94.3	0.0
	Saint-Louis	31.9	0.0	68.1	31.9
	Ziguinchor	24.1	0.4	99.6	0.0
	Total	**17.6**	**1.0**	**91.0**	**8.0**
Okra	Kaolack	0.0	5.1	94.9	0.0
	Kolda	6.1	5.7	88.5	5.8
	Matam	1.0	26.0	73.6	0.4
	Sedhiou	0.0	0.0	100.0	0.0
	Ziguinchor	18.0	0.0	99.7	0.3
	Total	**9.1**	**7.7**	**91.0**	**1.3**
Sweet eggplant	Saint-Louis	1.2	0.0	100.0	0.0
	Total	**16.9**	**4.2**	**94.9**	**1.0**
Bitter eggplant	Ziguinchor	0.4	0.4	99.2	0.4
	Total	**0.5**	**3.6**	**96.0**	**0.5**
ATV		12.4	7.2	87.6	5.2

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Harvesting is usually done manually

Concerning harvesting, the use of machines is rare as only 4.3% of the plots are harvested mechanically. In general, plots are harvested manually (91.5%). The regions of Saint-Louis and Kolda remain the areas where mechanized harvesting is most important, with 24% of irrigated rice plots in the north and 30.9% if rainfed rice plots in the south using this method. For the other VCs (cereals), mechanized harvesting does not exceed 4%. For ATVs, 94.3% of producers use manual harvesting; this trend is observed in all

regions except Kaffrine, where mechanized harvesting is used for 22.1% of plots. The latter remains low for all areas and does not exceed 2%. (Table 3.42)

Manual harvesting is more important for threshing operations, as it concerns 67.8% of plots. In the southern regions, this proportion reaches 96% for the corn VC, 86% for the rainfed rice VC, and 83.8% for irrigated rice in Matam. Irrigated rice in the Saint-Louis region and millet in the Kaolack region remain the crops where mechanized threshing is highest, with 64.5% and 87% of plots, respectively, using this method. In the Fatick region, mechanization is used as much as manual threshing in the millet and corn VCs. For ATVs, manual threshing is used by 96.9% of producers. However, 20% of producers in the Kaffrine region use machines.

Table 3.42   Distribution of producers by main harvesting and threshing mode by value chain and by region (%)

Value chain	Region	Main harvesting method			Main threshing method	
		No harvesting	Manual	Mechanized	Manual	Mechanized
Dooleel Mbay area		4.2	91.5	4.3	67.8	32.2
Irrigated rice	Matam	0.4	99.1	0.4	83.8	16.2
	Saint-Louis	2.9	73.1	24.0	34.6	65.4
	Total irrigated rice	**2.5**	**82.5**	**15.0**	**53.8**	**46.2**
Rainfed rice	Sedhiou	1.4	93.2	5.4	92.4	7.6
	Kolda	1.4	67.7	30.9	68.9	31.1
	Ziguinchor	6.0	93.7	0.2	99.6	0.4
	Total rainfed rice	**3.8**	**85.5**	**10.8**	**86.4**	**13.6**
Millet	Fatick	0.6	99.3	0.1	47.5	52.5
	Kaolack	1.6	95.9	2.6	13.0	87.0
	Kaffrine	1.6	97.7	0.7	54.2	45.8
	Total millet	**5.0**	**93.9**	**1.2**	**46.6**	**53.4**
Corn	Fatick	4.2	92.5	3.3	48.2	51.8
	Kaolack	11.5	86.7	1.7	24.0	76.0
	Kaffrine	6.8	92.5	0.7	76.1	23.9
	Sedhiou	3.1	96.7	0.1	99.3	0.7
	Kolda	2.7	93.3	4.0	92.9	7.1
	Ziguinchor	0.0	100.0	0.0	98.2	1.8
	Total corn	**5.1**	**92.4**	**2.5**	**76.5**	**23.5**
Total cereal		**4.4**	**90.1**	**5.5**	**66.7**	**33.3**
Onion	Saint-Louis	6.8	93.2	0.0	0.0	0.0
	Ziguinchor	6.2	93.8	0.0	0.0	0.0
	Total	**4.6**	**95.1**	**0.3**	**100.0**	**0.0**
Tomato	Kaolack	15.4	84.6	0.0	0.0	0.0
	Saint-Louis	3.7	96.3	0.0	0.0	0.0
	Ziguinchor	2.9	97.1	0.0	100.0	0.0
	Total	**5.5**	**94.1**	**0.3**	**100.0**	**0.0**
Okra	Kaolack	1.8	96.8	1.4	0.0	0.0
	Kolda	1.4	97.9	0.6	100.0	0.0
	Matam	7.1	92.9	0.0	100.0	0.0
	Sedhiou	1.4	98.6	0.0	0.0	0.0
	Ziguinchor	2.6	97.4	0.0	100.0	0.0
	Total	**2.6**	**96.8**	**0.7**	**100.0**	**0.0**
Sweet eggplant	Saint-Louis	10.1	89.9	0.0	100.0	0.0
	Total	**2.5**	**97.1**	**0.4**	**100.0**	**0.0**
Bitter eggplant	Ziguinchor	3.0	97.0	0.0	0.0	0.0
	Total	**2.9**	**96.2**	**0.8**	**0.0**	**0.0**
ATV		3.8	94.3	1.9	96.9	3.1

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Personal shelters are mainly used for storage

For storage, the use of personal shelters is the most common method; it is used by 51.4% of households. This trend is observed in all cereal VCs. Open storage is used by 22.8% of rainfed rice producers in Kolda, 20.1% of corn producers in the Kolda region, and 16.7% of corn producers in the Sédhiou region. Note that 16.3% of corn producers in the Ziguinchor region, 21.4% of corn producers in Sédhiou, 47.9% of rainfed rice producers in Ziguinchor, 20.9% of rainfed rice producers in Sédhiou, and 13.8% of irrigated rice producers in Saint-Louis use traditional granaries to store their harvest. Thus, for the cereal VC, the use of tarpaulin storage and rented shelters or community shelters remains low. (Table 3.43)

ATVs, with the exception of onions, are highly perishable products and are not generally stored (77.2%). However, 16.4% of producers use personal shelters for their crops. All other types of shelters exist in relatively small proportions. This trend is observed in all the zones concerned.

Table 3.43   Distribution of producers by mode of storage by value chain and by region (%)

Value chain	Region	Main storage method							
		No storage	Open-air	Under cover	Personal shelter	Community shelter	Rented shelter	Traditional attic	Other
Dooleel Mbay area		28.1	7.1	1.3	51.4	3.2	0.3	7.6	1.0
Irrigated rice	Matam	1.3	1.2	5.5	83.7	0.1	0.0	8.3	0.0
	Saint-Louis	4.1	2.0	0.0	74.2	4.9	1.0	13.8	0.0
	Total irrigated rice	**2.9**	**1.8**	**1.8**	**77.8**	**3.1**	**0.6**	**12.0**	**0.0**
Rainfed rice	Sedhiou	1.2	0.5	1.2	74.7	0.1	0.0	20.9	1.4
	Kolda	7.0	22.8	0.0	56.3	9.9	0.1	2.6	1.4
	Ziguinchor	0.9	0.0	0.0	50.9	0.0	0.2	47.9	0.2
	Total rainfed rice	**3.1**	**7.4**	**0.2**	**61.0**	**3.2**	**0.1**	**23.9**	**1.1**
Millet	Fatick	1.9	0.0	0.1	91.5	5.2	0.0	0.6	0.8
	Kaolack	1.7	1.9	6.2	78.5	2.0	0.1	7.2	2.3
	Kaffrine	3.4	8.4	0.1	64.6	16.6	2.3	1.7	2.9
	Total millet	**2.3**	**8.1**	**3.4**	**72.3**	**5.8**	**0.6**	**5.6**	**1.9**
Corn	Fatick	3.9	0.0	0.0	88.3	7.8	0.0	0.0	0.0
	Kaolack	12.7	0.3	4.4	73.2	1.5	0.0	7.3	0.6
	Kaffrine	3.3	7.6	0.0	74.0	8.9	1.5	0.0	4.6
	Sedhiou	7.8	16.7	5.3	47.5	0.0	0.0	21.4	1.3
	Kolda	4.1	20.1	0.0	67.9	5.9	0.0	1.7	0.3
	Ziguinchor	14.1	0.0	0.0	60.7	0.0	0.0	16.3	8.8
	Total corn	**6.2**	**12.3**	**1.3**	**68.5**	**4.7**	**0.2**	**5.7**	**1.2**
Total cereal		**3.7**	**8.5**	**1.8**	**68.7**	**4.5**	**0.4**	**11.2**	**1.3**
Onion	Saint-Louis	67.3	4.8	0.5	23.9	3.5	0.0	0.0	0.0
	Ziguinchor	49.9	8.6	0.0	34.7	2.4	0.0	0.0	4.4
	Total	**54.8**	**10.4**	**1.4**	**28.2**	**3.3**	**0.0**	**0.0**	**1.9**
Tomato	Kaolack	88.1	3.8	0.0	8.1	0.0	0.0	0.0	0.0
	Saint-Louis	96.8	0.0	0.0	1.1	2.1	0.0	0.0	0.0
	Ziguinchor	87.7	3.9	0.0	8.3	0.0	0.0	0.0	0.0
	Total	**88.6**	**2.7**	**0.0**	**8.1**	**0.5**	**0.0**	**0.0**	**0.0**
Okra	Kaolack	93.1	0.0	0.0	6.9	0.0	0.0	0.0	0.0
	Kolda	73.8	4.1	0.0	22.1	0.0	0.0	0.0	0.0
	Matam	91.3	0.9	0.0	7.1	0.0	0.0	0.7	0.0
	Sedhiou	59.7	26.1	0.0	14.2	0.0	0.0	0.0	0.0
	Ziguinchor	75.8	2.8	0.0	21.3	0.0	0.0	0.0	0.0
	Total	**79.1**	**4.7**	**0.0**	**16.1**	**0.0**	**0.0**	**0.1**	**0.1**
Sweet eggplant	Saint-Louis	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	**89.5**	**0.7**	**0.0**	**9.8**	**0.0**	**0.0**	**0.0**	**0.0**
Bitter eggplant	Ziguinchor	87.7	2.9	0.0	9.4	0.0	0.0	0.0	0.0
	Total	**85.6**	**3.9**	**0.0**	**10.5**	**0.0**	**0.0**	**0.0**	**0.0**

Value chain	Region	Main storage method							
		No storage	Open-air	Under cover	Personal shelter	Community shelter	Rented shelter	Traditional attic	Other
ATV		77.2	4.4	0.3	16.4	0.6	0.1	0.4	0.5

Very low use of stock preservation methods

With regard to the preservation of stocks after processing or screening, we note that most of the stock is not preserved (89.3%). Only 10.7% of producers apply conservation practices to store their products. In fact, we can see that the groundnut basin has the highest proportion of chemical pesticides used to preserve corn and millet, with an average of 12% for corn and 18.2% for millet. Overall, the Saint-Louis region has the lowest proportion of stock preservation practices, at 0.4% for irrigated rice. (Table 3.44)

Stock preservation methods are almost nonexistent among market gardeners (1.2%). Only in the Kaffrine region is the use of chemical pesticides noted at 9.2% and in the Matam region the use of organic methods is 7%. In the other regions, the rate of use is relatively low. For the mango sector, 18.4% of producers in the Ziguinchor region use chemical pesticides to preserve their production. However, in the other areas, stock preservation is negligible.

Table 3.44   Distribution of producers by type of preservation of stocks by value chain and by region (%)

Value chain	Region	Main method of preserving stocks			
		Chemical pesticides	Organic methods	Other	None
Dooleel Mbay area		8.7	0.8	1.2	89.3
Irrigated rice	Matam	10.8	6.2	0.0	83.0
	Saint-Louis	0.4	0.3	0.4	98.9
	Total irrigated rice	**3.7**	**2.2**	**0.7**	**93.4**
Rainfed rice	Sedhiou	3.3	1.8	0.1	94.8
	Kolda	3.0	0.0	0.4	96.6
	Ziguinchor	18.8	1.8	9.4	70.0
	Total rainfed rice	**9.1**	**1.1**	**4.1**	**85.7**
Millet	Fatick	12.8	0.0	0.0	87.2
	Kaolack	25.7	0.4	0.6	73.4
	Kaffrine	22.8	0.0	0.3	76.9
	Total millet	**18.2**	**0.4**	**0.4**	**81.0**
Corn	Fatick	18.5	0.0	0.0	81.5
	Kaolack	25.6	0.1	0.8	73.4
	Kaffrine	16.0	0.0	0.0	84.0
	Sedhiou	7.2	1.4	1.4	89.9
	Kolda	6.1	0.2	0.2	93.5
	Ziguinchor	1.5	0.0	0.0	98.5
	Total corn	**12.0**	**0.2**	**0.4**	**87.4**
Total cereal		**12.5**	**0.7**	**1.4**	**85.4**
Onion	Saint-Louis	0.0	0.4	0.0	99.6
	Ziguinchor	5.8	0.0	0.0	94.2
	Total	**1.8**	**3.4**	**0.6**	**94.1**
Tomato	Kaolack	0.0	0.0	0.0	100.0
	Saint-Louis	0.0	0.0	0.0	100.0
	Ziguinchor	0.0	0.0	0.0	100.0
	Total	**0.0**	**0.0**	**0.0**	**100.0**
Okra	Kaolack	0.0	0.0	0.0	100.0
	Kolda	0.3	0.0	0.0	99.7
	Matam	0.0	0.0	0.0	100.0
	Sedhiou	0.0	0.0	0.0	100.0
	Ziguinchor	0.0	0.0	0.4	99.6
	Total	**0.1**	**0.0**	**0.4**	**99.5**

| Value chain | Region | Main method of preserving stocks | | | |
		Chemical pesticides	Organic methods	Other	None
Sweet eggplant	Saint-Louis	0.0	0.0	0.0	100.0
	Total	**0.0**	**0.0**	**0.2**	**99.8**
Bitter eggplant	Ziguinchor	0.0	0.0	0.0	100.0
	Total	**0.0**	**0.0**	**0.0**	**100.0**
ATV		1.2	0.9	0.6	97.3

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.4 PRODUCTION AND USE OF VEGETABLE CROPS

3.4.1 Production and utilization of cereal crops

An average production of more than one ton of cereal per producer

The average production of cereals per producer is around 1,375 kg. Irrigated rice in Saint-Louis has the highest average quantity produced (3,147 kg), Kolda rainfed rice (2,146 kg), Kaffrine Corn (1,744 kg), and Kolda Corn (1,613 kg). Average rainfed rice production is relatively low in the Sedhiou (622 kg) and Ziguinchor (555 kg) regions. (Table 3.45)

High yield for irrigated rice, medium yield for corn, and low yield for millet

The average cereal yield is estimated at 1,662 kg/ha. It varies by region and by type of cereal. Irrigated rice has the highest yields, with 5,383 kg/ha for the Matam region and 4,963 kg/ha for the Saint-Louis region. It is followed by Kolda corn with 2,012kg/ha. The lowest yields are recorded on Ziguinchor rainfed rice (555kg/ha), Sedhiou rainfed rice (622kg/ha), Fatick millet (848 kg/ha), and Kaffrine millet (732 kg/ha).

Cereal production mainly for own consumption

As far as marketing is concerned, it appears that a small proportion of household cereal production is for sale. Only 12.1% of cereal production is destined for commercialization. It is the same trend for all cereals according to the regions except for the irrigated rice of Saint-Louis, where a third (33.4%) of the harvest is destined for the market, as well as millet of Kaolack (20.7%), where every fifth share of production is marketed.

Regardless of the VC considered, the shares of the harvest for donations (between 7.1% and 17.2%) and seeds (between 1% and 13.1%) remain low. The same is true for post-harvest losses of cereal production, which vary between 0.2% and 2.5%.

Table 3.45   Production and utilization of cereal crops by region

Value chain	Region	Quantity produced (kg)	Average yield (kg/ha)	Share of production consumed (%)	Share of production sold (%)	Share of production for donation (%)	Share of seed production (%)	Share of production lost (%)
Irrigated rice	Matam	1,577	5,383	81.0	7.5	8.6	1.7	1.3
	Saint-Louis	3,147	4,963	57.3	33.4	7.1	0.9	1.3
	Total irrigated rice	**2,510**	**5,074**	**66.4**	**23.1**	**7.7**	**1.6**	**1.2**
Rainfed rice	Sedhiou	622	1,197	76.9	0.1	8.3	12.4	2.3
	Kolda	2,146	1,576	68.0	16.5	8.0	6.1	1.4
	Ziguinchor	555	1,146	83.9	0.5	7.6	7.2	0.8
	Total rainfed rice	**1,154**	**1,337**	**77.2**	**5.6**	**7.8**	**7.5**	**1.9**
Millet	Fatick	1,482	848	67.9	17.8	12.5	1.3	0.5
	Kaolack	1,430	1,022	63.6	20.7	14.0	1.1	0.6
	Kaffrine	1,077	732	71.0	15.4	11.2	1.5	0.9
	Total millet	**1,152**	**822**	**68.7**	**15.8**	**12.6**	**1.8**	**1.0**
Corn	Fatick	1,135	1,711	73.2	14.4	10.5	1.7	0.2
	Kaolack	1,225	1,571	71.2	16.2	10.4	1.4	0.7
	Kaffrine	1,744	1,476	78.6	8.9	9.5	2.6	0.4
	Sedhiou	1,190	1,595	79.3	3.5	10.6	5.2	1.4
	Kolda	1,613	2,012	72.9	9.4	11.3	4.5	1.9
	Ziguinchor	677	1,723	76.5	3.6	17.2	2.2	0.5
	Total corn	**1,461**	**1,804**	**74.5**	**10.1**	**10.7**	**3.5**	**1.3**
Total cereal		**1,375**	**1,662**	**72.4**	**12.1**	**10.3**	**3.8**	**1.3**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.4.2 Market garden crop production and use

Average vegetable production slightly above 4.5 tons

The average vegetable production is 4,499 kg per producer. It varies by region and by type of vegetable. The quantities produced of ATVs are highest in the Kaolack tomato (17,979 kg), Kaolack okra (12,446 kg), and Saint-Louis sweet eggplant (11,070 kg) VCs. The quantity produced is relatively low for okra from Sédhiou (758 kg). This low quantity of okra produced could be explained by the fact that market gardening is mainly practiced by women in small gardens around their concessions.

Overall low vegetable yield

The average yield for vegetables is 19,686 kg/ha. It is highest for okra in Matam (44,689 kg/ha), and tomatoes in Kaolack (31,616 kg/ha), Saint-Louis (30,314 kg/ha), and Ziguinchor (29,834 kg/ha). Okra in Sédhiou (8,734 kg/ha) and Ziguinchor (15,727 kg/ha) has the lowest yields.

The market is the main destination for vegetable production

Most of the vegetable production is marketed. It appears that 64.2% of the harvest is destined for the market. This situation is more pronounced for tomatoes in Saint-Louis (82.0%) and Ziguinchor (73.0%), as well as bitter eggplant in Ziguinchor (70.6%). The situation is virtually the same for all VCs in each region, with the exception of onions in Ziguinchor, where slightly more than half (52.0%) of the harvest is intended for household consumption. (Table 3.46)

Table 3.46   Production and utilization of market gardening crops by region

Value chain	Region	Quantity produced (kg)	Average yield (kg/ha)	Share of production consumed (%)	Share of production sold (%)	Share of production for grants (%)	Share of seed production (%)	Share of production lost (%)
Onion	Saint-Louis	4 481	19 568	19.5	62.2	3.7	0.0	14.7
	Ziguinchor	3 890	20 322	52.0	35.7	9.4	0.0	3.0
	Total	**5 374**	**20 069**	**33.7**	**52.0**	**6.1**	**0.0**	**8.2**
Tomato	Kaolack	17 979	31 616	34.1	55.4	4.1	0.0	6.3
	Saint-Louis	5 951	30 314	9.3	82.0	1.1	0.0	7.7
	Ziguinchor	4 748	29 834	14.7	73.0	6.4	0.0	5.9
	Total	**8 252**	**30 750**	**16.8**	**73.0**	**4.4**	**0.0**	**5.8**
Okra	Kaolack	12 466	17 594	40.4	49.2	5.6	1.6	3.2
	Kolda	3 839	17 572	35.7	55.7	5.6	1.7	1.3
	Matam	3 206	44 689	42.1	47.7	6.3	1.7	2.2
	Sedhiou	758	8 734	39.9	48.6	3.6	3.0	4.9
	Ziguinchor	3 074	15 727	20.6	68.2	6.5	1.7	3.0
	Total	**3 857**	**18 513**	**30.7**	**58.7**	**6.3**	**1.6**	**2.7**
Sweet eggplant	Saint-Louis	11 070	29 547	25.5	61.5	9.1	0.0	3.9
	Total	**5 162**	**26 286**	**21.9**	**65.4**	**7.6**	**0.0**	**5.0**
Bitter eggplant	Ziguinchor	3 626	23 087	16.5	70.6	5.6	0.0	7.3
	Total	**3 505**	**22 460**	**21.6**	**65.6**	**6.4**	**0.0**	**6.5**
ATV		4 499	19 686	24.1	64.2	5.6	0.8	4.7

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.4.3 Mango production and use

Average mango production exceeding 1.5 tons

Mango producers hold an average of 116 plants. The average number of plants per producer is higher in Ziguinchor, with 115 plants. The regions of Sédhiou and Kolda have 62 and 60 plants per producer, respectively. However, the average production of mango per producer is estimated at 1207 kg. The Kolda region (3,661 kg) dominates production, followed by Sédhiou (2,507 kg) and Ziguinchor (1,685kg). The fact that production is higher in regions with fewer trees on average could be related to the types of mango varieties. Indeed, the main varieties in the Kolda region are Sierra Leone,

Diourou, and Kent. In Sédhiou, Sierra Leone, Kent, and Keitt are the dominant varieties. For Ziguinchor, the most prominent varieties are, in order of dominance, Kent, Keitt, and Diourou (Commango, 2021). (Table 3.47)

Relatively low density of mango

Overall, mango density is low compared with the recommended density for mango (between 100 and 156 feet/ha). The average mango density is 81 feet/ha. The mango crop is most important in the Ziguinchor region (80 feet/ha), followed by Kolda (69 feet/ha). It is relatively low in the Sédhiou region (67 feet/ha).[1]

Mango production generally mixed between consumption and sale

In general, slightly more than half of the mango production is destined for the market, although a good portion is consumed by the farmers themselves. The results show that 61.2% of production is sold , compared with 38.8% that is grown for self-consumption. This situation leaves large variations across the regions of the southern zone. In fact, the share of production sold is more preponderant in the Ziguinchor region, where 76.1% of production is marketed, whereas 65.8% of production is consumed in the Kolda region.

Mango yield

The average yield of mango is 2,687 kg/ha. It is highest in the Sédhiou region (3,363 kg/ha), followed by Kolda (2,840 kg/ha) and Ziguinchor (2,211 kg/ha).

Table 3.47   Situation of mango production and use by region

Value chain	Region	Tree count	Density (tree/ha)	Quantity produced (kg)	Yield (kg/ha)	Share of own-consumption production (%)	Share of production sold (%)
Mango	Sedhiou	62	67	2,507	3,363	47.2	52.8
	Kolda	60	69	3,661	2,840	65.8	34.2
	Ziguinchor	115	80	1,685	2,211	23.8	76.1
Total mango		**116**	**81**	**1,207**	**2,687**	**38.8**	**61.2**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.4.4 Breeding of small ruminants

Very small herd size

On average, a producer/breeder owns 5.4 sheep and 4.7 goats. The average number of sheep and goats owned by a producer is higher in the Matam (10.1 sheep and 12.0 goats) and Saint-Louis (6.6 sheep and 7.3 goats) regions. However, the lowest numbers are found in the Kaolack (3 sheep and 3 goats) and Fatick (3.6 sheep and 3.8 goats) regions. This small size of the herd could be explained by the fact that most farm households practice sedentary and breeder breeding, i.e., the multiplication of animals through reproduction (Table 3.48) (DAPSA Report, 2020/2021).

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[1] The density is calculated on homogeneous plots containing at least 20 plants.

Table 3.48   Average number of animals possessed per household and flows by species by region

Region	Species	Stock	Incoming flow			Outflow		
			Purchase	Birth	Donations and others	Sale	Self-consumption	Loss/death/theft/donation
Dooleel Mbay area	Sheep	5.4	2.3	3.5	2.1	3.0	1.8	3.5
	Goats	4.7	1.7	3.3	2.1	2.7	2.3	3.2
Fatick	Sheep	3.6	1.7	2.4	1.0	1.8	2.4	2.8
	Goats	3.8	1.4	2.3	1.9	2.3	1.9	2.9
Kaolack	Sheep	3.0	1.8	2.4	1.6	1.7	1.4	2.1
	Goats	3.0	1.5	2.3	1.8	2.1	2.1	2.2
Kaffrine	Sheep	5.2	2.8	3.5	1.9	2.8	1.2	5.1
	Goats	4.1	1.9	2.8	1.6	2.3	1.6	2.9
Sedhiou	Sheep	3.9	2.5	2.5	1.4	2.0	1.6	3.1
	Goats	4.9	1.9	3.0	1.6	1.8	1.4	5.8
Kolda	Sheep	4.6	2.3	2.8	1.4	2.7	1.5	3.0
	Goats	4.6	1.7	3.0	1.3	2.8	1.6	3.7
Ziguinchor	Sheep	4.3	1.4	3.6	1.0	4.7	1.7	4.1
	Goats	4.8	1.7	4.1	2.0	1.6	2.1	3.0
Matam	Sheep	10.1	2.4	6.1	2.9	3.9	2.2	5.6
	Goats	12.0	1.9	7.5	4.5	4.9	4.5	3.9
Saint-Louis	Sheep	6.6	2.7	3.8	2.4	4.3	2.5	3.5
	Goats	7.3	2.0	5.0	3.5	4.0	3.2	4.1

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Breeding

It appears that births account for more than half of the inflows. Overall, more than 60% of the inflows are due to the reproduction of livestock (61.5% for sheep and 69% for goats). The percentages of purchases of inward flows are 30.4% for sheep and 17.8% for goats. Inflows through donations remain low. (Table 3.49)

This trend is the same in all regions but is more prominent in the Ziguinchor region, where inflows by births are estimated at 85.1% for sheep and 75.3% for goats.

Livestock neither sold nor consumed

The results reveal that deaths, losses, or donations constitute the most important outflows. In fact, 57.8% of goats and 56.3% of sheeps leave the herd through losses (theft or death) or donations. In addition, 23.9% of sheep and 24.5% of goats are sold. Self-consumption is also low, at 19.8% for sheep and 17.6% for goats. The same results are noted in all regions except Saint-Louis, where sales represent the most dominant outflow (39.6% for goats and 41.2% for sheeps). The Matam region also records fairly significant outflows for goats through sales (31.6%) and self-consumption (38.8%)

Table 3.49   Distribution of the workforce by type of flow

Region	Species	Incoming flow			Outflow		
		Purchase	Birth	Donations and others	Sale	Self-consumption	Loss/death/theft/donation
Dooleel Mbay area	Sheep	30.4	61.5	8.0	23.9	19.8	56.3
	Goats	17.8	69.0	13.2	24.5	17.6	57.8
Fatick	Sheep	28.1	65.4	6.5	6.7	39.8	53.5
	Goats	13.2	73.9	12.9	26.6	18.0	55.4
Kaolack	Sheep	39.6	50.5	9.8	25.4	13.9	60.7
	Goats	25.3	55.6	19.1	24.9	12.8	62.3
Kaffrine	Sheep	37.0	57.8	5.2	19.1	10.2	70.7
	Goats	22.1	70.1	7.8	29.0	13.1	58.0
Sedhiou	Sheep	27.0	68.1	4.9	21.5	24.2	54.3
	Goats	18.5	77.5	4.0	6.7	10.5	82.7

Region	Species	Incoming flow			Outflow		
		Purchase	Birth	Donations and others	Sale	Self-consumption	Loss/death/theft/donation
Kolda	Sheep	37.2	60.0	2.8	18.7	18.8	62.5
	Goats	22.7	72.3	5.0	19.7	12.7	67.6
Ziguinchor	Sheep	12.3	85.1	2.5	3.9	30.4	65.7
	Goats	11.0	75.3	13.7	6.5	11.7	81.8
Matam	Sheep	20.7	69.0	10.3	23.5	21.3	55.2
	Goats	5.2	77.0	17.9	31.6	38.8	29.6
Saint-Louis	Sheep	29.1	59.2	11.7	41.2	23.1	35.7
	Goats	13.7	70.1	16.2	39.6	23.9	36.5

3.5   RISK AND SHOCK MANAGEMENT

3.5.1   Use of climate information

Drought and wind are the most common climate risks for households

Table 3.50 shows that the most frequent climatic hazards for households are drought and wind, with more than 4 out of 10 households reporting having experienced these two hazards. This proportion is relatively higher among cereal and livestock producers and lower among vegetable and mango producers. Cereal crops, which are mainly grown in winter, are sometimes affected by climatic factors, such as a long break in rainfall or the appearance of a strong wind at flowering time. Agro-pastoralists also face this problem since they are often confronted with a problem of watering their animals in case of drought. Market garden crops are often grown on irrigated land and are therefore less exposed to climatic risks in general. Tree crops, particularly mango, are much more resistant to climate shocks. The producers most affected by these risks are millet producers in Fatick and rice producers in Matam and Saint-Louis, with proportions exceeding 70%. Excessive rainfall and extreme temperatures affect nearly one-third of the target population, with relatively high frequencies among millet producers in Fatick and irrigated rice producers in Saint-Louis.

Table 3.50   Distribution of households by region and value chain (%) by climate risk

Value chain	Region	Drought	Excess rain	Extreme temperatures	Wind	Other
Dooleel Mbay area		47.8	33.1	35.5	42.4	7.6
Irrigated rice	Matam	79.9	35.2	31.8	44.5	22.6
	Saint-Louis	66.3	29.8	58.2	67.8	11.8
	Total irrigated rice	**69.3**	**31.4**	**48.7**	**59.3**	**15.3**
Rainfed rice	Sedhiou	40.8	45.8	36.9	46.0	3.3
	Kolda	47.0	33.2	44.9	34.2	8.1
	Ziguinchor	40.8	33.0	13.6	7.0	0.5
	Total rainfed rice	**47.7**	**38.3**	**32.8**	**31.7**	**9.1**
Millet	Fatick	89.8	89.7	57.3	71.9	2.9
	Kaolack	22.0	11.3	13.6	38.0	3.2
	Kaffrine	49.9	29.2	42.8	46.1	12.7
	Total millet	**48.8**	**34.6**	**36.2**	**48.8**	**8.1**
Corn	Fatick	79.6	98.5	61.3	79.3	1.1
	Kaolack	17.7	13.7	8.3	36.6	4.7
	Kaffrine	44.7	32.8	42.5	44.1	14.3
	Sedhiou	45.7	49.1	36.0	42.3	2.1
	Kolda	53.0	29.3	43.0	37.3	4.6
	Ziguinchor	62.0	0.0	0.0	0.0	20.7
	Total corn	**47.5**	**32.3**	**37.5**	**41.0**	**5.7**
Total cereal		**50.7**	**34.4**	**37.3**	**44.0**	**8.5**
Total ATV		**39.3**	**27.8**	**32.8**	**36.8**	**5.8**

Value chain	Region	Drought	Excess rain	Extreme temperatures	Wind	Other
Total mango		35.2	32.3	27.2	38.1	3.9
Total livestock		48.9	33.9	35.1	44.0	8.4

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Risk of input access affects nearly three-fourths of producers

Access to inputs is a major problem for most producers; this risk is experienced by nearly three-fourths of households and is more pronounced among cereal producers and agro-pastoralists. Even if some cereal producers use seeds from their personal reserves, the increase in the price of mineral fertilizers induced by the Russia-Ukraine conflict makes access to inputs difficult. This situation is more pronounced among millet, corn, and upland rice producers in all regions except Ziguinchor.

Plant health problems are the second most important economic risk, affecting 59% of households. Millet, rice, and vegetables are more susceptible to pest and insect attacks, affecting more than 60% of producers. Small ruminant farmers are also faced with problems related to livestock feed.

The trend toward higher input costs necessarily affects the selling price of agricultural products. In fact, 59% of households believe that a low selling price in relation to production costs could constitute a risk of underperformance for the farm, particularly for dry cereals such as millet and corn.

The performance of the operation could be affected as a result of illness among the actors

The health of the HOH or that of relatives could be a risk for one-third of households. This proportion is relatively higher among cereal producers and small ruminant breeders. The latter are more common on family farms, where the HOH is the main person responsible for managing the plots and the labor force is essentially made up of household members. The occurrence of an illness among the assets or a relative could seriously affect the performance of the farm.

Table 3.51   Distribution of households by economic risk

Value chain	Region	Selling price	Access to inputs	Pests (insects...)	Your health	Your loved ones' health
Dooleel Mbay area		55.9	73.9	58.7	34.3	29.8
Irrigated rice	Matam	15.8	65.2	76.8	53.7	38.8
	Saint-Louis	56.0	69.5	76.4	27.9	13.6
	Total irrigated rice	**42.5**	**67.0**	**76.0**	**35.8**	**21.3**
Rainfed rice	Sedhiou	46.3	84.9	69.5	28.7	22.1
	Kolda	60.9	77.7	62.2	36.9	36.1
	Ziguinchor	19.2	39.6	52.5	31.8	18.2
	Total rainfed rice	**42.7**	**65.6**	**65.5**	**33.0**	**29.2**
Millet	Fatick	94.1	98.1	85.4	60.7	45.6
	Kaolack	83.6	93.5	25.7	18.2	27.7
	Kaffrine	60.0	86.3	44.4	33.7	35.3
	Total millet	**68.3**	**83.4**	**50.5**	**36.0**	**37.2**
Corn	Fatick	83.9	100.0	92.2	64.7	61.7
	Kaolack	87.8	95.2	34.3	17.3	33.2
	Kaffrine	72.2	88.9	45.7	40.0	39.8
	Sedhiou	67.7	81.3	54.3	24.2	25.2
	Kolda	52.3	83.5	56.2	48.6	42.8
	Ziguinchor	8.6	0.0	41.4	0.0	0.0
	Total corn	**62.4**	**84.2**	**54.9**	**40.3**	**39.4**
Total cereal		**57.8**	**77.7**	**58.2**	**36.6**	**34.1**
Total ATV		**47.4**	**59.1**	**62.2**	**27.6**	**16.9**
Total mango		**55.7**	**70.6**	**57.6**	**26.7**	**24.8**

Value chain	Region	Selling price	Access to inputs	Pests (insects…)	Your health	Your loved ones' health
Total livestock		58.7	76.2	58.1	34.6	30.4

More than half of households have access to and use climate information

The use of climate information could help households adapt to climate change and improve their resilience. Overall, more than half of households (55.5%) reported having at least one member who has access to climate information. This proportion varies slightly across VCs. It is significantly higher among small ruminant farmers and vegetable producers. However, there are significant regional differences in access to climate information. The producers in Ziguinchor, regardless of the crop under consideration, fared well with an access rate of more than 70%. This may be due to the relatively high level of education of HOHs in this region. Producers in Fatick and Kaolack also have relatively high levels of access. This could be explained by the dynamism of extension services or farmer support services in these regions. Producers of irrigated crops, particularly irrigated rice and vegetables, have less need for climate information in managing their operations. It should be noted that almost all producers who have access to climate information use it. (Table 3.52)

Table 3.52   Distribution of households with access to agro-climatic information (%)

Value chain	Region	Access	Use
Dooleel Mbay area		55.5	52.9
Irrigated rice	Matam	70.8	68.2
	Saint-Louis	52.6	49.6
	Total irrigated rice	**58.2**	**55.3**
Rainfed rice	Sedhiou	60.9	57.7
	Kolda	59.0	57.9
	Ziguinchor	76.5	71.7
	Total rainfed rice	**66.1**	**63.0**
Millet	Fatick	72.1	65.5
	Kaolack	58.8	55.2
	Kaffrine	44.7	43.1
	Total millet	**53.4**	**50.1**
Corn	Fatick	96.0	93.5
	Kaolack	75.1	70.6
	Kaffrine	52.0	47.5
	Sedhiou	47.2	47.2
	Kolda	31.8	31.6
	Ziguinchor	91.4	91.4
	Total corn	**47.9**	**46.1**
Total cereal		**55.2**	**52.4**
ATV	Fatick	90.1	85.7
	Kaolack	91.3	91.3
	Kaffrine	83.3	83.3
	Sedhiou	42.2	40.7
	Kolda	66.7	61.6
	Ziguinchor	50.6	49.0
	Matam	63.0	63.0
	Saint-Louis	43.6	42.1
	Total ATV	**56.5**	**54.8**
Mango	Sedhiou	70.1	70.1
	Kolda	30.3	30.3
	Ziguinchor	70.4	57.7
	Total mango	**66.7**	**63.1**
Breeding	Fatick	80.6	74.9
	Kaolack	69.5	66.2
	Kaffrine	53.1	51.7
	Sedhiou	46.6	46.2

Value chain	Region	Access	Use
	Kolda	50.9	48.8
	Ziguinchor	60.5	54.8
	Matam	67.6	63.9
	Saint-Louis	55.6	53.9
	Total livestock	**59.6**	**56.8**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

The choice of crops/varieties and sowing or fertilizer application periods are the main reasons for using climate information

Climate information is used in all crop operations, from the choice of crop to be grown to harvesting. The choice of crop type is important and helps to reduce household vulnerability to climate effects. Among households that use agro-climatic information, 69% report having used it to select crop types and varieties for the agricultural season. This proportion is much higher among cereal producers in Kaffrine, Ziguinchor, Kolda, and Sédhiou, with proportions ranging from 73% to 100%. The use of climatic information to choose the type of crop is relatively rare among households in Kaolack and Fatick.

Apart from the choice of crop type, the choice of sowing period is often cited as a reason for using climatic information (87%). The percentages of households using agro-climatic information to determine the sowing period exceed 80% in almost all household categories, except for rice producers in Saint-Louis and millet and corn producers in Fatick.

The use of climate information also informs household decisions regarding fertilizer application (66.1% of households). Households in Kolda and Kaffrine that use climate information often use it to choose the right time to apply fertilizer (over 80%). Crop protection treatment appears to be a secondary reason for using climate information (53.4%). With the exception of households in Kolda and, to a lesser extent, millet-producing households in Kaffrine, households in other regions do not often refer to climate information to treat pests and insects. (Table 3.53)

Table 3.53   Distribution of households according to cultivation operations where they use information (%)

Value chain	Region	Choice of the type of speculation	Seedlings	Spreading	Treatment	Harvest
Dooleel Mbay area		69.0	87.0	66.1	53.4	65.6
Irrigated rice	Matam	40.5	87.3	66.5	57.7	85.0
	Saint-Louis	43.1	64.3	83.0	59.7	86.0
	Total irrigated rice	**42.9**	**74.0**	**75.3**	**58.1**	**84.7**
Rainfed rice	Sedhiou	90.4	91.5	15.3	3.9	25.1
	Kolda	93.4	94.2	88.6	91.0	91.7
	Ziguinchor	72.6	80.8	39.9	45.3	18.7
	Total rainfed rice	**77.6**	**89.8**	**58.8**	**59.4**	**54.1**
Millet	Fatick	58.5	66.9	50.0	15.8	60.5
	Kaolack	54.1	97.2	61.9	49.2	61.3
	Kaffrine	78.6	91.9	85.4	64.9	89.4
	Total millet	**64.2**	**89.5**	**63.7**	**44.4**	**66.9**
Corn	Fatick	72.2	78.3	64.4	52.1	71.6
	Kaolack	40.5	94.7	64.8	29.0	57.5
	Kaffrine	81.4	81.0	87.4	49.3	77.9
	Sedhiou	82.1	57.3	13.4	8.0	43.9
	Kolda	89.1	95.9	94.2	86.8	94.8

Value chain	Region	Choice of the type of speculation	Seedlings	Spreading	Treatment	Harvest
	Ziguinchor	100.0	100.0	32.1	0.0	0.0
	Total corn	**71.4**	**88.4**	**70.5**	**52.6**	**71.3**
Total cereal		**67.0**	**87.3**	**65.6**	**52.2**	**66.8**
ATV	Fatick	39.5	87.7	66.1	31.7	68.0
	Kaolack	75.9	100.0	86.1	51.0	88.4
	Kaffrine	84.9	100.0	89.4	59.2	87.7
	Sedhiou	84.8	83.2	8.4	5.2	42.5
	Kolda	78.1	87.2	79.1	79.0	33.5
	Ziguinchor	90.4	79.3	51.5	47.4	48.5
	Matam	40.4	92.4	56.7	47.3	67.6
	Saint-Louis	56.8	73.6	72.0	71.5	69.8
	Total ATV	**72.6**	**85.0**	**65.4**	**56.2**	**59.9**
Mango	Sedhiou	84.3	91.3	26.2	8.2	37.7
	Kolda	92.6	100.0	88.2	70.9	92.6
	Ziguinchor	94.1	88.5	49.4	32.7	36.7
	Total	**86.7**	**89.8**	**62.3**	**51.2**	**61.0**
Breeding	Fatick	59.8	71.2	55.7	25.7	65.3
	Kaolack	56.8	98.3	69.5	48.4	67.6
	Kaffrine	80.1	90.5	86.9	61.2	86.1
	Sedhiou	85.0	81.9	16.1	6.8	31.4
	Kolda	88.6	94.0	89.4	88.0	80.9
	Ziguinchor	72.5	71.0	17.5	39.4	31.3
	Matam	36.7	92.6	59.0	53.4	70.7
	Saint-Louis	52.5	74.0	72.8	58.4	75.9
	Total livestock	**65.8**	**87.3**	**65.6**	**54.2**	**68.2**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Producers are most interested in information on rainfall dates and rainfall break periods

The variability of rainfall over time appears to be of greater concern to households. Indeed, more than 8 out of 10 households that use climate information use it to obtain information on rainfall dates and forecasts of rainfall break periods. However, this trend is less pronounced among cereal producers in Fatick. Climate information on temperature and wind is of greater interest to rice producers in Saint-Louis, and to corn and rainfed rice producers in Kolda (more than 90% of producers). (Table 3.54)

Table 3.54   Distribution of households by type of information used

Value chain	Region	Rain date forecast	Forecasting of rainfall break periods	Temperatures	Wind	Other
Dooleel Mbay area		89.1	81.9	64.0	55.1	21.7
Irrigated rice	Matam	90.0	86.3	49.7	36.1	17.5
	Saint-Louis	82.7	76.7	89.9	87.1	23.8
	Total irrigated rice	**85.9**	**79.7**	**73.1**	**66.1**	**21.0**
Rainfed rice	Sedhiou	92.1	66.9	65.6	38.0	19.2
	Kolda	95.8	95.3	93.2	92.6	59.9
	Ziguinchor	83.0	71.3	48.5	25.7	13.0
	Total rainfed rice	**91.2**	**79.7**	**65.8**	**53.9**	**31.9**
Millet	Fatick	55.9	46.2	32.1	20.3	6.5
	Kaolack	97.9	89.5	53.8	54.0	7.8
	Kaffrine	95.5	94.3	75.3	77.9	36.9
	Total millet	**88.1**	**79.8**	**58.7**	**52.6**	**18.8**
Corn	Fatick	72.7	70.2	71.5	49.4	49.4

Value chain	Region	Rain date forecast	Forecasting of rainfall break periods	Temperatures	Wind	Other
	Kaolack	94.7	80.2	37.0	41.1	5.4
	Kaffrine	96.7	87.2	59.1	75.8	27.3
	Sedhiou	57.3	71.6	51.9	31.6	5.2
	Kolda	98.9	97.4	91.2	93.6	42.5
	Ziguinchor	100.0	77.4	32.1	0.0	0.0
	Total corn	**90.8**	**85.3**	**64.3**	**62.7**	**26.6**
Total cereal		**89.4**	**81.2**	**63.9**	**57.2**	**24.6**
ATV	Fatick	96.0	81.4	16.3	9.9	17.5
	Kaolack	100.0	97.6	60.0	61.8	0.0
	Kaffrine	100.0	95.7	87.1	84.9	21.6
	Sedhiou	85.5	47.0	37.7	36.0	0.0
	Kolda	86.5	90.4	83.4	74.1	49.2
	Ziguinchor	85.4	82.1	37.8	10.4	1.6
	Matam	94.7	86.2	51.6	15.4	5.3
	Saint-Louis	77.1	74.3	87.1	69.4	21.6
	Total ATV	**87.8**	**83.3**	**62.1**	**45.2**	**15.2**
Mango	Sedhiou	94.9	75.1	63.7	54.1	3.5
	Kolda	100.0	100.0	83.8	92.6	53.3
	Ziguinchor	93.1	83.1	31.9	16.7	3.0
	Total mango	**91.2**	**80.6**	**62.6**	**49.7**	**14.6**
Breeding	Fatick	63.2	56.8	42.9	25.9	19.5
	Kaolack	98.7	90.4	55.4	56.7	5.3
	Kaffrine	96.5	92.7	73.0	78.3	31.9
	Sedhiou	83.0	65.4	56.5	33.2	12.7
	Kolda	95.8	95.3	91.2	89.6	58.9
	Ziguinchor	74.4	62.2	32.5	21.8	1.1
	Matam	93.6	83.1	44.0	28.9	14.9
	Saint-Louis	84.7	76.2	88.9	76.4	21.2
	Total livestock	**89.5**	**82.2**	**64.0**	**57.5**	**23.1**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.5.2 Use of ICT

Most households have access to ICT

The adoption of ICT is a relevant element to capture within the agricultural population in order to measure the capacity of households to inform themselves and to make use of the information gathered in the context of their social and economic activities. For this study, the results on ICT adoption show that nearly 7 out of 10 households have access to ICT. The situation is almost the same for all types of VCs (more than 65% of households have access to ICT), but access is higher for mango producers (Table 3.55).

Depending on the gender of the HOH, the results are in line with the overall trend observed. For both types of households, access to ICT is high (70% in male-headed households and 66% in female-headed households). On average, male-headed households have relatively more access to ICT, with the exception of cereal-producing households (77% vs. 67.7%). The massive adoption of ICT by households with a female HOH in cereals is more pronounced in Kolda for rainfed rice, in Kaffrine for millet and corn, and in Fatick for corn, where access to ICT is exhaustive (Table 3.55).

At the regional level, market gardening in Fatick, Matam, and Kolda shows very mixed results in terms of ICT adoption, with access rates of 38%, 49%, and 51%, respectively.

Table 3.55   Distribution (%) of ICT adopted households by HOH gender by region and value chain

Type of grain	Region	HOH gender		
		Male	Female	Total
Dooleel Mbay area		69.6	65.9	69.3
Irrigated rice	Matam	51.5	45.7	51.3
	Saint-Louis	74.4	84.6	75.3
	Total irrigated rice	**67.0**	**80.7**	**68.0**
Rainfed rice	Sedhiou	87.4	93.6	87.7
	Kolda	66.0	100.0	66.1
	Ziguinchor	87.7	91.5	88.8
	Total rainfed rice	**74.0**	**79.2**	**74.7**
Millet	Fatick	45.3	0.0	44.8
	Kaolack	76.0	89.8	76.8
	Kaffrine	54.2	100.0	55.6
	Total millet	**62.9**	**77.6**	**63.4**
Corn	Fatick	73.4	100.0	75.6
	Kaolack	78.4	0.0	76.0
	Kaffrine	65.5	100.0	65.6
	Sedhiou	76.0	0.0	76.0
	Kolda	65.0	0.0	64.5
	Ziguinchor	100.0	0.0	100.0
	Total corn	**69.5**	**60.8**	**69.3**
Total cereal		**67.7**	**77.0**	**68.2**
Total mango		**72.7**	**53.2**	**69.4**
Total ATV		**79.0**	**58.9**	**77.0**
Total small ruminants		**68.9**	**61.6**	**68.4**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Phone (Android and simple) access rate to ICT is high

Identifying the means by which households access ICTs is an important element in understanding the use of ICT in rural areas. More specifically, the results on the type of equipment used to access ICT show that access is mainly via Android phones (77.9%) and simple phones (48.5%). This result could be explained by the high access rate of smartphones in rural areas. Indeed, compared with other ICT tools (computers, smartphone, or televisions), smartphones have the advantage of being more financially accessible. The results also show the same situation for both male- and female-headed households: the Android phone is the tool widely used to access ICT (Table 3.56).

Furthermore, the analysis based on the types of VCs shows that access to ICT via Android phones is relatively more important for livestock producers (81.3%) and less important for mango producers (78.3%), particularly in Kolda, where only 40.2% of households have access to ICT via this equipment, the lowest proportion of all VCs combined (Table 3.56).

As regards simple telephones as ICT access equipment, its greatest value is observed in market gardening, which is driven by the large share of households that access ICT via this type of equipment in Kaffrine (88.5), Kaolack (87.3%), and Kolda (76.7%).

Table 3.56   Distribution (%) of households by type of equipment used to access ICT by region and value chain

Value chain	Region	HOH gender	Service used in ICT				
			Computer	Simple phone	Android phone	iPhone	Television/radio
Dooleel Mbay area		Male	3.4	48.5	77.9	0.7	1.7
		Female	1.7	58.2	77.7	0.0	0.0
		Total	**3.2**	**49.3**	**77.9**	**0.7**	**1.5**
Irrigated rice	Matam	Male	2.5	34.4	99.5	0.0	0.0
		Woman	0.0	80.0	100.0	0.0	0.0
		Total	**2.4**	**35.5**	**99.5**	**0.0**	**0.0**
	Saint-Louis	Male	2.9	44.3	84.3	1.2	0.0
		Woman	3.8	92.9	80.9	0.0	0.0
		Total	**3.0**	**49.3**	**84.0**	**1.1**	**0.0**
	Total irrigated rice	Male	3.3	43.2	87.9	0.9	0.0
		Woman	3.6	92.1	82.1	0.0	0.0
		Total	**3.3**	**47.2**	**87.4**	**0.8**	**0.0**
Rainfed rice	Sedhiou	Male	0.0	60.8	78.3	0.0	1.9
		Woman	0.0	0.0	100.0	0.0	0.0
		Total	**0.0**	**57.3**	**79.6**	**0.0**	**1.8**
	Kolda	Male	1.1	62.7	51.6	0.1	0.0
		Woman	0.0	100.0	32.1	0.0	0.0
		Total	**1.1**	**63.0**	**51.5**	**0.1**	**0.0**
	Ziguinchor	Male	14.5	21.7	89.8	0.0	4.0
		Woman	0.0	32.1	69.1	0.0	0.0
		Total	**10.1**	**24.9**	**83.4**	**0.0**	**2.8**
	Total millet	Male	4.7	45.7	72.1	0.1	1.6
		Woman	0.7	33.8	73.3	0.0	0.0
		Total	**4.1**	**44.1**	**72.2**	**0.0**	**1.3**
Millet	Fatick	Male	0.0	56.7	59.4	2.0	0.0
		Woman	0.0	0.0	0.0	0.0	0.0
		Total	**0.0**	**56.7**	**59.4**	**2.0**	**0.0**
	Kaolack	Male	0.6	45.7	93.0	0.0	0.5
		Woman	0.0	97.5	73.7	0.0	0.0
		Total	**0.6**	**49.4**	**91.6**	**0.0**	**0.5**
	Kaffrine	Male	1.9	61.0	62.1	0.0	0.0
		Woman	0.0	90.9	54.5	0.0	0.0
		Total	**1.8**	**62.6**	**61.7**	**0.0**	**0.0**
	Total millet	Male	2.7	53.3	78.1	0.2	1.0
		Woman	0.0	95.7	68.7	0.0	0.0
		Total	**2.6**	**55.2**	**77.7**	**0.2**	**1.0**
Corn	Fatick	Male	44.6	92.5	74.5	0.0	0.0
		Woman	0.0	6.3	100.0	0.0	0.0
		Total	**39.8**	**83.1**	**77.2**	**0.0**	**0.0**
	Kaolack	Male	0.0	70.8	95.6	0.0	2.8
		Woman	0.0	0.0	0.0	0.0	0.0
		Total	**0.0**	**70.8**	**95.6**	**0.0**	**2.8**
	Kaffrine	Male	0.0	55.0	68.2	0.0	8.3
		Woman	0.0	0.0	100.0	0.0	0.0
		Total	**0.0**	**54.7**	**68.4**	**0.0**	**8.3**
	Sedhiou	Male	6.3	63.8	85.3	0.0	0.0
		Woman	0.0	0.0	0.0	0.0	0.0
		Total	**6.3**	**63.8**	**85.3**	**0.0**	**0.0**
	Kolda	Male	0.1	24.8	79.1	1.9	0.8
		Woman	0.0	0.0	0.0	0.0	0.0
		Total	**0.1**	**24.8**	**79.1**	**1.9**	**0.8**
	Ziguinchor	Male	29.3	70.7	100.0	0.0	0.0
		Woman	0.0	0.0	0.0	0.0	0.0
		Total	**29.3**	**70.7**	**100.0**	**0.0**	**0.0**
	Total Corn	Male	3.9	44.8	81.7	1.0	1.8
		Woman	0.0	39.6	63.7	0.0	0.0
		Total	**3.8**	**44.7**	**81.4**	**0.9**	**1.8**
Total cereal		**Male**	**3.6**	**47.8**	**78.9**	**0.5**	**1.3**
		Female	**.9**	**57.6**	**72.8**	**0.0**	**0.0**
		Total	**3.4**	**48.4**	**78.5**	**0.5**	**1.2**
Total ATV		**Male**	**2.6**	**54.5**	**78.3**	**1.2**	**1.6**
		Female	**3.1**	**59.2**	**85.7**	**0.0**	**0.0**
		Total	**2.7**	**55.1**	**79.2**	**1.0**	**1.4**
Total mango		**Male**	**4.5**	**45.8**	**76.5**	**0.5**	**5.5**
		Female	**0.0**	**51.6**	**100.0**	**0.0**	**0.0**

Value chain	Region	HOH gender	Service used in ICT				
			Computer	Simple phone	Android phone	iPhone	Television/ radio
		Total	4.2	46.3	78.3	0.5	5.1
Total small ruminants		Male	3.7	47.3	81.5	.6	1.8
		Female	1.2	61.3	78.9	0.0	0.0
		Total	3.6	48.1	81.3	.6	1.7

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

More than half of households do not have access to the internet

As far as access to the internet is concerned, just less than 50% of households have access to the internet. The proportion does not vary much from one Value Chain to another (between 40.5% and 53.6%). Depending on the gender of the HOH, internet access is more common in female-headed mango households (56.4%) and is particularly noticeable in households in Sédhiou (100%) and Ziguinchor (76.8%) (Table 3.57).

For the cereal VC, 45.5% of households have access to the internet, and more female-headed households have access to the internet (49.1% vs. 45.2%), despite amixed situation. This average proportion is driven upward by the relatively higher share of female-headed households in Kaffrine in corn (100%), in Saint-Louis in irrigated rice (63.5%), and in Ziguinchor in rainfed rice (61.3%). Further, it is affected by the very low access rates in Kolda and Kaolack for corn and in Fatick for millet, where no female-headed household has access to the internet.

In addition, market gardening is the VC with the fewest female-headed households that have access to the internet (44.6%). This is a result of the still negligible access rate in the Kolda, Fatick, and Kaffrine regions (less than 4.3%) (Appendix Table 0.67 and Table 0.68).

Table 3.57   Distribution (%) of households with access to the internet by HOH gender by region and value chain

Value chain	Region	HOH gender		
		Male	Female	Total
Dooleel Mbay area		46.0	41.3	45.7
Irrigated rice	Matam	28.7	45.7	29.1
	Saint-Louis	42.7	63.5	44.6
	Total irrigated rice	**38.9**	**61.7**	**40.5**
Rainfed rice	Sedhiou	56.9	54.1	56.8
	Kolda	38.7	32.1	38.7
	Ziguinchor	61.1	61.3	61.2
	Total rainfed rice	**48.0**	**51.1**	**48.4**
Millet	Fatick	12.7	0.0	12.6
	Kaolack	64.3	61.5	64.2
	Kaffrine	26.5	54.5	27.4
	Total millet	**41.8**	**49.2**	**42.1**
Corn	Fatick	36.7	6.3	34.2
	Kaolack	60.7	0.0	58.9
	Kaffrine	32.3	100.0	32.5
	Sedhiou	57.7	0.0	57.7
	Kolda	48.8	0.0	48.5
	Ziguinchor	100.0	0.0	100.0
	Total corn	**50.1**	**23.7**	**49.5**
Total cereal		**45.2**	**49.1**	**45.5**
ATV		**47.1**	**32.3**	**44.6**
Mango		**53.2**	**56.4**	**53.6**
Breeding		**46.3**	**32.4**	**45.5**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

The use of ICT for agricultural purposes is not widespread

In the agricultural field, the use of ICT can be useful for several purposes. It can, for example, provide better information about the best time to grow a particular crop based on rainfall forecasts. For this study, the information collected on the use of ICT shows that only 11.7% of households use ICT for agricultural purposes, and most of the technology is used to forecast rainfall dates (75.9%). For other possible uses in agriculture, the proportions obtained are very marginal, even though the use of ICT for better knowledge of market prices exists and concerns 8.3% of households using ICT for agricultural purposes (Table 3.58).

Within the types of VCs, the proportions of households using ICT vary slightly. The highest proportions are observed for mango with 15%, followed by livestock with 12.5%, market gardening with 11.9%, and finally cereals with 11.2%. In the use of ICT for agricultural purposes, forecasting the onset of rain is of interest to a large proportion of households, especially those that produce mangoes and cereals, and this can be explained by the preponderance of user households in rainfed rice production (in Kolda, Sédhiou, and Ziguinchor) and in the groundnut basin (Kaffrine, Kaolack, and Fatick) with corn production.

In market gardening, in addition to the use of rainfall forecasts, ICT is a means for producers to know the amount of rain expected (13.7%) and market prices (11.3%). These two practices are especially widespread, with 39.8% in Kaffrine and 78.4% in Matam (Appendix Table 0.69 and Table 0.70).

Table 3.58   Distribution (%) of households by ICT use in agriculture by region and value chain

Value chain	Region	HOH gender	Agricu ltural uses of ICT	Service used in ICT						
				Rain foreca st	Access to inputs	Te mpe ratu res	Remot e irrigati on	Mark et price	Amo unt of rainf all	Growin g techniq ues
Dooleel Mbay area		Male	12.5	75.4	4.0	3.7	0.0	8.5	6.7	1.7
		Female	2.9	97.6	0.0	2.4	0.0	0.0	0.0	0.0
		Total	**11.7**	**75.9**	**3.9**	**3.6**	**0.0**	**8.3**	**6.6**	**1.6**
Irrigated rice	Matam	Male	10.3	99.7	0.3	0.0	0.0	0.0	0.0	0.0
		Woman	0.0							
		Total	**10.1**	**99.7**	**0.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
	Saint-Louis	Male	10.1	48.2	29.6	17.9	0.0	1.9	2.4	0.0
		Woman	0.0							
		Total	**9.2**	**48.2**	**29.6**	**17.9**	**0.0**	**1.9**	**2.4**	**0.0**
	Total Irrigated rice	Male	10.1	66.8	19.0	11.4	0.0	1.2	1.6	0.0
		Woman	0.0							
		Total	**9.4**	**66.8**	**19.0**	**11.4**	**0.0**	**1.2**	**1.6**	**0.0**
Rainfed rice	Sedhiou	Male	15.0	89.1	0.0	0.0	0.0	10.9	0.0	0.0
		Woman	0.0							
		Total	**14.2**	**89.1**	**0.0**	**0.0**	**0.0**	**10.9**	**0.0**	**0.0**
	Kolda	Male	19.6	89.7	0.0	0.3	0.0	3.0	7.0	0.0
		Woman	19.8	0.0	0.0	100.0	0.0	0.0	0.0	0.0
		Total	**19.6**	**89.4**	**0.0**	**0.7**	**0.0**	**2.9**	**7.0**	**0.0**
	Ziguinchor	Male	19.1	93.1	0.0	0.0	0.0	2.5	4.3	0.0
		Woman	2.1	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	**14.1**	**93.4**	**0.0**	**0.0**	**0.0**	**2.4**	**4.1**	**0.0**
	Total rainfed rice	Male	16.2	90.6	0.0	0.1	0.0	4.1	5.1	0.0
		Woman	1.7	84.8	0.0	15.2	0.0	0.0	0.0	0.0
		Total	**14.4**	**90.5**	**0.0**	**0.4**	**0.0**	**4.1**	**5.0**	**0.0**
Millet	Fatick	Male	0.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0

Value chain	Region	HOH gender	Agricultural uses of ICT	Service used in ICT						
				Rain forecast	Access to inputs	Temperatures	Remote irrigation	Market price	Amount of rainfall	Growing techniques
		Woman	0.0							
		Total	0.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Kaolack	Male	3.2	83.7	7.3	7.3	0.0	1.7	0.0	0.0
		Woman	2.3	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	3.2	84.4	7.0	7.0	0.0	1.7	0.0	0.0
	Kaffrine	Male	12.2	43.8	3.1	3.1	0.0	25.8	24.3	0.0
		Woman	0.0							
		Total	11.8	43.8	3.1	3.1	0.0	25.8	24.3	0.0
	Total millet	Male	7.1	57.7	7.0	3.1	0.0	15.5	14.8	1.7
		Woman	1.4	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	6.9	58.0	7.0	3.1	0.0	15.4	14.7	1.7
Corn	Fatick	Male	16.4	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Woman	0.0							
		Total	15.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Kaolack	Male	18.9	93.3	0.0	0.0	0.0	6.7	0.0	0.0
		Woman	0.0							
		Total	18.4	93.3	0.0	0.0	0.0	6.7	0.0	0.0
	Kaffrine	Male	8.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Woman	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	8.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sedhiou	Male	16.0	54.3	0.0	0.0	0.0	42.8	2.8	0.0
		Woman	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	16.0	54.3	0.0	0.0	0.0	42.8	2.8	0.0
	Kolda	Male	16.4	85.2	4.7	4.9	0.0	5.2	0.0	0.0
		Woman	0.0							
		Total	16.3	85.2	4.7	4.9	0.0	5.2	0.0	0.0
	Ziguinchor	Male	0.0							
		Woman	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	0.0							
	Total Corn	Male	15.3	85.8	2.7	3.2	0.0	8.1	0.3	0.0
		Woman	2.1	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	15.1	85.8	2.7	3.2	0.0	8.0	0.3	0.0
Total cereal		Male	11.8	78.9	4.6	3.2	0.0	8.0	5.1	0.4
		Female	1.4	90.6	0.0	9.4	0.0	0.0	0.0	0.0
		Total	11.2	78.9	4.5	3.2	0.0	7.9	5.0	0.4
Total ATV		Male	13.3	56.7	3.3	6.7	0.0	12.1	14.6	6.6
		Female	4.7	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	11.9	59.5	3.1	6.2	0.0	11.3	13.7	6.2
Total mango		Male	15.8	72.6	0.0	2.2	0.0	14.0	11.0	0.2
		Female	7.4	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	15.0	73.9	0.0	2.1	0.0	13.3	10.5	0.2
Total small ruminants		Male	13.0	74.2	4.4	3.9	0.0	9.6	7.2	0.6
		Female	3.6	96.7	0.0	3.3	0.0	0.0	0.0	0.0
		Total	12.5	74.6	4.4	3.9	0.0	9.5	7.1	0.6

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.5.3 Shocks and coping strategies

Access to food and agricultural inputs are the main shocks experienced by households

The sharp increase in the price of food and the difficult access to agricultural inputs and rainfall deficit are the main shocks that have negatively affected households (Appendix Table 0.71, Table 0.72, and Table 0.73). Thus, the distribution of shocks experienced by households shows that the sharp increase in food prices affected households the most, with a proportion of 76.3%, followed by the inability to access agricultural inputs, which affected 61.1% of households, and 36.5% of households were affected by the rainfall deficit. The main shocks experienced by households remain the same across the VCs. However, pests affecting crops are noted for 39.6% of households in the vegetable VC. Similarly, livestock diseases affected pastoral households (42.1%). These results are similar for each region according to the VC targeted.

Changing eating habits to cope with rising food prices

Households faced with the high food price shock had to change their eating habits (Appendix Table 0.74, Table 0.75, and Table 0.76). Indeed, changing eating habits is the main coping strategy in the face of the sharp increase in food prices for 22.1% of households. This does not vary according to the type of VC. However, there are disparities in the regions depending on the VC targeted. Households in the rainfed rice (23.1%) and corn (31.5%) VCs in the Kolda region opted more to use their savings, whereas households in the corn VC in Kaolack (30.2%) and those in the millet VC in the Fatick (22.2%), Kaffrine (15.5%), and Kaolack (14.3%) regions report having taken out loans to overcome rising food prices.

In contrast, households in the vegetable VC in Fatick sold some of their agricultural assets (41.2%), whereas employed members of households in the mango VC in Kolda took on additional jobs (51.3%).

No strategy to combat the difficulty of accessing agricultural inputs and the rainfall deficit

A large proportion of households report that they have not adopted any strategies to deal with the lack of access to crop inputs or the rainfall deficit (Appendix Table 0.78, Table 0.79, and Table 0.80). In fact, 42.1% of households did not take any adaptation measures for difficult access to inputs and 51.1% did not do so for the rainfall deficit. The results are similar across VC types (cereals, vegetables, mango, and small ruminants) as well as for each region depending on the VC targeted.

Higher resilience to shocks/stress among households with adult men and women (in units)

The results of the distribution of the index of household capacity to recover from shocks/stress show that in the project's ZOI, a shock would result in a resilience capacity of 0.29 (units). This resilience to a shock is twice as high as it is for households with adult men and women (0.30) compared with those with adult women only (0.15) (Appendix Table 0.94).

Analysis by VC by region shows that households producing rainfed rice in Ziguinchor (0.58), corn in Kolda (0.35), and millet in Kaffrine (0.28) have a greater capacity to cope with shock/stress than those producing millet in Fatick (0.19), millet in Kaolack (0.19), corn in Kaolack, and corn in Sédhiou (0.18), which have the weakest resiliency capacities. With respect to market gardening households as well as pastoral households, the highest resilience capacities are noted in the regions of Kolda, Ziguinchor, and Matam, whereas Fatick is home to the least resilient. For households in the mango VC, the ability to recover from shocks is strongest in Ziguinchor (0.27), Kolda (0.23), and Sédhiou (0.20), respectively.

Few households have increased resilience to shock/stress (%)

Increased resilience is measured by the combination of a set of economic variables cited by households as coping strategies for shocks/stress. These include the use of savings, the practice of off-season cultivation, the taking of employment by the inactive or unemployed or additional employment by the employed, and the obtaining of credit. The results show that the percentage of households with increased resilience is low (Table 3.59, Table 3.60, and Table 3.61). Only 19.2% of households show sustained resilience. This weakness in increased household resilience is most pronounced in the rainfed rice VC in Ziguinchor (0.6%) and the irrigated rice VC in Matam (3.0%). However, the corn VC in Kaolack (41.4%), the millet VC in Kaolack (35.7%), and the corn VC in Kaffrine (29.2%) each have households with relatively high levels of increased resilience. This high proportion is also noted in the vegetable VC in Kaolack (41.2%) and the mango VC in Kolda (40.9%).

Moreover, this proportion of households with increased resilience to shock/stress does not vary much by household type. It is 19.2% for households with adult men and women, compared with 19.9% for households with adult women only. It also appears that male-headed households (19.8%) have more increased resilience than female-headed households (11.4%).

Table 3.59   Distribution of households with increased resilience by gender and household type by value chain and region (%)

Value chain	Region	Male			Female			Total		
		Adult men and women (M&F)	adult women without adult men (FNM)	Set	Adult men and women (M&F)	adult women without adult men (FNM)	Set	Adult men and women (M&F)	Adult women without adult men (FNM)	Set
Dooleel Mbay area		19.8		19.8	9.5	19.9	11.4	19.2	19.9	19.2
Irrigated rice	Matam	2.9		2.9	8.9		8.9	3.0		3.0
	Saint-Louis	16.8		16.8	8.9	25.5	9.7	16.0	25.5	16.1
	Total irrigated rice	**11.7**		**11.7**	**8.9**	**25.5**	**9.6**	**11.5**	**25.5**	**11.6**
Rainfed rice	Sedhiou	19.7		19.7	17.6	0.0	11.8	19.6	0.0	19.3
	Kolda	24.1		24.1	22.5	100.0	32.1	24.0	100.0	24.1
	Ziguinchor	0.9		0.9	0.0	0.0	0.0	0.7	0.0	0.6
	Total rainfed rice	**16.5**		**16.5**	**2.6**	**35.1**	**14.6**	**15.4**	**35.1**	**16.3**
Millet	Fatick	28.5		28.5	0.0		0.0	28.2		28.2
	Kaolack	33.9		33.9	69.0	0.0	63.8	35.8	0.0	35.7
	Kaffrine	22.8		22.8	0.0		0.0	22.1		22.1
	Total millet	**25.7**		**25.7**	**40.6**	**0.0**	**38.8**	**26.2**	**0.0**	**26.1**
Corn	Fatick	14.7		14.7	0.0		0.0	13.5		13.5
	Kaolack	42.7		42.7	0.0	0.0	0.0	41.7	0.0	41.4
	Kaffrine	28.9		28.9	100.0		100.0	29.2		29.2
	Sedhiou	11.5		11.5				11.5		11.5
	Kolda	16.9		16.9	0.0	0.0	0.0	16.8	0.0	16.8
	Ziguinchor	0.0		0.0				0.0		0.0
	Total corn	**21.1**		**21.1**	**2.7**	**0.0**	**2.1**	**20.8**	**0.0**	**20.7**
Total cereal		**20.8**		**20.8**	**14.6**	**29.3**	**18.0**	**20.5**	**29.3**	**20.6**
Total ATV		**11.8**		**11.8**	**4.5**	**0.0**	**3.9**	**10.7**	**0.0**	**10.5**
Total mango		**20.9**		**20.9**	**1.3**	**0.0**	**0.9**	**19.5**	**0.0**	**19.0**
Total livestock		**19.2**		**19.2**	**15.5**	**35.7**	**18.9**	**19.0**	**35.7**	**19.2**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Table 3.60   Distribution of households with increased resilience by gender and household type by horticultural value chain and region (%)

Horticultural value chain	Region	HOH gender								
		Male			Female			Total		
		Adult men and women (M&F)	Adult women without adult men (FNM)	Together	Adult men and women (M&F)	adult women without adult men (FNM)	Together	Adult men and women (M&F)	Adult women without adult men (FNM)	Together
ATV	Fatick	9.9	0.0	9.9	0.0	0.0	0.0	9.6	0.0	9.4
	Kaolack	38.6	0.0	38.6	75.9	0.0	75.9	41.2	0.0	41.2
	Kaffrine	18.4	0.0	18.4	0.0	0.0	0.0	18.4	0.0	16.8
	Sedhiou	12.1	0.0	12.1	26.6	0.0	26.6	12.7	0.0	12.7
	Kolda	11.0	0.0	11.0	0.0	0.0	0.0	10.8	0.0	10.7
	Ziguinchor	0.3	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.2
	Matam	3.5	0.0	3.5	29.0	0.0	18.8	5.2	0.0	5.1
	Saint-Louis	18.9	0.0	18.9	0.7	0.0	0.6	15.7	0.0	15.2
Total ATV		**22.1**	**0.0**	**22.1**	**10.5**	**0.0**	**2.9**	**21.7**	**0.0**	**20.0**
Mango	Sedhiou	7.4	0.0	7.4	100.0	0.0	100.0	9.9	0.0	9.9
	Kolda	40.9	0.0	40.9	0.0	0.0	0.0	40.9	0.0	40.9
	Ziguinchor	4.6	0.0	4.6	0.0	0.0	0.0	4.3	0.0	3.5
Total mango		**11.8**	**0.0**	**11.8**	**4.5**	**0.0**	**3.9**	**10.7**	**0.0**	**10.5**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Table 3.61   Distribution of households with increased resilience by gender and household type by small ruminant value chain and region (%)

Value chain	Region	HOH gender								
		Male			Female			Total		
		Adult men and women (M&F)	Adult women without adult men (FNM)	Together	Adult men and women (M&F)	Adult women without adult men (FNM)	Together	Adult men and women (M&F)	Adult women without adult men (FNM)	Together
Small ruminants	Fatick	24.1	0.0	24.1	0.0	0.0	0.0	23.3	0.0	23.3
	Kaolack	37.2	0.0	37.2	63.6	0.0	58.1	38.5	0.0	38.3
	Kaffrine	23.8	0.0	23.8	7.9	0.0	4.5	23.6	0.0	23.4
	Sedhiou	18.1	0.0	18.1	55.7	0.0	31.2	18.5	0.0	18.4
	Kolda	12.6	0.0	12.6	8.6	0.0	6.2	12.6	0.0	12.6
	Ziguinchor	0.5	0.0	0.5	0.0	0.0	0.0	0.4	0.0	0.4
	Matam	5.6	0.0	5.6	11.9	71.2	40.8	5.9	71.2	8.8
	Saint-Louis	21.8	0.0	21.8	5.3	4.1	5.2	19.7	4.1	19.5
Total small ruminants		**19.2**	**0.0**	**19.2**	**15.5**	**35.7**	**18.9**	**19.0**	**35.7**	**19.2**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.5.4 Agricultural insurance

Very low insurance take-up

The Table 3.62 shows that 6.3% of producers have taken out agricultural insurance, with 8.2% of male producers and 2.4% of female producers. Within the VCs, this percentage remains low, with vegetables having the highest number of producers who have taken out insurance (7.5%). Everywhere, the subscription rate is lower among women producers, except for millet in Fatick (100%), and vegetables (21.6%) and millet in Kaffrine (16.1%). In addition, the results reveal the absence of subscription among both men and women in corn and ATV in Kaolack, ATV in Fatick, and ATV and mango in Sédhiou (Appendix Table 0.83).

More specifically, the proportion of producers who have subscribed is higher in irrigated rice in Saint-Louis (19.4%) and market gardening in Saint-Louis (33.9%) and Fatick (17.3%).

Table 3.62   Percentage of Producers with Agricultural Insurance by Value Chain and Region (%)

Value chain	Region	Gender of the producer		
		Male	Female	Total
Dooleel Mbay area		8.2	2.4	6.3
Irrigated rice	Matam	6.9	5.9	6.8
	Saint-Louis	20.5	7.1	19.4
	Total irrigated rice	**13.6**	**4.3**	**12.7**
Rainfed rice	Sedhiou	40.1	1.0	2.2
	Kolda	0.0	5.2	2.2
	Ziguinchor	0.0	0.0	0.0
	Total rainfed rice	**5.4**	**2.4**	**4.0**
Millet	Fatick	7.6	100.0	8.2
	Kaolack	0.0	0.0	0.0
	Kaffrine	6.7	16.1	7.6
	Total millet	**3.8**	**5.3**	**3.9**
Corn	Fatick	15.6	100.0	16.7
	Kaolack	0.0	0.0	0.0
	Kaffrine	8.8	0.0	8.6
	Sedhiou	7.2	0.0	6.9
	Kolda	7.5	0.0	7.2
	Ziguinchor	0.0		0.0
	Total corn	**6.6**	**2.6**	**6.4**
Total cereal		6.4	2.9	5.8
Total ATV		19.2	2.1	7.5

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

A very small portion of the area covered by agricultural insurance

The average share of the area insured by a producer is 5.8% (Table 3.62). This average varies very little according to the VCs taken as a whole, but there are clearly considerable differences when the disaggregation becomes more detailed. Indeed, insurance covers larger areas in terms of shares in Saint-Louis for irrigated rice (27.1%), rainfed rice in Kolda (25.9%), and millet in Kaffrine (17.7%). Further, the smallest shares of insured areas are observed in Ziguinchor, Kaolack, and Sédhiou for all crops considered.

There is little variation in the type of insurer across the VCs. The majority of areas are insured by individual subscription for cereals (56.7%) and a considerable proportion have benefited from collective insurance (producer networks) for this group. As for market gardening, producers mainly take out insurance through producer networks or cooperatives (59.6%), although the proportion of individually insured areas is considerable for this activity (36.7%). However, a very small proportion of producers have insured their areas thanks to World Food Programme (WFP) support. These are 3.2 of cereal producers, mainly based in Kaolack, and 2.2 of ATV producers, mainly located in Ziguinchor (Appendix Table 0.84).

Moreover, the analysis based on the type of insurer shows that the areas insured by the producer concern all millet producers in Fatick, ATV producers in Kaffrine and Sédhiou, and mango producers in Kolda and Ziguinchor.

Table 3.63   Distribution (%) of insured area by insurer by value chain and region

Value chain	Region	Share of insured area	Distribution of insured area by insurer			
			Individually	Network	WFP	Other
Dooleel Mbay area		5.8	51.2	38.7	3.0	7.1
Irrigated rice	Matam	1.7	1.6	92.4	4.0	2.0
	Saint-Louis	27.1	31.7	67.0	0.6	0.8
	Total irrigated rice	**17.3**	**28.4**	**69.8**	**1.0**	**0.9**
Rainfed rice	Sedhiou	0.6	41.8	58.2	0.0	0.0
	Kolda	25.9	79.8	0.0	9.2	11.0
	Ziguinchor	0.1	0.0	50.0	0.0	50.0
	Total rainfed rice	**9.2**	**53.0**	**26.0**	**5.4**	**15.6**
Millet	Fatick	14.8	100.0	0.0	0.0	0.0
	Kaolack	0.5	0.0	37.1	62.9	0.0
	Kaffrine	17.7	65.3	14.9	5.6	14.2
	Total millet	**8.5**	**69.0**	**14.3**	**6.1**	**10.6**
Corn	Fatick	6.4	100.0	0.0	0.0	0.0
	Kaolack	0.1	0.0	100.0	0.0	0.0
	Kaffrine	10.0	89.6	10.4	0.0	0.0
	Sedhiou	2.0	80.8	0.0	0.0	19.2
	Kolda	2.7	69.1	10.0	1.0	19.9
	Ziguinchor	0.0				
	Total corn	**3.2**	**78.9**	**9.0**	**0.5**	**11.6**
Total cereal		**8.0**	**56.7**	**30.9**	**3.2**	**9.2**
Total ATV		**1.4**	**36.7**	**59.6**	**2.2**	**1.5**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.6 MARKETING METHOD

3.6.1 Marketing method of cereal production

Direct market sales are the primary marketing method for grain producers

Marketing contracts are not very common among cereal producers. Indeed, the distribution of producers according to the existence of a marketing contract reveals that only 1.2% of cereal producers have contracts for the sale of their production. The proportions of producers with sales contracts are more preponderant for corn in Kolda and irrigated rice in Saint-Louis, at 4.2% and 2.2%, respectively (Table 3.64).

In addition, markets remain the preferred places for marketing cereal products. Indeed, 67.5% of producers declare that they sell their cereals there. Direct field sales to collectors (14.5%) and to wholesalers or intermediaries (16.3%) are not negligible. Direct sales in markets are most striking among corn producers in Ziguinchor (100%), and among millet producers in the Kaolack (84.7%), Fatick (82.4%), and Kaffrine (82.2%) regions. In contrast, rainfed rice producers in Kolda (70.2%) generally sell directly to collectors, whereas those in Ziguinchor almost all sell through cooperatives.

Table 3.64   Proportion of producers according to the place of sale of the cereal production (%)

Value chain	Region	Place of sale						Percentage of producers with a sales contract
		Direct sales at the market	Direct field sale to a collector	Wholesaler / intermediary	Processing company	Cooperative	Producer network	
Dooleel Mbay area		76.9	9.5	10.0	2.8	0.3	0.5	2.8
Irrigated rice	Matam	51.8	3.3	38.1	0.0	0.5	6.3	0.0
	Saint-Louis	61.4	16.5	19.8	0.4	0.2	1.7	2.2
	Total irrigated rice	**59.8**	**15.0**	**22.3**	**0.3**	**0.3**	**2.3**	**1.7**
Rainfed rice	Sedhiou	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Kolda	5.1	70.2	23.4	0.0	0.7	0.6	0.7
	Ziguinchor	0.0	0.0	0.0	0.0	100.0	0.0	0.0
	Total rainfed rice	**15.1**	**61.0**	**20.4**	**0.0**	**2.3**	**1.1**	**0.4**
Millet	Fatick	82.4	0.0	17.6	0.0	0.0	0.0	0.0
	Kaolack	84.7	4.8	10.4	0.0	0.0	0.1	0.3
	Kaffrine	82.2	1.9	11.4	0.0	0.0	4.5	2.0
	Total millet	**81.9**	**4.8**	**12.2**	**0.0**	**0.0**	**1.1**	**0.9**
	Fatick	34.9	21.7	43.4	0.0	0.0	0.0	0.0
	Kaolack	72.5	24.6	1.6	0.2	0.0	1.2	0.7
	Kaffrine	78.5	0.0	21.5	0.0	0.0	0.0	0.0
	Sedhiou	50.7	6.5	42.8	0.0	0.0	0.0	0.0
	Kolda	61.0	14.4	22.3	0.4	1.8	0.0	4.2
	Ziguinchor	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Corn	**Total corn**	**63.0**	**16.0**	**19.2**	**0.3**	**0.9**	**0.6**	**2.0**
Total cereal		**67.5**	**14.5**	**16.3**	**0.1**	**0.5**	**1.2**	**1.2**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.6.2 Marketing method of vegetable production

Sales in markets is the main means of disposing of market garden production

Vegetable sales contracts are almost nonexistent. Only 4.5% of producers have marketing contracts (Table 3.65). An analysis by region shows that Saint-Louis has the highest proportion of producers with sales contracts, at 24.9%. They are very negligible in the regions of Fatick, Kaolack, Ziguinchor, and Matam. However, the results show that the main marketing method used by vegetable producers is direct sales in markets. In other words, 83.4% of producers sell their vegetable production in markets.

This is almost the same trend in all regions except Sédhiou (24.9%) and Kaffrine (20.6%), where direct sales to collectors at the field level are relatively high.

Table 3.65   Proportion of producers according to the place of sale of the vegetable production (%)

Value chain	Region	Place of sale						Percentage of producers with a sales contract
		Direct sales at the market	Direct sale at the field to a collector	Wholesaler/ intermediary	Processing company	Cooperative	Producer network	
ATV	Fatick	84.8	5.1	10.1	0.0	0.0	0.0	0.0
	Kaolack	80.2	11.2	8.2	0.0	0.0	0.4	0.0
	Kaffrine	60.3	20.6	16.8	0.0	2.3	0.0	2.5
	Sedhiou	71.6	24.9	2.9	0.5	0.0	0.0	1.9
	Kolda	90.4	3.5	5.6	0.2	0.3	0.0	0.5
	Ziguinchor	94.6	1.6	3.8	0.0	0.0	0.0	0.0
	Matam	92.0	6.8	1.2	0.0	0.0	0.0	0.0
	Saint-Louis	62.0	4.3	6.7	26.9	0.0	0.1	24.9
	Total ATV	**83.4**	**6.0**	**5.7**	**4.6**	**.2**	**.0**	**4.5**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.7   INCOME AND COSTS RELATED TO AGRICULTURAL ACTIVITIES

3.7.1 *Sale of agricultural products*

Vegetable crops generate more revenue than cereal crops

Producers who have sold their production have an average annual income of 496,134 FCFA . This average is higher for market gardeners (844,317 FCFA) than for cereal growers (**173 855**FCFA). The strong variation in marketing (destination of production) between these two types of crops was reflected in the sales amounts. Cereal crops are primarily intended for household consumption, unlike market garden crops, which are often intended for sale. A comparison of cereals shows that irrigated rice in Saint-Louis and rainfed rice in Kolda generate more revenue on average than dry cereals (less than 150,000 FCFA). For millet and corn, producers in Fatick and Kaolack sell more on average than those in other regions. The lowest revenues are recorded among rainfed rice producers in Sédhiou and Kolda.

In general, market gardening generates more income than cereals. Tomato growers in Kaolack stand out from the rest with average revenues of more than FCFA3,000,000. Tomato growers in Saint-Louis and onion growers in Ziguinchor follow with sales of 1,772,567 FCFA and 1,443,018 FCFA, respectively. In contrast, okra cultivation in Sédhiou and Matam appears to be less profitable, with average revenues per producer of less than 500,000 FCFA.

The distribution of the amount of revenue by producer gender shows that the revenue from the sale of agricultural products is higher for women than for men. This could be because women are relatively more frequent in high-value crops such as vegetable crops; cereal crops are overwhelmingly grown by men. For most cereal crops, the revenues of male producers are higher than those of female producers. In contrast, the situation is reversed for female producers of irrigated rice in Matam and Mais in Kaffrine, where they have higher average revenues than male producers. With respect to market garden crops, women have higher average revenues than men, except for onion production in Saint-Louis and bitter eggplant production in Ziguinchor.

Mango production generates an average revenue of 158,478 FCFA. This average is higher in Kolda than in Ziguinchor and Sédhiou. In these two regions, male mango producers sell more than female mango

producers, with amounts of 185,359 and 171,156, respectively. In contrast, in Kolda, women appear to be more active than men in selling mango.

Table 3.66   Average value of crop production sales (FCFA)

Value chain	Region	Gender of the producer		
		Male	Female	Total
Dooleel Mbay area		350 161	722 258	496 134
Irrigated rice	Matam	53 235	70 246	54 077
	Saint-Louis	368 514	1 041 259	425 625
	Total irrigated rice	**291 530**	**792 822**	**334 494**
Rainfed rice	Sedhiou	3 486	2 061	2 095
	Kolda	620 150	2 300	438 284
	Ziguinchor	7 780	3 015	4 651
	Total rainfed rice	**396 483**	**2 767**	**242 190**
Millet	Fatick	123 126	59 583	122 133
	Kaolack	151 623	91 256	148 295
	Kaffrine	98 037	57 943	94 801
	Total millet	**118 814**	**78 694**	**115 817**
Corn	Fatick	174 819	86 197	172 442
	Kaolack	158 887	30 774	158 175
	Kaffrine	120 520	381 420	127 592
	Sedhiou	93 550		93 550
	Kolda	143 659	76 420	139 662
	Ziguinchor	71 889		71 889
	Total morn	**141 600**	**99 729**	**140 098**
Total cereal		**185 225**	**96 638**	**173 855**
Onion	Saint-Louis	648 518	532 794	609 717
	Ziguinchor	133 837	1 575 331	1 443 018
	Total	**634 691**	**669 828**	**654 089**
Tomato	Kaolack	146 565	3 754 078	3 171 045
	Saint-Louis	1 664 214	2 999 893	1 772 567
	Ziguinchor	779 022	921 346	883 976
	Total	**1 557 253**	**1 826 949**	**1 716 431**
Okra	Kaolack	212 309	1 143 579	944 509
	Kolda	515 031	1 074 900	1 041 306
	Matam	396 920	465 791	424 767
	Sedhiou	294 188	146 253	175 605
	Ziguinchor	906 834	444 618	570 982
	Total	**638 083**	**589 276**	**601 726**
Sweet eggplant	Saint-Louis	742 954	1 051 889	938 153
	Total	**308 420**	**852 307**	**653 193**
Bitter eggplant	Ziguinchor	1 506 718	899 082	1 005 109
	Total	**1 165 257**	**815 828**	**886 920**
ATV		831 724	850 312	844 317
Mango	Sedhiou	171156	55000	164324
	Kolda	181565	475000	205040
	Ziguinchor	185359	161250	181553
Total mango		**158003**	**161980**	**158478**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Livestock, especially sheep, is a significant source of income for producers

The analysis of small ruminant sales among agro-pastoralist households as shown in Table 3.67 reveals that the average revenue from sales was 89,582 FCFA. The sale of animals was highest in Saint-Louis (199,916 FCFA), followed by Matam and Sédhiou, with amounts of 82,440 FCFA and 75,346 FCFA, respectively. Livestock farmers in the regions of Fatick and Ziguinchor had lower average revenues. In addition, there is a great disparity between species. In fact, the sale of sheep generates an average income of 163,000 FCFA, whereas the sale of goats is 43,000 FCFA. This trend is noted in all regions.

However, the gap between sheep and goat sales is less pronounced in Matam compared with the other regions.

The results show that male herders have higher revenues than women herders, with revenues of 110,411 versus 56,769 FCFA. This difference is observed among farmers in all regions, except for goat farmers in Matam, who have an average income of 31,229 FCFA for men compared with 41,122 for women.

Table 3.67   Average value of animal sales by species (FCFA)

Region	Species	Gender		
		Male	**Female**	**Total**
Total small ruminants	Sheep	184 609	103 338	163 166
	Goats	46 548	40 307	43 640
	Total	**110 411**	**56 769**	**89 582**
Fatick	Sheep	49 706	46 258	49 087
	Goats	19 735	19 950	19 818
	Total	**24 036**	**21 392**	**23 073**
Kaolack	Sheep	126 185	77 471	116 272
	Goats	42 848	40 816	41 832
	Total	**75 228**	**45 932**	**63 051**
Kaffrine	Sheep	118 976	78 499	105 780
	Goats	45 784	35 337	39 466
	Total	**78 938**	**44 290**	**61 140**
Sedhiou	Sheep	126 934	46 351	118 901
	Goats	48 497	42 306	45 693
	Total	**89 943**	**42 833**	**75 346**
Kolda	Sheep	103 862	70 006	96 744
	Goats	53 152	32 134	44 707
	Total	**79 395**	**43 432**	**68 033**
Ziguinchor	Sheep	38 804		38 804
	Goats	35 553	35 000	35 530
	Total	**35 938**	**35 000**	**35 904**
Matam	Sheep	125 988	85 705	112 863
	Goats	31 229	41 122	35 007
	Total	**90 901**	**66 571**	**82 440**
Saint-Louis	Sheep	402 685	169 373	333 465
	Goats	77 242	65 328	72 032
	Total	**254 547**	**106 302**	**199 916**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.7.2 Production costs

Market gardeners bear the highest costs

It follows from **Table 3.68** that production costs reach 133,745 FCA/ha for cereals and 935,608 FCFA/ha for vegetables. It is known that vegetables are high-value crops that require more expenses, particularly in terms of irrigation, labor, seeds, and fertilization.

For cereals, production costs for irrigated rice in Matam and Saint-Louis are much higher than for other cereals, at 343,271 FCFA/ha and 325,162 FCFA/ha, respectively. These values are mainly driven by fertilizer expenses (80,469 FCFA for Saint-Louis and 102,853 FCFA/ha for Matam), harvesting and threshing expenses (110,613 and 50,188 FCFA/ha for Saint-Louis and Matam, respectively), and irrigation expenses (52,018 and 87,024 FCFA/ha for Saint-Louis and Matam, respectively). Corn cultivation in Kaolack and Fatick has relatively high production costs (171,157 and 195,609 FCFA/ha), mainly due to the purchase of fertilizers and harvesting expenses. The lowest production costs per hectare are found for corn in Ziguinchor (15,467), millet in Kaffrine (57,295 FCFA), and Fatick (63,329 FCFA).

With respect to vegetables, tomato and onion crops require more expenditure than others, with significant regional disparities. Production costs per hectare for tomatoes in Saint-Louis are estimated at 2,217,057 FCFA, compared with 1,519,353 FCFA for Kaolack, and 2,009,367 FCFA for Ziguinchor. This could be explained by the growing season and the varieties grown. In Saint-Louis, most of the tomato and onion production takes place during the off-season, whereas in the other regions these crops are generally grown in the rainy season. Rainy season crops require fewer costs and sometimes allow for economies of scale on expenses related to soil preparation, labor, and fertilizers. Average production costs for okra are higher in Sédhiou and Matam than in Ziguinchor and Kolda. In Matam and Sédhiou, they are mainly driven by costs related to seeds and sowing and the purchase of fertilizer. Sweet eggplant in Saint-Louis and bitter eggplant in Ziguinchor have production costs per hectare of 2,450,375 FCFA and 972,467 FCFA, respectively.

It should be noted that irrigated rice, tomato, and onion producers in Saint-Louis and, to a lesser extent, irrigated rice producers in Matam sometimes incur costs related to agricultural insurance. (Table 3.69)

Table 3.68   Average costs (in FCFA) per hectare of agricultural inputs and services by region and cereal value chain

Value chain	Region	Soil preparation	Seeds	Fertilizers	Irrigation	Weed control	Workforce	Harvest	Storage	Insurance	Total cost
Dooleel Mbay area		33976	95718	84156	54467	4320	63843	35182	13055	2015	398013
Irrigated rice	Matam	28177	22331	102853	87024	6148	10312	50188	6126	67	325162
	Saint-Louis	32389	20574	80469	52018	17284	18473	110613	2736	3330	343271
	Total irrigated rice	**29229**	**20814**	**82699**	**59434**	**12628**	**17554**	**84564**	**3745**	**2083**	**319708**
Rainfed rice	Sedhiou	61342	7398	57674	0	0	20460	34442	2690	0	186806
	Kolda	48722	13592	49942	0	0	9589	32182	6631	1036	186794
	Ziguinchor	30591	21731	14416	0	0	60999	16710	5729	0	148235
	Total rainfed rice	**41392**	**16673**	**40017**	**3366**	**249**	**33096**	**28066**	**5430**	**531**	**176841**
Millet	Fatick	1192	150	37930	0	0	10241	12246	1532	0	63329
	Kaolack	1169	1062	45831	0	0	21646	18053	959	21	91688
	Kaffrine	570	1675	27048	0	119	13989	12392	965	6	57295
	Total millet	**4885**	**2748**	**30687**	**0**	**52**	**13847**	**13160**	**1106**	**9**	**67991**
Corn	Fatick	15174	2522	108059	0	0	26888	36760	6103	0	195609
	Kaolack	12785	8584	90158	0	11	35858	21163	1599	80	171157
	Kaffrine	1899	8806	47718	0	4	17299	9923	1746	0	87031
	Sedhiou	7381	11840	29161	0	0	12773	1662	2128	0	68849
	Kolda	5310	2547	50990	0	43	11624	10925	1110	49	89421
	Ziguinchor	4878	583	3221	0	0	5259	523	844	0	15467
	Total corn	**7569**	**6306**	**56613**	**0**	**48**	**17715**	**14645**	**1739**	**38**	**108274**
Total cereal		**17905**	**9309**	**45807**	**6750**	**1340**	**20523**	**24630**	**2715**	**362**	**133745**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Table 3.69   Average costs (in FCFA) per hectare of agricultural inputs and services by region and horticultural value chain

Value chain	Region	Soil preparation	Seeds	Fertilizers	Irrigation	Weed control	Workforce	Harvest	Storage	Insurance	Total cost
Onion	Saint-Louis	101207	223015	113152	292600	23138	100673	106159	28157	2963	1030388
	Ziguinchor	351	91101	8490	0	0	50155	0	12597	0	150349
	Total	**58892**	**220218**	**88723**	**168840**	**10876**	**109460**	**49126**	**36661**	**1160**	**754121**
Tomato	Kaolack	10063	245481	981981	111677	27014	106959	41572	27276	0	1519353
	Saint-Louis	344716	268684	74683	684159	71938	217967	294084	29854	106170	2217057
	Ziguinchor	36324	600452	352904	422184	4454	316244	134815	66717	0	2009367
	Total	**114137**	**387829**	**410869**	**359095**	**23382**	**250893**	**149558**	**43092**	**25560**	**1821974**
Okra	Kaolack	115179	145901	53836	121687	802	50471	0	18012	0	516223
	Kolda	9213	170436	86724	3121	28	67507	6401	21041	0	362623
	Matam	22204	343881	25933	141080	1055	107943	24668	42454	0	696903
	Sedhiou	25912	410057	158925	0	0	146535	0	50624	0	737383
	Ziguinchor	78170	135082	97713	5933	41	161542	731	16677	0	488835
	Total	**48238**	**196090**	**87289**	**45781**	**577**	**123192**	**13783**	**24298**	**0**	**531780**
sweet eggplant	Saint-Louis	0	898360	156828	466516	12106	251113	313385	110909	0	2450375
	Total	95809	713336	108024	261735	21155	287221	136318	88066	0	1893226
Bitter eggplant	Ziguinchor	147521	218337	142069	121737	30969	263107	38692	26955	0	972467
	Total	**127536**	**278866**	**129508**	**124206**	**24495**	**219510**	**39308**	**34428**	**0**	**998945**
ATV		66659	271442	162143	151506	10380	151941	56640	34083	5375	935608

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.7.3 Producers' farm income

The gross margin[2] is the result of economic activity. Applied to agriculture, it measures the economic profitability of agricultural activities that occurred during the seasons. For this study, the results obtained evaluate the gross margin at 1,615,552 FCFA per sown hectare. According to the VC, it appears that market gardening is the most profitable activity of all with a gross margin of 4,149,207 FCFA per hectare. After market gardening, comes mango with a profitability at least two times lower than market gardening (1,747,711 FCFA obtained per hectare). As for cereal crops, the gross margin is evaluated at 345,645 FCFA, the lowest of all the crops, which could be justified by the larger surface area, which requires more costs per hectare (**Table 3.70**).

Depending on the gender of the producer, productive activities carried out by women are more profitable. However, this situation is only observed in the ATVs.

Table 3.70   Gross margin per hectare (in FCFA) in the value chains according to the gender of the producer

Value chain	Producer gender		
	Male	Female	Total
Dooleel Mbay Total area	888 818	2 977 984	1 615 552
Total cereals	323 557	452 540	345 645
Total ATV	4 006 718	4 210 207	4 149 207
Total mango	2 034 184	212 251	1 747 711

<u>Source</u>: IPAR, *Baseline Dooleel Mbay, 2022.*

In terms of cereal crops, analyses of this VC revealed an overall positive result of 345,645 FCFA per hectare. While most producers had a favorable balance sheet, irrigated rice producers in Saint-Louis and Matam had the highest margins (646,707 FCFA and 627,361 FCFA, respectively). In contrast to rice farmers in St. Louis and Matam, millet farmers have a less rosy picture with the lowest margins: 176,021 FCFA in Kaolack, 153,837 FCFA in Fatick, and 129,097 FCFA in Kaffrine. For rainfed rice and corn, performance was noted in Ziguinchor, and overall, the gross margins obtained by producers of these two cereals are above 240,000 FCFA (**Table 3.71**).

These results could be explained by the lower price[3] of millet compared with other cereals, with rice having the highest price of all (Food Security Commission [CSA]).

With regard to the gender of the producer, the results on cereals show that female producers have more profitable activities. The margin obtained for women is 349,032 FCFA per hectare sown, compared with 292,896 FCFA per hectare sown for men. However, the group with the best profitability alternates from one region to another. In Ziguinchor and Kolda, female producers have a higher margin than male producers, regardless of the grain produced in the area. In Sédhiou, the opposite trend is observed. In addition, it appears that in irrigated rice, which has the highest margins, producers have better profitability.

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[2] Difference between the production obtained (monetary valuation) and the production costs (seeds, fertilizers, harvesting, paid labor, storage, water, etc.).

[3] Here, we are talking about producer prices, i.e., the price for which the producer sells his or her production.

Table 3.71   Gross margin per hectare (in FCFA) in cereals by gender of producer by region

Type of grain	Region	Producer gender		
		Male	**Female**	**Total**
Total cereals		323 557	452 540	345 645
Irrigated rice	Matam	643 721	304 364	627 361
	Saint-Louis	651 166	597 662	646 707
	Total irrigated rice	**658 164**	**649 039**	**657 314**
Rainfed rice	Sedhiou	303 951	337 541	335 538
	Kolda	432 258	375 739	409 374
	Ziguinchor	297 797	635 132	450 351
	Total rainfed rice	**443 022**	**488 848**	**465 508**
Millet	Fatick	156 249	- 17 402	153 837
	Kaolack	177 841	143 987	176 021
	Kaffrine	126 797	174 443	129 097
	Total millet	**151 739**	**168 743**	**152 685**
Corn	Fatick	254 202	303 588	254 949
	Kaolack	238 110	277 410	240 452
	Kaffrine	280 361	259 258	279 759
	Sedhiou	331 575	339 460	331 910
	Kolda	425 363	389 354	424 115
	Ziguinchor	420 422	400 750	419 555
	Total corn	**352 536**	**352 581**	**352 538**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

For ATV, it was found that upstream it is the most profitable of all crops with a gross margin of 4,149,207 FCFA per hectare. However, there is a slight nuance to this result. Margins are used for comparison purposes, requiring conversion to hectares for market garden crops that are largely planted on small areas (87.5 of them are less than 0.5 ha). Thus, conversion to hectares systematically leads to a multiplication of the order of conversion of the initial value (e.g., in meters per square meter).

In market gardening, the margin results show better profitability for sweet eggplant, tomato, onion, and bitter eggplant compared with okra (see **Table 3.72**). As a result, the highest margins are observed in Saint-Louis for sweet eggplant (7,167,593 FCFA) and in Kaolack for tomato (6,308,663 FCFA). The next highest margins are for tomatoes in Saint-Louis (5,961,077 FCFA), onions in Ziguinchor (5,677,090), and tomatoes in Ziguinchor (5,415,447 FCFA).

For okra, its profitability is lower than for other crops but still considerable. For this crop, Kolda and Ziguinchor are the most profitable regions, with margins of 4,490,074 FCFA and 4,066,050 FCFA, respectively. However, the lowest profitability in the market garden VC is obtained for this crop: 2,189,759 FCFA gross margin per hectare in Sédhiou.

Depending on the gender of the producer, men have a slightly higher gross margin than women (4,819,596 FCFA vs. 4,234,998 FCFA). Depending on the crop, the group with the highest margin changes, but always with a small difference.

Table 3.72   Gross margin per hectare (in FCFA) in ATVs by gender of producer by region

Value chain	Region	Producer gender		
		Male	**Female**	**Total**
ATV		4 006 718	4 210 207	4 149 207
Onion	Saint-Louis	5 258 402	4 111 761	4 817 305
	Ziguinchor	4 574 788	5 752 126	5 677 090
	Total	**5 274 054**	**4 783 720**	**4 956 859**
Tomato	Kaolack	4 638 475	6 770 368	6 308 663
	Saint-Louis	5 678 836	7 629 158	5 961 077
	Ziguinchor	6 930 165	4 914 657	5 415 447
	Total	**5 659 480**	**6 073 957**	**5 914 116**
Okra	Kaolack	2 397 884	4 589 842	4 102 151
	Kolda	3 742 471	4 531 311	4 490 074
	Matam	3 522 039	2 039 424	2 445 950

Value chain	Region	Producer gender		
		Male	Female	Total
	Sedhiou	5 030 692	1 578 282	2 189 759
	Ziguinchor	3 947 643	4 105 603	4 066 050
	Total	**3 783 926**	**3 843 536**	**3 830 442**
Sweet eggplant	Saint-Louis	7 728 117	6 886 057	7 167 593
	Total	**3 759 381**	**6 558 450**	**5 610 810**
Bitter eggplant	Ziguinchor	5 287 417	4 239 241	4 409 616
	Total	**4 819 596**	**4 234 998**	**4 350 879**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

For mango, the analyses show margins per hectare ranging from 1 384 154 FCFA to 5 268 358 FCFA (Table 3.73). This large difference in margin is attributable to the performance of producers in Ziguinchor, who have a gross margin of 7,718,889 FCFA per hectare. This result contrasts with what is obtained for female producers in this region, as Ziguinchor has the greatest difference in margin, although the lowest margin is observed in Sédhiou (101,135 FCFA).

Table 3.73   Gross margin per hectare (in FCFA) in mango by gender of producer, by region

Region	Gender of the producer		
	Male	Female	Total
Total mango	2 034 184	212 251	1 747 711
Sedhiou	1 446 754	101 135	1 384 154
Kolda	563 896	1 739 381	589 554
Ziguinchor	7 718 889	306 363	5 268 358

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

3.8   LEVEL OF WOMEN'S EMPOWERMENT IN AGRICULTURE

This section analyzes the level of women's participation in household decisions across the respective areas of empowerment, namely, agricultural production, asset ownership, access to credit, control over the use of income, leadership, and work time allocation (Table 3.74 and Table 3.75). The overall index of women's empowerment in the five areas is estimated at 0.52 (Appendix Table 0.85 and Table 0.86)

3.8.1   *Participation in decision-making in agricultural production*

A woman is autonomous in production when she participates and contributes to at least some decisions; or makes the decisions or feels that she can make her own decisions **7**).

More than half of the women are not yet autonomous in agricultural production

The analysis of the results shows that overall, more than half of the women are not yet autonomous in the area of agricultural production. It appears that 57.8% of women do not contribute to production decisions in their household. However, there are differences between regions and VCs. The percentage of women not participating in production decisions in their household is higher in irrigated rice-producing households in Saint-Louis (81.2%), corn-producing households in Sédhiou (70.1%), millet-producing households in Kaffrine (63.5%), and corn-producing households in Kaolack (62.5%). This proportion is lower in households producing corn in Fatick (40.8%) and millet in Fatick (45.9%).

Women more autonomous in households with adult women only regarding production decisions

Households with both men and adult women have a lower percentage of women who are self-sufficient in agricultural activities than those with adult women only. Specifically, 42.0% of women in households

with both men and adult women are self-sufficient compared with 59.1% in households with adult women only.

The older women are, the less autonomous they are in participating in decision-making in agricultural production activities

It also shows that adult women younger than 65 years of age are more autonomous than senior women in relation to agricultural production decisions. In other words, women between 30 and 64 years of age (44.3%) are significantly more autonomous in participating in productive decisions than women 65 years or older (26.7%). This could be explained by the fact that the age of 65 and older is generally characterized by the end of productive activities.

3.8.2 Possession of production goods

Productive capital (or productive assets) refers to all assets that can be used to generate income. A woman is autonomous in terms of asset ownership if the household holds at least one significant asset and she owns or co-owns that asset.

Most women are autonomous in terms of holding productive assets

In general, women own at least one productive asset belonging to the household. Indeed, 70.9% of women have a significant level of ownership of productive assets. This percentage of women with access to productive capital is only 50% for women in households in the Ziguinchor rainfed rice VC (39.4%). In contrast, it is very high for women in corn-producing households in Fatick (95.7%), millet-producing households in Fatick (90.6%), and women in Kaolack (90.5%).

Women are more independent in households with adult men and women

The percentage of women with access to productive assets is slightly higher in households with men and women than in households with adult women only. The percentage is estimated at 71.0% for households with men and women compared with 67.6% for those with adult women only.

The older the women, the more access they have to productive capital

The distribution of women according to access to productive assets by age shows that older women (65 years or older) have more access to productive capital with a rate of 73.9%. This is followed by women between 30 and 64 years of age with a percentage of 72.4%, and young women (15 to 29 years), who have a rate of access to productive assets of 62.5%.

3.8.3 Access to credit and decision-making

Access to credit includes both formal and informal financial services. These are NGOs, formal lenders (bank/financial institution), informal lenders, friends or family, formal groups such as microfinance or credit groups, informal credit/savings groups such as tontines, and cyclical loans, among others. A woman is considered autonomous when her household uses a source of credit for which she has made the decision to lend or use the loan.

Just over half of women contribute to financial services decisions

Overall, access to credit concerns a large proportion of women in households in the project's ZOI. This is illustrated by the 53.2% of women who have access to financial services in their households and make decisions in this regard. This is the same trend across VCs at the regional level, except for irrigated rice in Matam (17.0%), corn in Sédhiou (38.2%), and rainfed rice in Sédhiou (42.2%) and Kolda (46.1%), where the percentages of women who have made decisions about loans or their use do not reach half. For the vegetable VC, this proportion is lower in the regions of Sédhiou (38.3%) and Matam

(20.2%), whereas for mango, only the region of Kolda (76.7%) has a contribution rate exceeding 50%, unlike the regions of Ziguinchor (44.4%) and Sédhiou (36.8%).

Women living in households with adult men and women have more autonomy in decisions about financial services

The analysis of the level of autonomy that women have in decisions related to financial services by type of household shows that women are more autonomous when they are in households with adult men and women. This is confirmed by the results, which show that 34.2% of women in households with adult women only are autonomous compared with 53.5% for households with adult men and women.

Women between 30 and 64 years of age are more empowered than younger or older women with respect to credit access

Women between 30 and 64 years of age have more decision-making power in accessing financial services than either younger or older women. For example, 55.5% of women between 30 and 64 years of age have made decisions about loans or loan use, whereas this proportion is 48.0% and 41.1% for women younger than 30 and 65 years of age or older, respectively.

3.8.4 Control of income use

A woman is autonomous in the use of income if she participates in an activity and has at least some input into decision-making about the use of income generated by that activity or feels that she can make decisions about wages or major household expenses.

Women do not generally have decision-making power in the use of household income

Overall, the results reveal that women do not have control over the use of income in the household. The percentage of women decision-makers who have control over the use of income in their households is estimated at 39.6%. In other words, 60.4% of women are not autonomous in controlling the use of household income. This proportion of women who are not yet autonomous is more pronounced in the irrigated rice value chain in Saint-Louis (81.2%), millet in Kaffrine (67.2%), and corn in Sédhiou (67.0%). In contrast, the corn and millet VCs in Fatick have the highest percentages of women who are autonomous in controlling the use of their income, exceeding 50%, or 59.2% and 54.1%, respectively. In fact, the same households in Fatick are certainly in both VCs, even though the gap between the two subsamples is relatively large.

In addition, almost half of the women (49.2%) in vegetable VC households are autonomous in the use of household income. This autonomy of women in households in the vegetable VC is more sustained in the regions of Kaolack (73.6%), Matam (61.2%), Kaffrine (55.3%), and Sédhiou (54.2%). The proportions of women who are not yet autonomous in the use of their income are significant in the mango VC. In the regions of Kolda, Ziguinchor, and Sédhiou they are 70.4%, 65.1%, and 56.8%, respectively.

Women in households with adult women only have more control over the use of income than women in households with both adult men and women

Control over the use of household income is more the responsibility of women in households with adult women only than it is for those in households with adult men and women. Thus, 57.9% of women in households with adult women only participate in decisions about the use of income when less than half or 39.4% of women in households with adult women and men make decisions about their household income.

Women between 30 and 64 years of age are more represented in the control of household income use

Women between 30 and 64 years of age have the highest percentage of autonomy in controlling the use of income, at 41.8%. They are followed by younger women (35.2%), whereas older women (26.7%) are less represented in the control of income use. The finding that women aged 65 or older have less autonomy than women aged between 30 and 64 years of age in controlling the use of income could be explained by the fact that the latter are more active in income-generating activities and certainly have decision-making power in their own activities.

3.8.5 Leadership (group member)

Leadership is measured through membership in community groups, whether formal, informal, or customary. These include agricultural/livestock/fish farming producer groups, water user groups, forest user groups, credit or microfinance groups, insurance or mutual benefit groups, trade and business association groups, civic and/or charity groups, and religious groups. A woman is empowered in leadership when she is a member of at least one of these community groups.

One in two women is a member of a community group

Regarding leadership, in general, more than half of the women are members of a group (50.5%). This proportion does not vary much according to the type of VC. However, it does vary from one region to another and from one VC to another. It appears that more than half of the women in the Kolda corn (88.4%), Kolda rainfed rice (80.3%), Matam irrigated rice (64.0%), Kaffrine corn (63.0%), and Kaffrine millet (62.7%) VCs are not yet autonomous in terms of leadership. However, the corn VC in Fatick, the rainfed rice VC in Ziguinchor, and the millet VC in Fatick have very high percentages of women belonging to a group, at 83.5%, 80.1%, and 71.7%, respectively.

In the vegetable VC, the level of women's membership in groups is high except in the Kolda (34.1%) and Matam (39.5%) regions. However, the level of membership is very low for the mango VC in the Kolda region (11.8%) compared with the Ziguinchor (76.4%) and Sédhiou (50.6%) regions.

Women in households with adult women only have more leadership than those in households with adult men and women.

The results show that women in households with adult women only have a higher level of membership in community groups than women in households with adult men and women. That is, 86.3% of women in households with adult women only are members of at least one community group compared with 50.0% of women in households with adult men and women.

Women between 30 and 64 years of age are more likely to participate in community groups than younger or older women

According to age, the level of community group membership is higher among women between 30 and 64 years of age (54.7%), followed by young women (39.2%). Older women have the lowest level of membership, with 31.4% of them being members of at least one community group.

3.8.6 Workload

Working time corresponds to the time spent on productive agricultural and nonagricultural activities as well as domestic activities. A woman is autonomous with respect to her workload if she allocates fewer than 10.5 hours per day to productive and domestic activities.

The proportion of women who are overworked is relatively high

The analysis of the distribution of women according to the workload threshold shows that the percentage of women who are overworked (working more than 10.5 hours) is relatively high. In fact, on the scale of the project's ZOI, 44.4% of women are overworked.

By VC, the highest proportions of overworked women were found in rainfed rice in Sédhiou (67.3%), corn in Sédhiou (67.0%), rainfed rice in Ziguinchor (62.8%), corn in Kaolack (55.0%), and millet in Kaolack (50.7%). In contrast, all other cereal VCs have proportions of overworked women below 50%. For vegetables, the regions of Ziguinchor (70.5%), Sédhiou (58.3%), and Fatick (55.5%) have the highest proportions of overworked women. For mangoes, the Sédhiou region (57.5%) is in first place in terms of women's workload, followed by the Ziguinchor region (46.1%). In contrast, in the Kolda region (23.7%), the percentage of women who are overworked is relatively low.

Heavier work overload for women in households with adult women only

It appears that households with adult women only have a much higher proportion of women who are overworked than households with adult women and men (65.4% vs. 44.1%). This finding that single adult women in their households are more overworked than women in households with adult men and women could be explained by the fact that single adult women in their households are busy with both productive and domestic activities. In contrast, those living in households with adult men and women can find a balance between productive and domestic activities.

More overworked women aged 30 to 64

Women aged 30 to 64 are more overworked than women younger than 30. Specifically, 47.1% of women in aged 30 to 64 work more than 10.5 hours, compared with 45.7% of younger women, whereas only 12.7% of women aged 65 and older are overworked. Thus, it appears that work overload increases with age until the age of 64.

Table 3.74   Level of women's empowerment by value chain and region

Type of grain	Region	Areas of empowerment					
		Production	Holding of assets	Access to credit	Use of income	Member of a group	Use of time
Dooleel Mbay area		42.2	70.9	53.2	39.6	50.5	55.6
Irrigated rice	Matam	37.6	82.7	17.0	37.2	36.0	67.6
	Saint-Louis	18.8	65.1	69.1	18.8	61.0	85.9
	Total irrigated rice	**27.0**	**70.1**	**50.0**	**26.5**	**51.8**	**78.4**
Rainfed rice	Sedhiou	45.4	65.0	42.2	44.2	55.7	32.7
	Kolda	39.7	58.9	46.1	38.6	19.7	54.0
	Ziguinchor	45.9	39.4	53.8	43.5	80.1	37.2
	Total rainfed rice	**43.7**	**59.3**	**46.1**	**42.3**	**48.8**	**43.3**
Millet	Fatick	54.1	90.6	77.1	52.7	71.7	74.5
	Kaolack	47.8	90.5	51.0	43.9	69.7	49.3
	Kaffrine	36.2	65.5	58.5	32.8	37.3	59.9
	Total millet	**42.4**	**81.2**	**52.3**	**39.0**	**55.5**	**54.9**
Corn	Fatick	59.2	95.7	72.1	60.7	83.5	86.3
	Kaolack	37.5	85.5	66.3	38.2	69.9	45.0
	Kaffrine	49.4	69.6	57.5	42.9	37.0	61.0
	Sedhiou	29.9	62.8	38.2	33.0	52.3	33.0
	Kolda	42.0	53.9	45.9	34.6	11.6	45.0
	Ziguinchor	41.4	50.0	8.6	41.4	50.0	0.0
	Total corn	**43.7**	**65.2**	**51.3**	**39.3**	**33.7**	**49.0**
Total cereals		**43.0**	**70.1**	**52.6**	**40.4**	**49.1**	**54.5**

Type of grain	Region	Areas of empowerment					
		Production	Holding of assets	Access to credit	Use of income	Member of a group	Use of time
Total ATV		**49.2**	**74.7**	**61.0**	**47.2**	**59.4**	**60.1**
Total mango		**35.0**	**52.1**	**57.1**	**33.6**	**46.3**	**62.0**
Total small ruminants		**48.5**	**78.4**	**54.1**	**45.6**	**52.5**	**58.4**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Table 3.75   Level of Women's Empowerment by Horticultural Value Chain and Region

Type of horticultural value chain	Region	Areas of empowerment					
		Production	Holding of assets	Access to credit	Use of income	Member of a group	Use of time
ATV	Fatick	31.6	75.5	75.9	31.6	71.3	44.5
	Kaolack	77.7	70.8	88.7	73.6	68.8	82.7
	Kaffrine	58.9	84.0	87.7	55.3	68.4	92.2
	Sedhiou	55.5	62.6	38.3	54.2	67.7	41.7
	Kolda	51.8	95.6	56.0	50.2	34.1	70.9
	Ziguinchor	44.6	65.6	71.5	42.7	67.1	29.5
	Matam	61.1	70.7	20.2	61.2	39.5	60.5
	Saint-Louis	40.0	77.8	59.8	37.3	64.6	83.2
Total ATV		**49.2**	**74.7**	**61.0**	**47.2**	**59.4**	**60.1**
Mango	Sedhiou	47.6	66.2	36.8	43.2	50.6	42.5
	Kolda	31.1	54.2	76.7	29.6	11.8	76.3
	Ziguinchor	35.4	46.7	44.4	34.9	76.4	53.9
Total mango		**35.0**	**52.1**	**57.1**	**33.6**	**46.3**	**62.0**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Table 3.76   Level of Women's Empowerment by Domain for the Small Ruminant Value Chain by Region

Value chain	Region	Areas of empowerment					
		Production	Holding of assets	Access to credit	Use of income	Member of a group	Use of time
Small ruminants	Fatick	56.0	91.1	79.2	55.4	78.1	74.2
	Kaolack	49.2	90.0	56.1	46.8	73.2	50.0
	Kaffrine	44.1	71.1	60.7	39.9	40.7	64.4
	Sedhiou	49.0	65.4	35.1	46.9	54.8	41.2
	Kolda	55.3	80.1	52.3	49.5	23.2	55.3
	Ziguinchor	51.8	56.6	66.8	50.6	69.2	45.1
	Matam	46.4	85.1	25.4	46.3	41.6	56.5
	Saint-Louis	36.0	75.8	60.5	33.1	67.4	81.6
Total small ruminants		**48.5**	**78.4**	**54.1**	**45.6**	**52.5**	**58.4**

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

Table 3.77   Level of Empowerment of Women by Domain, by Age of Woman and Type of Household

Type of household	Age	Empowerment domain					
		Production	Holding of assets	Access to credit	Use of income	Member of a group	Use of time
M&F	15–29 years old	37.9	62.4	48.1	35.1	39.1	54.4
	30–64 years old	44.3	72.5	55.8	41.5	54.2	53.3
	65 years and older	26.7	73.8	40.5	26.4	30.6	87.4
	Total	42.0	71.0	53.5	39.4	50.0	55.9

FNM	15–29 years old	100.0	100.0	0.0	100.0	100.0	0.0
	30–64 years old	59.7	65.7	30.4	58.4	86.6	30.8
	65 years and older	44.3	80.7	80.7	44.3	80.7	80.7
	Total	59.1	67.6	34.2	57.9	86.3	34.6
Total	15–29 years old	38.0	62.5	48.0	35.2	39.2	54.3
	30–64 years old	44.6	72.4	55.5	41.8	54.7	52.9
	65 years and older	26.9	73.9	41.1	26.7	31.4	87.3
	Total	42.2	70.9	53.2	39.6	50.5	55.6

Source: IPAR, *Baseline Dooleel Mbay, 2022.*

4   DISCUSSION AND CONCLUSIONS

Ultimately, this study made it possible to draw up a sociodemographic and economic profile of households in the areas targeted by the Dooleel Mbay project. The results characterize these households in terms of several aspects relevant to the project. These results reveal a distinct typology of households with adult males and females (M&F), which represent 98.6% of households in the ZOI, and a small proportion of households with adult females only (FNM), or 1.4%. In addition, a characterization according to the gender of the HOH shows a large majority of households with a male HOH (92.3%).

In terms of economic activities, the results obtained accurately reflect the importance of agriculture in rural areas. Overall, agriculture (in the broadest sense) accounts for more than 70% of overall household income, with nearly one-third of households deriving their main income from agricultural activities and 8.15% from livestock (small and large ruminants combined). The importance of agriculture is best appreciated in terms of the share of income it generates in overall household income. In nearly 70% of households, agricultural activities contribute more than 50% of overall income. This dependence on agriculture is greater in the entire groundnut basin and the Kolda region.

The Dooleel Mbay project pays particular attention to the population's standard of living, which is measured here by the incidence of poverty, which measures the proportion of households living on less than $1.90/day in 2014 PPP. With this threshold established, slightly more than half of the people are poor in the PIZ (50.2%). This is close to the poverty rate obtained by the EHCVM census (September 2021) from the ANSD (53.6%). Poverty is relatively more prevalent in households headed by men (50.2%) than in those headed by women (49.4%), but it is also more prevalent in households with adult women only (64.3%) than in households with adult men and women (50.0%). Furthermore, the highest levels of poverty are often observed for households in Kaffrine, Fatick, Ziguinchor, and Kolda, regardless of the VC considered.

The figures obtained on the poverty situation point to recommendations that would allow these households to have more income to ensure food security, since households are mainly affected by shocks related to access to foodstuffs (76.3%), and 22.1% of them deal with these shocks by changing their eating habits. In addition, these results on the poverty situation, in relation to the dependence on agriculture, should lead to an intervention in favor of diversification of economic activities, often identified as a factor leading to or aggravating household poverty.

This baseline study also addressed the issue of women's empowerment by analyzing the level of women's participation in agricultural decision-making. This analysis is based on agricultural production, asset ownership, access to credit, control over the use of income, leadership, and work time allocation. Despite some disparities according to the VC and region considered, the results globally revealed that women are mostly autonomous in the ownership of productive assets (70.9%), in the allocation of work time (55.6%), in access to credit (53.2%), and in leadership or membership in a group (50.5%). In contrast, they are less autonomous in agricultural production (42.3%) and in the use of income (39.6%). These levels of empowerment highlight the aspects in which resources must be made available to increase the level of women's empowerment. Although women participate in agricultural activities in terms of production and thus in the generation of agricultural income, they have limited decision-making power in these two areas. This lower level of empowerment in agricultural production or in the use of income could be explained by the fact that women's access to land is often through the family (husband, father, brothers, etc.). These findings on the level of empowerment further support the recommendations made earlier for truly promoting women's access to land.

Although agriculture is a common feature of the project's target areas, specificities exist from one area to another. As a result, irrigated rice is analyzed in the northern zone (Matam and Saint-Louis); millet and corn in the central zone (Fatick, Kaolack, and Kaffrine); and rainfed rice, corn, and mango in the southern zone (Sédhiou, Kolda, and Ziguinchor). In all regions, market gardening and the raising of

small ruminants are analyzed. In general, slightly more men than women are involved in agricultural activities. Female producers make up 44.8% of farmers, and they are in the majority in market gardening (72.5%), where only Saint-Louis is an exception. They are also very present in rainfed rice production in Sédhiou (97.8%) and Kolda (52.4%). In livestock production, a significant proportion of women are recorded, constituting 46.4% of livestock herders. In contrast, women represent a small proportion of cereal or mango producers (less than one woman for every five producers in total).

With regard to the plots held, they are mainly individually owned (61.4%) or family owned (31.9%), with just over three plots held by male producers, compared to two for female producers. For these plots, an average area of 0.88 ha per household is sown, despite the larger areas sown to cereals (1.41 ha) and the smaller areas sown to ATV (0.37 ha). This clear difference in area size highlights the issue of land capital, particularly access to agricultural land for women, who are more active in market gardening but on relatively smaller areas. Clear land policies and reforms to promote women's access to land would help to correct disparities in agricultural land holdings in the targeted VCs. These reforms could include the introduction of a quota for applications, the abolition of demarcation fees, awareness raising on the role of women in land governance, etc.

In addition to the characteristics of producers and land resources, agricultural activities can be described in terms of cultivation practices. According to the results, farming activities essentially mobilize manual equipment for soil preparation (53.9%), with more pronounced use in Ziguinchor rainfed rice (91.1%) and vegetables (77.8%). Also, the seeds used on most plots come from personal reserves, which concern 60% of plots. The use of improved seeds remains very low in the ZOI. Harvesting is still poorly mechanized and only 4.3% of plots are harvested using mechanical equipment. In all the different VCs, the Kolda region stands out for irrigated rice production, where harvesting is more mechanized (30.9% of plots). For the other cereal VCs, mechanized harvesting does not reach 6%. For ATVs, almost all producers use manual harvesting (94.5%).

The characteristics of agricultural activities in terms of cultivation practices indicate a need to modernize agriculture through mechanization of soil preparation and harvesting, as well as through the adoption of improved seeds. The modernization of agriculture is a real opportunity to make up for the low yields obtained by producers. Support to producers seems to be essential to achieve this modernization objective, but the results obtained are not so good. Indeed, only 6% of producers have benefited from a project and for Naatal Mbay, they represent only 1.3%, the majority of which are located in Kolda (10.7%), and those who have benefited from the PCE are evaluated at 0.1%. In this sense, producers must rely more on their own resources or resort to loans. Membership in a producers' network could be a preferred solution, and the most encouraging results are obtained in Saint-Louis in cereals for irrigated rice (64.9%), in vegetables (61.5%), and in small ruminant breeding (36.8%). In addition, Matam and Sédhiou stand out in irrigated rice (31.3%) and rainfed rice (15.5%), respectively. Through the networks, producers will be able to access agricultural materials and/or improved seeds more easily. Thus, raising awareness on the need to join producers' networks could be an avenue to explore for projects and policymakers in order to facilitate the implementation channels of the various projects and programs and to broaden the scope of their beneficiaries. Also, efforts in terms of support and formalization of these entities must be made.

From a socioeconomic perspective, agricultural production is intended for consumption or sale in return for financial compensation. The study revealed that most cereal production is consumed (72.4%) and most market garden production is sold (64.2%). Cereal sales amounted to FCFA 185,225, and the main methods of disposal identified were direct sales at the market (66.4%), sales to wholesalers/intermediaries (15.9%), and direct field sales (14.6%). For vegetables, sales generated an average of 831,724 FCFA, with a domination of direct sales at the market (82.4%). Vegetable production has nevertheless been better contracted than cereal production, even though the existence of contracts is one of the most recurrent major problems encountered by producers (4.5% vs. 1.2%).

This low level of contracting argues strongly in favor of connecting supply to demand through better structuring of agricultural activity and identification of each key actor.

APPENDIX

APPENDIX A: HORTICULTURAL AND SMALL RUMINANT VALUE CHAIN TABLES

Annexe-a.1.   Sociodemographic characteristics of heads of agricultural households

Table 0.1   Distribution of household types by horticultural value chain and region (%)

Value chain	Region	HOH gender	Adult men and women (M&F)	Adult women without adult men (FNM)	Total
ATV	Fatick	Male	100.0	0.0	100.0
		Female	70.6	29.4	100.0
		Total	98.6	1.4	100.0
	Kaolack	Male	100.0	0.0	100.0
		Female	100.0	0.0	100.0
		Total	100.0	0.0	100.0
	Kaffrine	Male	100.0	0.0	100.0
		Female	0.0	100.0	100.0
		Total	91.1	8.9	100.0
	Sedhiou	Male	100.0	0.0	100.0
		Female	100.0	0.0	100.0
		Total	100.0	0.0	100.0
	Kolda	Male	100.0	0.0	100.0
		Female	95.7	4.3	100.0
		Total	99.9	.1	100.0
	Ziguinchor	Male	100.0	0.0	100.0
		Female	95.8	4.2	100.0
		Total	98.8	1.2	100.0
	Matam	Male	100.0	0.0	100.0
		Female	64.7	35.3	100.0
		Total	96.4	3.6	100.0
	Saint-Louis	Male	100.0	0.0	100.0
		Female	83.8	16.2	100.0
		Total	96.7	3.3	100.0
Total ATV		Male	100.0	0.0	100.0
		Female	87.6	12.4	100.0
		Total	98.0	2.0	100.0
Mango	Sedhiou	Male	100.0	0.0	100.0
		Female	100.0	0.0	100.0
		Total	100.0	0.0	100.0
	Kolda	Male	100.0	0.0	100.0
		Female	0.0	0.0	0.0
		Total	100.0	0.0	100.0
	Ziguinchor	Male	100.0	0.0	100.0
		Female	25.2	74.8	100.0
		Total	83.0	17.0	100.0
Total mango		Male	100.0	0.0	100.0
		Female	27.3	72.7	100.0
		Total	92.1	7.9	100.0
Breeding	Fatick	Male	100.0	0.0	100.0
		Female	100.0	0.0	100.0
		Total	100.0	0.0	100.0
	Kaolack	Male	100.0	0.0	100.0
		Female	91.4	8.6	100.0
		Total	99.6	0.4	100.0
	Kaffrine	Male	100.0	0.0	100.0
		Female	56.6	43.4	100.0
		Total	99.0	1.0	100.0
	Sedhiou	Male	100.0	0.0	100.0
		Female	56.0	44.0	100.0

Value chain	Region	HOH gender	Adult men and women (M&F)	Adult women without adult men (FNM)	Total
		Total	99.1	0.9	100.0
	Kolda	Male	100.0	0.0	100.0
		Female	72.0	28.0	100.0
		Total	99.9	0.1	100.0
	Ziguinchor	Male	100.0	0.0	100.0
		Female	100.0	0.0	100.0
		Total	100.0	0.0	100.0
	Matam	Male	100.0	0.0	100.0
		Female	51.2	48.8	100.0
		Total	95.6	4.4	100.0
	Saint-Louis	Male	100.0	0.0	100.0
		Female	88.6	11.4	100.0
		Total	98.4	1.6	100.0
Total Livestock		Male	100.0	0.0	100.0
		Female	83.5	16.5	100.0
		Total	99.0	1.0	100.0

Table 0.2   Distribution (%) of households by HOH gender by region and horticultural value chain

Value chain	Region	HOH gender		
		Male	Female	Total
ATV	Fatick	95.2	4.8	100.0
	Kaolack	92.8	7.2	100.0
	Kaffrine	91.1	8.9	100.0
	Sedhiou	95.5	4.5	100.0
	Kolda	97.5	2.5	100.0
	Ziguinchor	72.1	27.9	100.0
	Matam	89.8	10.2	100.0
	Saint-Louis	79.6	20.4	100.0
Total ATV		83.5	16.5	100.0
Mango	Sedhiou	97.3	2.7	100.0
	Kolda	100.0	0.0	100.0
	Ziguinchor	77.2	22.8	100.0
Total mango		89.2	10.8	100.0

Table 0.3 Distribution (%) of households by HOH gender by region and small ruminants

Region	HOH gender		
	Male	Female	Total
Fatick	96.8	3.2	100.0
Kaolack	94.8	5.2	100.0
Kaffrine	97.8	2.2	100.0
Sedhiou	98.1	1.9	100.0
Kolda	99.5	0.5	100.0
Ziguinchor	84.0	16.0	100.0
Matam	90.9	9.1	100.0
Saint-Louis	85.9	14.1	100.0
Total small ruminants	94.0	6.0	100.0

Table 0.4 Household size and average age of HOH by horticultural value chain region

Value chain	Region	HOH gender	Size				Age			
			Average	Standard deviation	Min.	Max.	Average	Standard deviation	Min.	Max.
ATV	Fatick	Male	11.4	4.4	4.0	20.0	55.5	10.5	36.0	70.0
		Female	9.2	2.8	5.0	11.0	58.5	2.1	57.0	60.0
		Total	11.3	4.3	4.0	20.0	55.8	10.0	36.0	70.0
	Kaolack	Male	13.1	7.6	5.0	31.0	50.0	12.9	22.0	80.0
		Woman	4.7	2.0	4.0	10.0	37.3	7.0	30.0	44.0
		Total	12.5	7.6	4.0	31.0	49.1	13.0	22.0	80.0
	Kaffrine	Male	11.6	4.2	4.0	20.0	49.3	13.2	28.0	75.0
		Woman	17.0	0.0	17.0	17.0	60.0	-	60.0	60.0
		Total	12.1	4.3	4.0	20.0	49.8	13.1	28.0	75.0
	Sedhiou	Male	9.4	4.9	2.0	26.0	51.5	13.1	25.0	80.0
		Woman	8.1	3.8	4.0	13.0	55.6	7.6	45.0	63.0
		Total	9.3	4.9	2.0	26.0	51.9	12.7	25.0	80.0
	Kolda	Male	8.6	5.0	2.0	27.0	50.4	14.1	22.0	86.0
		Woman	6.3	0.4	6.0	7.0	41.8	9.4	35.0	55.0
		Total	8.6	5.0	2.0	27.0	50.0	14.0	22.0	86.0
	Ziguinchor	Male	9.3	6.1	2.0	27.0	54.8	12.2	23.0	82.0
		Woman	9.0	5.2	3.0	25.0	56.6	10.3	40.0	72.0
		Total	9.2	5.9	2.0	27.0	55.1	11.9	23.0	82.0
	Matam	Male	8.5	3.1	3.0	20.0	56.3	10.0	32.0	77.0
		Woman	7.6	5.9	3.0	29.0	59.3	10.4	41.0	74.0
		Total	8.4	3.5	3.0	29.0	56.9	10.0	32.0	77.0
	Saint-Louis	Male	8.3	5.3	2.0	30.0	52.5	12.8	26.0	90.0
		Woman	7.7	5.1	1.0	19.0	53.6	12.9	26.0	75.0
		Total	8.2	5.3	1.0	30.0	52.8	12.8	26.0	90.0
Total ATV		Male	9.3	5.6	2.0	31.0	52.6	12.7	22.0	90.0
		Woman	8.5	5.3	1.0	29.0	54.2	11.9	26.0	75.0
		Total	9.2	5.5	1.0	31.0	52.8	12.6	22.0	90.0
Mango	Sedhiou	Male	12.8	10.2	2.0	30.0	52	11	27	70
		Woman	4.0	0.0	4.0	4.0	53	-	53	53
		Total	12.5	10.1	2.0	30.0	52	11	27	70
	Kolda	Male	10.6	6.4	4.0	29.0	58	15	34	87
		Woman	-	-	-	-	-	-	-	-

Value chain	Region	HOH gender	Size				Age			
			Average	Standard deviation	Min.	Max.	Average	Standard deviation	Min.	Max.
		Total	10.6	6.4	4.0	29.0	58	15	34	87
	Ziguinchor	Male	8.5	3.7	2.0	17.0	56	11	25	89
		Woman	5.4	1.1	4.0	8.0	52	15	35	70
		Total	7.8	3.6	2.0	17.0	56	12	25	89
Total mango		Male	10.0	6.3	2.0	30.0	55.8	12.4	25.0	89.0
		Woman	5.4	1.1	4.0	8.0	51.8	13.5	35.0	70.0
		Total	9.5	6.2	2.0	30.0	55.6	12.4	25.0	89.0

Table 0.5 Household size and average age of HOH by region and small ruminants

Region	HOH gender	Size				Age			
		Average	Standard deviation	Min.	Max.	Average	Standard deviation	Min.	Max.
Fatick	Male	13.7	6.2	4.0	30.0	54.3	12.6	23.0	98.0
	Female	8.2	2.1	6.0	17.0	50.7	8.5	40.0	60.0
	Total	13.6	6.2	4.0	30.0	54.2	12.4	23.0	98.0
Kaolack	Male	14.2	5.8	4.0	36.0	50.9	12.1	22.0	88.0
	Female	8.4	5.6	3.0	33.0	48.5	13.3	30.0	71.0
	Total	13.9	5.9	3.0	36.0	50.8	12.2	22.0	88.0
Kaffrine	Male	11.2	4.6	3.0	24.0	49.6	12.3	21.0	77.0
	Female	13.1	3.7	5.0	17.0	56.8	8.3	50.0	67.0
	Total	11.2	4.6	3.0	24.0	49.8	12.2	21.0	77.0
Sedhiou	Male	11.4	6.9	2.0	38.0	50.4	13.4	21.0	80.0
	Female	6.6	3.3	4.0	13.0	46.2	5.3	39.0	53.0
	Total	11.3	6.9	2.0	38.0	50.3	13.2	21.0	80.0
Kolda	Male	9.5	5.1	2.0	40.0	52.1	14.3	22.0	87.0
	Female	6.3	1.8	3.0	8.0	56.0	11.0	35.0	65.0
	Total	9.4	5.1	2.0	40.0	52.2	14.2	22.0	87.0
Ziguinchor	Male	10.1	5.5	2.0	27.0	55.6	11.4	26.0	89.0
	Female	8.1	5.1	3.0	25.0	58.1	9.3	41.0	72.0
	Total	9.8	5.5	2.0	27.0	55.9	11.1	26.0	89.0
Matam	Male	9.3	3.8	2.0	32.0	57.5	12.0	26.0	88.0
	Female	9.6	4.4	3.0	29.0	55.2	13.4	22.0	74.0
	Total	9.3	3.9	2.0	32.0	57.2	12.2	22.0	88.0
Saint-Louis	Male	10.4	5.9	2.0	35.0	54.9	13.3	25.0	92.0
	Female	8.8	5.6	1.0	27.0	55.1	11.5	26.0	75.0
	Total	10.2	5.9	1.0	35.0	54.9	13.1	25.0	92.0
Total small ruminants	Male	11.2	5.7	2.0	40.0	52.6	13.1	21.0	98.0
	Female	8.8	5.1	1.0	33.0	54.3	11.5	22.0	75.0
	Total	11.0	5.7	1.0	40.0	52.7	13.0	21.0	98.0

Table 0.6   Distribution of households (%) by gender and age group of HOH by region and horticultural value chain

Value chain	Region	HOH gender	Age group			
			Under 30 years old	30–44 years old	45–64 years old	65 years and older
ATV	Fatick	Male	0.0	14.3	61.9	23.8
		Female	0.0	0.0	100.0	0.0
		Total	0.0	13.0	65.2	21.7
	Kaolack	Male	4.5	34.1	43.2	18.2
		Woman	0.0	100.0	0.0	0.0
		Total	4.3	38.3	40.4	17.0
	Kaffrine	Male	5.3	31.6	42.1	21.1
		Woman	0.0	0.0	100.0	0.0
		Total	5.0	30.0	45.0	20.0
	Sedhiou	Male	3.5	33.3	43.9	19.3
		Woman	0.0	0.0	100.0	0.0
		Total	3.2	30.6	48.4	17.7
	Kolda	Male	8.6	19.8	56.8	14.8
		Woman	0.0	75.0	25.0	0.0
		Total	8.2	22.4	55.3	14.1
	Ziguinchor	Male	2.0	17.2	57.6	23.2
		Woman	0.0	15.8	57.9	26.3
		Total	1.7	16.9	57.6	23.7
	Matam	Male	0.0	11.9	64.3	23.8
		Woman	0.0	20.0	40.0	40.0
		Total	0.0	13.5	59.6	26.9
	Saint-Louis	Male	1.6	26.4	57.4	14.7
		Woman	3.2	16.1	58.1	22.6
		Total	1.9	24.4	57.5	16.3
Total ATV		Male	3.3	23.4	54.7	18.7
		Woman	1.3	21.3	56.0	21.3
		Total	3.0	23.1	54.9	19.0
Mango	Sedhiou	Male	4.8	19.0	66.7	9.5
		Woman	0.0	0.0	100.0	0.0
		Total	4.5	18.2	68.2	9.1
	Kolda	Male	0.0	23.3	40.0	36.7
		Woman	0.0	0.0	0.0	0.0
		Total	0.0	23.3	40.0	36.7
	Ziguinchor	Male	3.8	7.7	67.3	21.2
		Woman	0.0	40.0	40.0	20.0
		Total	3.5	10.5	64.9	21.1
Total mango		Male	2.9	14.6	59.2	23.3
		Woman	0.0	33.3	50.0	16.7
		Total	2.8	15.6	58.7	22.9

Table 0.7   **Distribution of households (%) by gender and age class of HOH by region and small ruminants**

Region	HOH gender	Age group			
		Under 30 years old	30–44 years old	45–64 years old	65 years and older
Fatick	Male	1.7	19.0	57.8	21.6
	Female	0.0	33.3	66.7	0.0
	Total	1.6	19.7	58.2	20.5
Kaolack	Male	4.1	24.5	57.8	13.6
	Woman	0.0	50.0	33.3	16.7
	Total	4.0	25.4	57.0	13.7
Kaffrine	Male	2.4	33.7	52.9	11.1
	Woman	0.0	0.0	75.0	25.0
	Total	2.4	33.0	53.3	11.3
Sedhiou	Male	5.9	30.1	47.9	16.0
	Woman	0.0	33.3	66.7	0.0
	Total	5.8	30.2	48.4	15.6
Kolda	Male	4.6	25.6	47.8	21.9
	Woman	0.0	16.7	66.7	16.7
	Total	4.5	25.5	48.2	21.8
Ziguinchor	Male	1.5	12.4	65.0	21.2
	Woman	0.0	11.1	66.7	22.2
	Total	1.3	12.3	65.2	21.3
Matam	Male	0.7	12.3	60.3	26.7
	Woman	4.0	16.0	48.0	32.0
	Total	1.2	12.9	58.5	27.5
Saint-Louis	Male	0.8	22.6	53.2	23.4
	Woman	4.9	12.2	61.0	22.0
	Total	1.4	21.1	54.3	23.2
Total small ruminants	Male	3.1	23.9	54.2	18.8
	Woman	2.5	18.6	57.6	21.2
	Total	3.1	23.6	54.4	18.9

Table 0.8   **Distribution of households (%) by gender and HOH education level by region and horticultural value chain**

Value chain	Region	HOH gender	Level of education								
			No.	Koranic school Daara	Literate in national language	Franco-Arab school	Primary incomplete	Full primary	Incomplete secondary	Full secondary	Higher ed.
ATV	Fatick	Male	2.1	83.5	0.0	5.7	7.2	1.5	0.0	0.0	0.0
		Female	0.0	70.6	0.0	29.4	0.0	0.0	0.0	0.0	0.0
		Total	2.0	82.8	0.0	6.9	6.8	1.4	0.0	0.0	0.0
	Kaolack	Male	2.8	93.1	0.9	2.5	0.7	0.0	0.0	0.0	0.0
		Woman	0.0	12.1	0.0	87.9	0.0	0.0	0.0	0.0	0.0
		Total	2.6	87.3	0.9	8.6	0.6	0.0	0.0	0.0	0.0
	Kaffrine	Male	0.0	57.9	6.6	13.7	0.0	12.0	9.8	0.0	0.0
		Woman	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	0.0	61.6	6.0	12.5	0.0	11.0	8.9	0.0	0.0
	Sedhiou	Male	27.8	42.0	0.7	19.9	8.1	1.6	0.0	0.0	0.0
		Woman	60.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	29.2	41.9	0.6	19.0	7.7	1.5	0.0	0.0	0.0
	Kolda	Male	20.0	20.4	39.6	8.1	3.8	3.3	4.9	0.0	0.0
		Woman	64.5	0.0	4.3	31.2	0.0	0.0	0.0	0.0	0.0
		Total	21.2	19.9	38.7	8.7	3.7	3.2	4.7	0.0	0.0

Value chain	Region	HOH gender	No.	Koranic school Daara	Literate in national language	Franco-Arab school	Primary incomplete	Full primary	Incomplete secondary	Full secondary	Higher ed.
	Ziguinchor	Male	2.7	22.7	0.0	35.7	15.5	20.3	3.2	0.0	0.0
		Woman	47.1	23.4	3.2	7.8	18.5	0.0	0.0	0.0	0.0
		Total	15.1	22.9	0.9	27.9	16.3	14.6	2.3	0.0	0.0
	Matam	Male	12.1	62.4	1.4	17.1	1.6	3.1	2.2	0.0	0.0
		Woman	46.5	27.1	0.0	26.4	0.0	0.0	0.0	0.0	0.0
		Total	15.7	58.8	1.3	18.1	1.4	2.8	2.0	0.0	0.0
	Saint-Louis	Male	28.2	43.7	1.6	17.4	4.1	3.5	1.4	0.0	0.0
		Woman	83.5	1.9	3.7	10.9	0.0	0.0	0.0	0.0	0.0
		Total	39.5	35.2	2.0	16.1	3.3	2.8	1.1	0.0	0.0
Total ATV		Male	14.6	41.1	7.6	19.4	6.7	7.9	2.7	0.0	0.0
		Woman	56.7	18.3	2.9	12.5	9.6	0.0	0.0	0.0	0.0
		Total	21.6	37.3	6.8	18.2	7.1	6.6	2.3	0.0	0.0
Mango	Sedhiou	Male	10.2	41.6	0.0	14.3	33.9	0.0	0.0	0.0	0.0
		Woman	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	12.6	40.5	0.0	14.0	33.0	0.0	0.0	0.0	0.0
	Kolda	Male	18.9	35.5	0.9	43.7	0.0	1.0	0.0	0.0	0.0
		Woman	-	-	-	-	-	-	-	-	-
		Total	18.9	35.5	0.9	43.7	0.0	1.0	0.0	0.0	0.0
	Ziguinchor	Male	1.5	16.6	0.0	21.5	30.6	28.0	1.8	0.0	0.0
		Woman	7.9	6.0	0.0	71.9	14.2	0.0	0.0	0.0	0.0
		Total	2.9	14.2	0.0	32.9	26.9	21.6	1.4	0.0	0.0
Total mango		Male	10.8	28.7	0.4	31.1	16.5	11.7	0.7	0.0	0.0
		Woman	10.6	5.8	0.0	69.8	13.8	0.0	0.0	0.0	0.0
		Total	10.8	26.2	0.4	35.3	16.3	10.4	0.6	0.0	0.0

Table 0.9   Distribution of households (%) by HOH gender and education level by region and small ruminants

Region	HOH gender	No.	Koranic school Daara	Literate in national language	Franco-Arab school	Primary incomplete	Full primary	Incomplete secondary	Full secondary	Higher ed.
Fatick	Male	1.5	94.0	0.0	2.7	1.0	0.8	0.0	0.0	0.0
	Female	73.0	27.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	3.8	91.9	0.0	2.6	1.0	.7	0.0	0.0	0.0
Kaolack	Male	2.6	80.2	.3	7.8	3.5	4.7	0.7	0.0	0.0
	Woman	25.0	18.5	0.0	12.0	44.5	0.0	0.0	0.0	0.0
	Total	3.8	77.0	0.3	8.1	5.6	4.5	0.7	0.0	0.0
Kaffrine	Male	20.8	63.5	4.2	5.8	2.1	2.6	1.0	0.0	0.0
	Woman	8.7	91.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	20.6	64.2	4.1	5.6	2.0	2.5	1.0	0.0	0.0
Sedhiou	Male	24.7	37.0	0.3	16.7	15.2	3.6	2.4	0.0	0.0
	Woman	32.5	67.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	24.9	37.6	0.3	16.3	14.9	3.6	2.4	0.0	0.0
Kolda	Male	35.8	29.6	10.1	12.5	8.4	1.5	2.1	0.0	0.0
	Woman	96.2	0.0	3.8	0.0	0.0	0.0	0.0	0.0	0.0
	Total	36.1	29.4	10.1	12.5	8.4	1.4	2.1	0.0	0.0
Ziguinchor	Male	3.6	14.2	0.0	34.9	24.2	19.6	3.4	0.0	0.0
	Woman	66.7	0.0	5.3	11.7	13.7	2.5	0.0	0.0	0.0
	Total	13.7	11.9	0.8	31.2	22.5	16.9	2.9	0.0	0.0
Matam	Male	29.3	51.6	4.7	10.6	1.3	1.8	0.7	0.0	0.0
	Woman	78.6	13.9	0.0	7.6	0.0	0.0	0.0	0.0	0.0
	Total	33.8	48.2	4.2	10.3	1.2	1.7	0.6	0.0	0.0
Saint-Louis	Male	25.1	45.6	5.1	15.3	3.1	4.1	1.6	0.0	0.0
	Woman	85.8	3.7	0.0	10.5	0.0	0.0	0.0	0.0	0.0

Region	HOH gender	Level of education								
		No.	Koranic school Daara	Literate in national language	Franco-Arab school	Primary incomplete	Full primary	Incomplete secondary	Full secondary	Higher ed.
	Total	33.6	39.7	4.4	14.6	2.7	3.5	1.4	0.0	0.0
Total small ruminants	Male	19.9	51.3	4.1	12.4	6.6	4.2	1.5	0.0	0.0
	Woman	65.0	13.1	1.4	9.3	10.6	.6	0.0	0.0	0.0
	Total	22.6	49.0	4.0	12.2	6.8	4.0	1.4	0.0	0.0

Annexe-a.2.   Socioeconomic characteristics of households

Table 0.10   Distribution of income generated by the main source of the household by HOH gender by horticultural and small ruminant value chain and by region (%)

Value chain	Region	HOH gender	Average	Standard deviation	Minimum	Maximum
ATV	Fatick	Male	921 809	1 181 357	100 000	5 000 000
		Female	411 765	138 665	200 000	500 000
		Total	897 170	1 158 004	100 000	5 000 000
	Kaolack	Male	1 021 202	1 352 766	200 000	18 250 000
		Female	450 775	278 810	340 000	1 200 000
		Total	980 404	1 313 850	200 000	18 250 000
	Kaffrine	Male	960 708	882 845	80 000	3 000 000
		Female	1 140 000	-	1 140 000	1 140 000
		Total	976 688	844 113	80 000	3 000 000
	Sedhiou	Male	647 936	837 747	135 000	7 500 000
		Female	813 805	1 129 288	100 000	3 600 000
		Total	655 364	853 393	100 000	7 500 000
	Kolda	Male	1 103 174	867 374	50 000	10 300 000
		Female	191 000	142 855	90 000	540 000
		Total	1 080 003	868 528	50 000	10 300 000
	Ziguinchor	Male	914 726	1 247 989	50 000	14 700 000
		Female	1 305 691	1 183 256	50 000	6 000 000
		Total	1 023 961	1 242 653	50 000	14 700 000
	Matam	Male	910 315	775 647	100 000	3 880 000
		Female	863 022	705 581	150 000	3 000 000
		Total	905 487	768 852	100 000	3 880 000
	Saint-Louis	Male	885 775	769 820	85 000	6 300 000
		Female	714 973	946 923	50 000	5 100 000
		Total	850 911	812 009	50 000	6 300 000
Total ATV		Male	929 170	1 003 557	50 000	18 250 000
		Female	1 022 414	1 082 074	50 000	6 000 000
		Total	944 561	1 017 513	50 000	18 250 000
Mango	Sedhiou	Male	727 864	493 151	100 000	1 576 000
		Female	650 000	-	650 000	650 000
		Total	725 789	486 694	100 000	1 576 000
	Kolda	Male	1 257 443	1 100 165	50 000	5 250 000
		Female				
		Total	1 257 443	1 100 165	50 000	5 250 000
	Ziguinchor	Male	809 799	779 203	100 000	4 350 000
		Female	117 615	151 145	50 000	600 000
		Total	652 324	747 271	50 000	4 350 000
Total mango		Male	1 011 369	949 576	50 000	5 250 000
		Female	132 807	173 366	50 000	650 000
		Total	916 330	939 077	50 000	5 250 000

Value chain	Region	HOH gender	Average	Standard deviation	Minimum	Maximum
Livestock	Fatick	Male	953 461	1 354 960	50 000	20 000 000
		Female	720 230	637 096	250 000	3 600 000
		Total	946 014	1 338 619	50 000	20 000 000
	Kaolack	Male	1 016 844	1 377 171	50 000	19 000 000
		Female	1 101 671	894 250	90 000	3 000 000
		Total	1 021 263	1 356 390	50 000	19 000 000
	Kaffrine	Male	792 223	848 132	50 000	8 000 000
		Female	639 981	445 555	50 000	1 140 000
		Total	788 811	841 520	50 000	8 000 000
	Sedhiou	Male	856 541	994 743	75 000	7 500 000
		Female	608 156	888 495	174 000	3 600 000
		Total	851 700	993 343	75 000	7 500 000
	Kolda	Male	1 152 301	1 282 635	50 000	13 000 000
		Female	321 411	105 058	105 000	540 000
		Total	1 148 062	1 280 750	50 000	13 000 000
	Ziguinchor	Male	845 708	1 157 919	50 000	14 700 000
		Female	1 101 453	1 335 385	90 000	6 000 000
		Total	886 545	1 191 679	50 000	14 700 000
	Matam	Male	1 065 212	1 135 367	50 000	8 000 000
		Female	824 341	460 236	150 000	3 000 000
		Total	1 043 325	1 093 597	50 000	8 000 000
	Saint-Louis	Male	936 933	1 190 953	50 000	21 360 000
		Female	672 265	462 959	108 000	4 000 000
		Total	899 624	1 121 210	50 000	21 360 000
Total livestock		Male	986 226	1 210 531	50 000	21 360 000
		Female	864 190	866 970	50 000	6 000 000
		Total	978 929	1 193 124	50 000	21 360 000

Table 0.11   Distribution of households by share of farm income in total income by horticultural and small ruminant value chain and by region (%)

Value chain	Region	HOH gender	Less than 50	50–75	75–100
ATV	Fatick	Male	14.7	51.7	33.6
		Female	70.6	29.4	0.0
		Total	17.4	50.6	32.0
	Kaolack	Male	35.9	35.3	28.9
		Female	24.1	75.9	0.0
		Total	35.1	38.2	26.8
	Kaffrine	Male	27.3	19.6	53.1
		Female	100.0	0.0	0.0
		Total	33.8	17.8	48.4
	Sedhiou	Male	47.2	36.4	16.5
		Female	100.0	0.0	0.0
		Total	49.5	34.7	15.7
	Kolda	Male	23.3	17.8	58.9
		Female	46.7	0.0	53.3
		Total	23.9	17.3	58.8
	Ziguinchor	Male	46.0	21.7	32.3
		Female	44.8	17.3	37.9

Value chain	Region	HOH gender	Less than 50	50–75	75–100
		Total	45.7	20.5	33.9
	Matam	Male	45.2	51.0	3.8
		Female	73.5	26.5	0.0
		Total	48.1	48.5	3.4
	Saint-Louis	Male	31.7	28.1	40.2
		Female	32.1	40.1	27.8
		Total	31.8	30.5	37.6
Total ATV		Male	36.4	28.2	35.4
		Female	44.4	25.8	29.8
		Total	37.7	27.8	34.5
	Sedhiou	Male	29.0	42.2	28.8
		Female	0.0	100.0	0.0
		Total	28.2	43.7	28.1
	Kolda	Male	55.7	20.0	24.3
		Female	0.0	0.0	0.0
		Total	55.7	20.0	24.3
	Ziguinchor	Male	25.9	37.6	36.5
		Female	7.9	0.0	92.1
Mango		Total	21.8	29.0	49.1
Total mango		Male	40.4	29.8	29.7
		Female	7.7	2.9	89.4
		Total	36.9	26.9	36.2
	Fatick	Male	17.8	46.2	36.0
		Female	79.9	0.0	20.1
		Total	19.8	44.8	35.5
	Kaolack	Male	20.9	37.5	41.6
		Female	64.8	28.1	7.0
		Total	23.2	37.0	39.8
	Kaffrine	Male	21.5	27.9	50.6
		Female	43.4	52.1	4.5
		Total	22.0	28.4	49.6
	Sedhiou	Male	53.7	27.1	19.1
		Female	31.9	68.1	0.0
Livestock		Total	53.3	27.9	18.8
	Kolda	Male	16.9	26.2	56.9
		Female	31.2	68.8	0.0
		Total	17.0	26.4	56.6
	Ziguinchor	Male	49.3	21.0	29.7
		Female	70.9	4.0	25.1
		Total	52.8	18.3	28.9
	Matam	Male	69.3	24.2	6.5
		Female	85.5	11.9	2.6
		Total	70.8	23.1	6.1
	Saint-Louis	Male	37.9	31.0	31.1
		Female	45.3	37.0	17.6
		Total	39.0	31.8	29.2
Total livestock		Male	31.6	29.9	38.5
		Female	61.9	24.1	14.0
		Total	33.5	29.5	37.0

Table 0.12   Share of different income sources in overall household income by value chain and region (%)

Value chain	Region	HOH gender	Agriculture	Breeding	Fishing	Hunting/gathering	Crafts/culture	Transport	Salary/rent	Migrant transfers	Trade	Traditional practor service	Other personal activity	Transfer
ATV	Fatick	Male	90.7	0.0	0.0	0.0	3.6	0.0	0.0	5.7	0.0	0.0	0.0	0.0
		Female	29.4	0.0	0.0	0.0	0.0	0.0	0.0	70.6	0.0	0.0	0.0	0.0
		Total	87.7	0.0	0.0	0.0	3.4	0.0	0.0	8.9	0.0	0.0	0.0	0.0
	Kaolack	Male	67.3	1.9	0.0	0.0	11.5	0.0	1.2	4.8	4.0	9.2	0.0	0.0
		Female	87.9	0.0	0.0	0.0	0.0	0.0	0.0	12.1	0.0	0.0	0.0	0.0
		Total	68.8	1.7	0.0	0.0	10.7	0.0	1.1	5.4	3.7	8.6	0.0	0.0
	Kaffrine	Male	91.6	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	3.8	0.0	0.0
		Female	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	92.4	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	3.4	0.0	0.0
	Sedhiou	Male	68.5	2.3	12.4	1.9	2.2	0.0	1.6	3.2	5.7	0.7	1.4	0.0
		Female	86.6	0.0	0.0	0.0	0.0	0.0	13.4	0.0	0.0	0.0	0.0	0.0
		Total	69.3	2.2	11.9	1.8	2.1	0.0	2.1	3.1	5.5	0.7	1.4	0.0
	Kolda	Male	78.9	9.2	0.0	0.0	1.5	.2	4.3	1.5	0.8	3.7	0.0	0.0
		Female	53.3	0.0	0.0	0.0	0.0	0.0	0.0	42.3	4.3	0.0	0.0	0.0
		Total	78.2	8.9	0.0	0.0	1.4	.2	4.2	2.6	0.9	3.6	0.0	0.0
	Zig	Male	62.0	0.0	1.1	0.9	9.0	5.0	3.3	13.0	3.2	1.9	0.4	0.2
		Female	61.0	0.0	0.0	0.0	2.4	20.8	4.8	0.0	11.1	0.0	0.0	0.0
		Total	61.7	0.0	0.8	0.7	7.1	9.4	3.7	9.4	5.4	1.4	0.3	0.1
	Matam	Male	84.5	5.5	0.7	0.0	0.0	0.0	5.9	3.4	0.0	0.0	0.0	0.0
		Female	53.0	13.2	0.0	0.0	0.0	0.0	0.0	33.8	0.0	0.0	0.0	0.0
		Total	81.3	6.3	0.7	0.0	0.0	0.0	5.3	6.5	0.0	0.0	0.0	0.0
	Saint-Louis	Male	80.2	6.8	1.1	0.0	0.2	0.2	1.4	1.1	3.1	5.3	0.7	0.0
		Female	67.6	12.5	0.0	0.0	0.6	0.0	0.6	16.9	1.7	0.0	0.0	0.0
		Total	77.7	8.0	0.8	0.0	0.3	0.2	1.2	4.3	2.8	4.2	0.5	0.0
Total ATV		Male	74.6	4.1	1.5	0.4	3.7	1.4	2.8	5.2	2.5	3.3	0.4	0.1
		Female	64.5	4.8	0.0	0.0	1.4	10.8	2.9	9.1	6.4	0.0	0.0	0.0
		Total	73.0	4.2	1.3	0.3	3.3	3.0	2.8	5.9	3.1	2.8	0.3	0.0
Mango	Sedhiou	Male	90.1	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	7.7	0.0	0.8
		Female	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	90.4	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	7.5	0.0	0.8
	Kolda	Male	49.8	0.0	0.2	0.0	38.6	0.2	0.0	6.8	1.9	2.4	0.0	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	49.8	0.0	0.2	0.0	38.6	.2	0.0	6.8	1.9	2.4	0.0	0.0
	Zig	Male	80.4	1.3	0.0	0.0	5.8	0.0	8.9	0.0	3.2	0.0	0.4	0.0
		Female	92.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	0.0	0.0	0.0
		Total	83.0	1.0	0.0	0.0	4.5	0.0	6.9	0.0	4.3	0.0	0.3	0.0
Total mango		Male	67.2	0.5	0.1	0.0	20.8	0.1	3.6	3.2	2.2	2.1	0.2	0.1
		Female	92.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	0.0
		Total	69.9	0.5	0.1	0.0	18.5	0.1	3.2	2.9	2.8	1.9	0.1	0.1
Livestock	Fatick	Male	80.1	0.0	0.0	0.0	1.9	2.4	4.0	1.8	3.5	.5	5.8	0.0
		Female	20.1	0.0	0.0	0.0	0.0	4.1	0.0	75.8	0.0	0.0	0.0	0.0
		Total	78.2	0.0	0.0	0.0	1.9	2.4	3.9	4.1	3.4	0.5	5.6	0.0
	Kaolack	Male	83.4	1.4	0.6	0.0	2.2	0.8	0.2	4.4	5.1	1.4	0.6	0.0
		Female	96.7	0.0	0.0	0.0	0.0	0.0	1.7	1.6	0.0	0.0	0.0	0.0
		Total	84.1	1.4	0.5	0.0	2.0	0.7	0.3	4.3	4.8	1.3	0.5	0.0
	Kaffrine	Male	90.5	2.2	0.0	0.0	0.5	0.6	1.5	1.3	2.6	.8	0.0	0.0
		Female	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	90.8	2.1	0.0	0.0	0.5	0.6	1.4	1.3	2.6	.8	0.0	0.0
	Sedhiou	Male	70.2	4.2	3.1	2.7	4.7	0.3	3.1	3.5	3.4	3.5	1.2	0.0
		Female	92.1	0.0	0.0	0.0	0.0	0.0	7.9	0.0	0.0	0.0	0.0	0.0
		Total	70.6	4.1	3.0	2.7	4.6	0.3	3.2	3.4	3.4	3.5	1.1	0.0
	Kolda	Male	86.3	2.7	0.0	0.0	0.8	0.9	0.8	5.9	2.1	0.5	0.0	0.0
		Female	68.8	6.2	0.0	0.0	0.0	0.0	0.0	21.2	3.8	0.0	0.0	0.0
		Total	86.2	2.7	0.0	0.0	0.8	0.9	0.8	6.0	2.1	0.5	0.0	0.0

Value chain	Region	HOH gender	Agriculture	Breeding	Fishing	Hunting/gathering	Crafts/culture	Transport	Salary/rent	Migrant transfers	Trade	Tradi practor service	Other personal activity	Transfer
	Zig	Male	68.2	0.3	1.0	0.0	3.9	4.1	6.5	8.9	3.6	0.0	3.4	0.2
		Female	38.7	0.0	2.7	0.0	3.9	34.2	3.9	2.2	14.3	0.0	0.0	0.0
		Total	63.5	0.3	1.3	0.0	3.9	8.9	6.1	7.8	5.3	0.0	2.9	0.1
	Matam	Male	54.8	8.6	0.2	0.0	0.2	0.6	8.4	18.5	0.8	0.7	6.8	0.4
		Female	25.3	5.7	0.0	0.0	2.8	0.0	4.0	60.3	1.9	0.0	0.0	0.0
		Total	52.1	8.3	0.2	0.0	0.4	0.5	8.0	22.3	0.9	0.7	6.2	0.4
	Saint-Louis	Male	70.7	10.4	1.0	0.0	1.4	2.3	1.3	5.7	2.3	3.9	0.2	0.9
		Female	61.6	15.5	0.0	0.0	3.7	0.0	0.0	10.8	8.5	0.0	0.0	0.0
		Total	69.4	11.1	0.9	0.0	1.7	1.9	1.1	6.4	3.2	3.3	0.2	0.8
Total livestock		Male	78.1	3.6	0.6	0.2	1.6	1.3	2.5	6.1	2.9	1.3	1.6	0.2
		Female	56.9	5.8	0.7	0.0	2.5	8.5	2.1	17.1	6.4	0.0	0.0	0.0
		Total	76.8	3.8	0.6	0.2	1.7	1.7	2.5	6.8	3.1	1.2	1.5	0.2

Annexe-a.3.   Household credit and savings

Table 0.13   Distribution (%) of households with access to credit by HOH gender by region and horticultural value chain

Value chain	Region	HOH gender	Credit		
			Loan	Cash loan	Loan in kind
ATV	Fatick	Male	63.6	60.1	14.1
		Female	70.6	70.6	0.0
		Total	64.0	60.6	13.4
	Kaolack	Male	79.3	77.8	16.0
		Female	100.0	100.0	24.1
		Total	80.8	79.4	16.6
	Kaffrine	Male	92.1	87.5	13.1
		Female	100.0	100.0	0.0
		Total	92.8	88.6	12.0
	Sedhiou	Male	30.4	28.8	1.6
		Female	40.0	40.0	0.0
		Total	30.8	29.3	1.5
	Kolda	Male	43.4	41.8	5.2
		Female	68.8	68.8	0.0
		Total	44.1	42.4	5.1
	Ziguinchor	Male	38.8	38.6	0.3
		Female	46.1	46.1	0.0
		Total	40.8	40.7	0.2
	Matam	Male	26.5	24.2	4.4
		Female	32.1	18.8	13.3
		Total	27.1	23.6	5.3
	Saint-Louis	Male	54.9	47.5	18.3
		Female	43.9	30.6	15.3
		Total	52.6	44.0	17.7
Total ATV		Male	47.8	44.8	8.2
		Female	47.9	42.8	6.5
		Total	47.8	44.5	7.9
Mango	Sedhiou	Male	33.2	25.5	7.7
		Female	100.0	100.0	0.0
		Total	35.0	27.5	7.5
	Kolda	Male	73.9	67.1	7.0
		Female			
		Total	73.9	67.1	7.0
	Ziguinchor	Male	42.9	41.4	1.5
		Female	20.2	20.2	0.0
		Total	37.7	36.6	1.2
Total mango		Male	56.4	51.5	4.9
		Female	22.5	22.5	0.0
		Total	52.7	48.4	4.4

Table 0.14   Distribution (%) of Households with Access to Credit by HOH gender by Region and Small Ruminants

Region	HOH gender	Credit		
		Loan	Cash loan	Loan in kind
Fatick	Male	79.2	77.2	8.8
	Female	73.0	73.0	0.0
	Total	79.0	77.1	8.5
Kaolack	Male	73.7	65.3	19.8
	Female	75.0	73.2	3.3
	Total	73.8	65.8	19.0
Kaffrine	Male	63.9	59.7	12.3
	Female	91.3	91.3	0.0
	Total	64.5	60.4	12.0
Sedhiou	Male	30.5	27.0	3.6
	Female	39.1	39.1	0.0
	Total	30.7	27.2	3.5
Kolda	Male	45.2	42.4	4.1
	Female	10.0	10.0	0.0
	Total	45.0	42.2	4.1
Ziguinchor	Male	36.4	35.8	0.6
	Female	52.0	49.5	2.5
	Total	38.9	38.0	0.9
Matam	Male	34.4	24.9	11.0
	Female	58.3	48.9	10.2
	Total	36.5	27.0	10.9
Saint-Louis	Male	54.6	45.0	16.2
	Female	48.0	40.6	9.0
	Total	53.6	44.4	15.2
Total small ruminants	Male	53.4	48.1	10.3
	Female	57.0	52.3	5.6
	Total	53.6	48.3	10.0

Table 0.15   Distribution (%) of households with access to credit by type of financial service by region and horticultural value chain

Value chain	Region	HOH gender	NGO	Formal lender (bank/ financial institution)	Informal lender	Friends or family	Microfinance facility	Tontine and others	Other credit
ATV	Fatick	Male	0.0	12.7	50.4	28.4	12.1	15.0	0.0
		Female	0.0	0.0	70.6	70.6	0.0	70.6	0.0
		Total	0.0	12.0	51.4	30.4	11.5	17.7	0.0
	Kaolack	Male	1.8	26.3	24.8	45.8	18.6	38.2	1.5
		Female	0.0	0.0	0.0	24.1	24.1	100	12.1
		Total	1.7	24.4	23.0	44.3	19.0	42.6	2.3
	Kaffrine	Male	3.8	13.6	27.3	38.3	45.1	12.4	7.9
		Female	0.0	0.0	0.0	0.0	100.0	100.0	0.0
		Total	3.4	12.4	24.9	34.9	50	20.2	7.2
	Sedhiou	Male	0.0	5.1	4.5	13.0	8.5	2.8	7.9
		Female	0.0	0.0	0.0	26.6	0.0	13.4	0.0
		Total	0.0	4.9	4.3	13.6	8.1	3.3	7.5
	Kolda	Male	4.9	17.3	5.7	13.1	6.8	10.3	0.9
		Female	0.0	0.0	4.3	0.0	42.3	22.2	0.0
		Total	4.7	16.9	5.7	12.7	7.7	10.6	0.9
	Ziguinchor	Male	0.2	8.1	0.2	2.3	14.0	19.0	0.2
		Female	0.0	0.0	0.0	0.0	10.5	35.7	0.0
		Total	0.1	5.8	0.1	1.7	13.0	23.7	0.1
	Matam	Male	0.6	4.9	6.5	16.8	0.8	2.7	0.6
		Female	0.0	0.0	26.5	5.6	0.0	0.0	0.0
		Total	0.6	4.4	8.5	15.6	0.7	2.4	0.6
	Saint-Louis	Male	1.4	33.4	23.2	24.9	4.4	4.8	0.0
		Female	6.6	12.1	1.3	7.5	4.5	17.0	0.0
		Total	2.5	29.1	18.7	21.4	4.4	7.3	0.0
Total ATV		Male	2.6	16.3	13.1	18.6	10.4	10	1.5
		Female	1.6	17.1	11.8	17.5	10.5	12.1	1.4
		Total	2.1	3.9	2.4	4.2	11.1	30.4	0.3
Mango	Sedhiou	Male	0.0	2.0	16.9	16.3	0.0	7.4	2.0
		Female	0.0	100.0	0.0	0.0	0.0	0.0	0.0
		Total	0.0	4.6	16.5	15.9	0.0	7.2	2.0
	Kolda	Male	2.7	8.2	14.5	7.0	41.9	7.9	0.0
		Female	-	-	-	-	-	-	-
		Total	2.7	8.2	14.5	7.0	41.9	7.9	0.0
	Ziguinchor	Male	0.0	0.0	0.0	2.8	9.9	4.8	25.4
		Female	0.0	0.0	0.0	0.0	0.0	20.2	0.0
		Total	0.0	0.0	0.0	2.2	7.6	8.3	19.6
Total mango		Male	1.3	4.1	9.0	6.5	23.8	6.6	10.4
		Female	0.0	2.9	0.0	0.0	0.0	19.6	0.0
		Total	1.1	4.0	8.0	5.8	21.2	8.0	9.3

Table 0.16   Distribution (%) of households with access to credit by type of financial service by region and small ruminants

Region	HOH gender	NGO	Formal lender (bank/ financial institution)	Informal lender	Friends or family	Microfinance facility	Tontine and others	Other credit
Fatick	Male	0.0	30.5	24.6	37.9	2.2	11.0	0.4
	Female	0.0	0.0	6.9	6.9	0.0	73.0	0.0
	Total	0.0	29.5	24.1	36.9	2.1	13.0	0.4
Kaolack	Male	1.7	23.3	29.2	30.2	10.3	19.0	1.4
	Female	1.7	44.5	0.0	6.6	1.6	24.8	3.4
	Total	1.7	24.4	27.7	29.0	9.9	19.3	1.5
Kaffrine	Male	2.4	17.9	18.7	27.1	23.4	12.0	3.6
	Female	0.0	47.9	0.0	4.5	43.4	86.8	0.0
	Total	2.3	18.6	18.3	26.6	23.9	13.7	3.5
Sedhiou	Male	0.3	4.2	6.9	14.9	3.0	3.9	5.4
	Female	0.0	15.6	0.0	15.6	0.0	7.9	0.0
	Total	0.3	4.5	6.7	14.9	3.0	3.9	5.3
Kolda	Male	1.4	12.9	3.4	15.9	12.6	7.3	1.5
	Female	0.0	0.0	3.8	6.2	0.0	0.0	0.0
	Total	1.4	12.8	3.4	15.9	12.5	7.3	1.5
Ziguinchor	Male	0.4	7.1	0.0	2.0	10.6	11.4	5.4
	Female	0.0	0.0	0.0	0.0	3.0	46.6	2.5
	Total	0.4	6.0	0.0	1.7	9.4	17.1	5.0
Matam	Male	0.7	8.6	11.3	10.3	1.5	5.6	0.3
	Female	0.0	0.0	17.5	6.1	0.7	34.8	0.0
	Total	0.6	7.8	11.9	9.9	1.4	8.3	0.3
Saint-Louis	Male	3.0	22.9	22.5	21.5	9.4	5.7	0.0
	Female	3.3	4.7	6.1	14.0	14.9	26.1	0.0
	Total	3.0	20.3	20.2	20.5	10.2	8.6	0.0
Total small ruminants	Male	1.4	16.3	14.7	20.4	10.4	10.1	2.0
	Female	1.3	11.3	5.1	7.3	7.6	35.8	1.2
	Total	1.4	16.0	14.1	19.6	10.3	11.6	1.9

Table 0.17   Average amount of credit received per household by HOH gender by region and horticultural value chain (FCFA)

Value chain	Region	HOH gender	Credit amount			
			Average	Standard deviation	Minimum	Maximum
ATV	Fatick	Male	84 335	128 324	2 000	410 000
		Female	95 000	-	95 000	95 000
		Total	84 892	124 949	2 000	410 000
	Kaolack	Male	252 098	323 523	3 000	2 750 000
		Female	44 241	75 130	2 000	184 000
		Total	233 696	315 250	2 000	2 750 000
	Kaffrine	Male	284 425	312 772	15 000	1 075 000
		Female	225 000	-	225 000	225 000
		Total	278 965	298 544	15 000	1 075 000
	Sedhiou	Male	130 824	137 813	20 000	680 000
		Female	23 296	9 526	10 000	30 000
		Total	124 580	136 113	10 000	680 000
	Kolda	Male	148 903	120 351	5 000	800 000
		Female	12 194	5 964	10 000	35 000

Value chain	Region	HOH gender	Credit amount			
			Average	Standard deviation	Minimum	Maximum
		Total	143 526	120 923	5 000	800 000
	Ziguinchor	Male	168 608	283 881	10 000	1 030 000
		Female	39 782	58 996	10 000	200 000
		Total	127 964	244 626	10 000	1 030 000
	Matam	Male	284 662	201 474	10 000	800 000
		Female	88 305	115 568	6 000	335 000
		Total	262 191	203 404	6 000	800 000
	Saint-Louis	Male	515 033	355 488	12 000	1 848 000
		Female	117 902	145 856	5 000	1 023 000
		Total	447 924	361 603	5 000	1 848 000
Total ATV		Male	289 899	323 125	2 000	2 750 000
		Female	74 379	107 279	2 000	1 023 000
		Total	254 612	309 125	2 000	2 750 000
Mango	Sedhiou	Male	110 044	139 091	5 000	650 000
		Female	100 000	-	100 000	100 000
		Total	109 279	133 709	5 000	650 000
	Kolda	Male	190 385	376 445	10 000	2 000 000
		Female				
		Total	190 385	376 445	10 000	2 000 000
	Ziguinchor	Male	1 036 478	1 964 744	2 500	5 000 000
		Female	146 858	82 266	20 000	200 000
		Total	927 985	1 864 091	2 500	5 000 000
Total mango		Male	314 315	750 756	2 000	5 050 000
		Female	46 957	62 939	5 000	200 000
		Total	292 257	723 097	2 000	5 050 000

Table 0.18   Average amount of credit received per household by HOH gender by region and small ruminants (FCFA)

Region	HOH gender	Credit amount			
		Average	Standard deviation	Minimum	Maximum
Fatick	Male	219 568	355 803	2 000	5 050 000
	Female	38 197	18 971	25 000	95 000
	Total	214 324	351 950	2 000	5 050 000
Kaolack	Male	285 948	617 048	3 000	8 600 000
	Female	191 444	138 419	2 000	303 500
	Total	280 958	601 747	2 000	8 600 000
Kaffrine	Male	298 626	370 571	1 500	2 100 000
	Female	226 997	25 372	120 000	240 000
	Total	296 370	364 931	1 500	2 100 000
Sedhiou	Male	233 136	298 824	10 000	2 100 000
	Female	53 927	38 478	10 000	100 000
	Total	228 670	296 458	10 000	2 100 000
Kolda	Male	179 797	397 585	2 000	3 525 000
	Female	25 769	7 485	20 000	35 000
	Total	179 622	397 393	2 000	3 525 000
Ziguinchor	Male	87 272	91 342	2 500	350 000
	Female	45 850	66 882	5 000	200 000
	Total	78 430	88 343	2 500	350 000
Matam	Male	297 154	541 849	1 000	2 000 000
	Female	79 443	54 529	6 000	335 000
	Total	266 995	508 913	1 000	2 000 000
Saint-Louis	Male	417 638	472 300	12 000	2 275 000
	Female	166 522	181 857	2 500	1 023 000

Region	HOH gender	Credit amount			
		Average	Standard deviation	Minimum	Maximum
	Total	388 147	455 287	2 500	2 275 000
Total small ruminants	Male	265 092	472 184	1 000	8 600 000
	Female	528 978	1 134 205	2 000	3 500 000
	Total	281 704	542 218	1 000	8 600 000

Table 0.19 Percentage of households with savings by type of supplier by region and horticultural value chain (%)

Value chain	Region	HOH gender	Set	Post Office/National Savings Office	Bank/microfinance institution	Insurance company	Mobile banking	Cooperative	Hoarding
ATV	Fatick	Male	61.6	0.0	12.8	0.0	44.4	0.0	22.6
		Female	70.6	0.0	0.0	0.0	70.6	0.0	70.6
		Total	62.0	0.0	12.2	0.0	45.7	0.0	24.9
	Kaolack	Male	20.7	0.0	5.0	0.0	18.8	1.9	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	19.3	0.0	4.6	0.0	17.5	1.8	0.0
	Kaffrine	Male	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Female	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sedhiou	Male	28.3	0.0	3.8	0.0	27.1	0.0	3.1
		Female	19.5	0.0	0.0	0.0	19.5	0.0	0.0
		Total	27.9	0.0	3.7	0.0	26.8	0.0	3.0
	Kolda	Male	19.0	2.2	8.8	0.0	11.3	0.0	4.7
		Female	4.3	0.0	0.0	0.0	4.3	0.0	0.0
		Total	18.7	2.1	8.6	0.0	11.2	0.0	4.5
	Ziguinchor	Male	30.0	0.2	6.0	0.0	23.3	0.0	1.0
		Female	30.1	0.0	0.0	0.0	6.9	0.0	20.8
		Total	30.0	0.1	4.3	0.0	18.7	0.0	6.6
	Matam	Male	35.5	0.0	0.0	0.0	20.4	0.3	1.9
		Female	13.2	0.0	0.0	0.0	13.2	0.0	0.0
		Total	33.3	0.0	0.0	0.0	19.7	0.3	1.7
	Saint-Louis	Male	32.5	0.0	8.0	0.3	19.9	0.0	5.0
		Female	15.0	1.7	3.9	0.0	12.2	0.0	0.0
		Total	28.9	0.3	7.1	0.3	18.4	0.0	4.0
Total ATV		Male	27.6	0.4	5.9	0.1	19.3	0.2	3.1
		Female	22.0	0.5	1.3	0.0	9.1	0.0	11.1
		Total	26.6	0.4	5.1	0.1	17.6	0.1	4.4
Mango	Sedhiou	Male	31.9	0.0	4.4	0.0	31.9	0.0	0.0
		Female	100.0	0.0	0.0	0.0	0.0	0.0	100.0
		Total	33.7	0.0	4.3	0.0	31.0	0.0	2.7
	Kolda	Male	8.8	0.0	3.1	0.0	5.7	0.0	2.2
		Female	--	--	--	--	--	--	--
		Total	8.8	0.0	3.1	0.0	5.7	0.0	2.2
	Ziguinchor	Male	40.0	0.0	20.4	0.0	33.1	0.0	5.1
		Female	86.1	0.0	0.0	0.0	83.1	0.0	3.0
		Total	50.5	0.0	15.8	0.0	44.4	0.0	4.6
Total mango		Male	24.2	0.0	10.2	0.0	19.9	0.0	3.1
		Female	86.5	0.0	0.0	0.0	80.7	0.0	5.8
		Total	31.0	0.0	9.1	0.0	26.5	0.0	3.4

Table 0.20   Percentage of households with savings by type of supplier, by region and small ruminant value chain

Value chain	Region	HOH gender	Set	Post Office/National Savings Office	Bank/ microfinance institution	Insurance company	Mobile banking	Cooperative	Hoarding
Small ruminants	Fatick	Male	33.2	0.0	19.2	0.0	17.1	0.0	7.1
		Female	6.9	0.0	0.0	0.0	6.9	0.0	6.9
		Total	32.4	0.0	18.6	0.0	16.8	0.0	7.1
	Kaolack	Male	49.5	2.5	10.2	3.6	46.7	2.4	0.4
		Female	48.3	0.0	0.0	0.0	48.3	1.7	0.0
		Total	49.4	2.4	9.7	3.4	46.7	2.3	0.4
	Kaffrine	Male	13.6	0.0	1.1	0.0	11.1	0.5	0.9
		Female	4.5	0.0	0.0	0.0	4.5	0.0	0.0
		Total	13.4	0.0	1.1	0.0	11.0	0.5	0.9
	Sedhiou	Male	33.3	0.0	7.8	0.0	27.6	0.0	5.3
		Female	15.6	0.0	0.0	0.0	0.0	0.0	15.6
		Total	33.0	0.0	7.7	0.0	27.1	0.0	5.5
	Kolda	Male	24.1	0.5	11.6	0.0	19.0	1.6	2.0
		Female	10.0	0.0	0.0	0.0	10.0	0.0	0.0
		Total	24.1	0.5	11.5	0.0	19.0	1.6	1.9
	Ziguinchor	Male	36.8	0.0	13.4	0.0	23.3	0.0	2.3
		Female	23.2	0.0	0.0	0.0	15.3	0.0	4.0
		Total	34.7	0.0	11.2	0.0	22.1	0.0	2.5
	Matam	Male	22.1	0.0	0.8	0.2	17.7	0.2	2.7
		Female	9.6	0.0	0.0	0.0	9.6	0.0	0.0
		Total	21.0	0.0	0.7	0.1	17.0	0.2	2.4
	Saint-Louis	Male	32.3	0.0	8.9	0.7	22.6	0.2	6.7
		Female	23.2	1.4	3.2	0.0	19.6	0.0	5.1
		Total	31.0	0.2	8.1	0.6	22.2	0.2	6.4
Total small ruminants		Male	30.6	0.6	8.9	0.8	24.4	0.9	2.8
		Female	23.2	0.4	1.0	0.0	19.8	0.3	3.1
		Total	30.2	0.6	8.4	0.7	24.1	0.9	2.8

Annexe-a.4. Household poverty level

Table 0.21 Average daily per capita consumption expenditure (FCFA) by gender and household type by region and horticultural value chain

Value chain	Region	HOH gender	Adult men and women (M&F)	adult women without adult men (FNM)	Together
ATV	Fatick	Male	630		630
		Female	364	500	404
		Total	621	500	619
	Kaolack	Male	817		817
		Female	1,199		1,199
		Total	845		845
	Kaffrine	Male	790		790
		Female		980	980
		Total	790	980	807
	Sedhiou	Male	589		589
		Female	973		973
		Total	607		607
	Kolda	Male	497		497
		Female	324	245	320
		Total	492	245	492
	Ziguinchor	Male	830		830
		Female	518	375	512
		Total	746	375	741
	Matam	Male	953		953
		Female	453	1,273	742
		Total	918	1,273	931
	Saint-Louis	Male	920		920
		Female	720	5,657	1,521
		Total	885	5,657	1,043
Total ATV		Male	786		786
		Female	603	2,898	887
		Total	759	2,898	803
Mango	Sedhiou	Male	782		782
		Female	1,146		1,146
		Total	792		792
	Kolda	Male	537		537
		Female			
		Total	537		537
	Ziguinchor	Male	663		663
		Female	460	398	414
		Total	649	398	606
Total mango		Male	618		618
		Female	532	398	434
		Total	616	398	599

Table 0.22   Average daily per capita consumption expenditure (FCFA) by gender and household type by region and small ruminants

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
Small ruminants	Fatick	Male	532		532
		Female	646		646
		Total	535		535
	Kaolack	Male	689		689
		Female	1,246	666	1,196
		Total	715	666	715
	Kaffrine	Male	566		566
		Female	1,291	980	1,156
		Total	575	980	579
	Sedhiou	Male	668		668
		Female	710	333	544
		Total	668	333	666
	Kolda	Male	591		591
		Female	408	1,831	807
		Total	590	1,831	592
	Ziguinchor	Male	551		551
		Female	625		625
		Total	563		563
	Matam	Male	878		878
		Female	597	617	607
		Total	864	617	853
	Saint-Louis	Male	739		739
		Female	602	6,475	1,273
		Total	721	6,475	814
Total small ruminants		Male	652		652
		Female	745	1,922	939
		Total	657	1,922	669

Table 0.23   Incidence of poverty (%) by gender and household type by region and horticultural value chain

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
ATV	Fatick	Male	40.8	0.0	40.8
		Female	100.0	100.0	100.0
		Total	42.8	100.0	43.6
	Kaolack	Male	38.4	0.0	38.4
		Female	0.0	0.0	0.0
		Total	35.7	0.0	35.7
	Kaffrine	Male	60.5	0.0	60.5
		Female	0.0	0.0	0.0
		Total	60.5	0.0	55.1
	Sedhiou	Male	54.2	0.0	54.2
		Female	26.6	0.0	26.6
		Total	53.0	0.0	53.0
	Kolda	Male	73.2	0.0	73.2
		Female	67.4	100.0	68.8
		Total	73.1	100.0	73.1
	Ziguinchor	Male	42.6	0.0	42.6

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
		Female	62.5	100.0	64.1
		Total	48.0	100.0	48.6
	Matam	Male	27.1	0.0	27.1
		Female	70.9	0.0	45.9
		Total	30.1	0.0	29.0
	Saint-Louis	Male	35.4	0.0	35.4
		Female	37.6	12.4	33.5
		Total	35.8	12.4	35.0
Total ATV		Male	45.7	0.0	45.7
		Female	52.7	24.6	49.3
		Total	46.8	24.6	46.3
Mango	Sedhiou	Male	32.3	0.0	32.3
		Female	0.0	0.0	0.0
		Total	31.5	0.0	31.5
	Kolda	Male	65.9	0.0	65.9
		Female	0.0	0.0	0.0
		Total	65.9	0.0	65.9
	Ziguinchor	Male	45.9	0.0	45.9
		Female	88.1	100.0	97.0
		Total	48.8	100.0	57.5
Total mango		Male	53.7	0.0	53.7
		Female	78.9	100.0	94.2
		Total	54.5	100.0	58.1

Table 0.24   Incidence of poverty (%) by gender and household type by region and small ruminants

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
Small ruminants	Fatick	Male	57.9	0.0	57.9
		Female	27.0	0.0	27.0
		Total	56.9	0.0	56.9
	Kaolack	Male	43.8	0.0	43.8
		Female	7.7	24.2	9.1
		Total	42.0	24.2	42.0
	Kaffrine	Male	60.9	0.0	60.9
		Female	15.4	0.0	8.7
		Total	60.3	0.0	59.8
	Sedhiou	Male	46.8	0.0	46.8
		Female	27.9	100.0	59.6
		Total	46.6	100.0	47.1
	Kolda	Male	59.3	0.0	59.3
		Female	70.6	13.7	54.7
		Total	59.3	13.7	59.2
	Ziguinchor	Male	63.6	0.0	63.6
		Female	35.4	0.0	35.4
		Total	59.1	0.0	59.1
	Matam	Male	27.9	0.0	27.9
		Female	55.5	71.2	63.2
		Total	29.2	71.2	31.1
	Saint-Louis	Male	38.7	0.0	38.7
		Female	51.6	16.8	47.7

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
		Total	40.3	16.8	40.0
Total small ruminants		Male	50.2	0.0	50.2
		Female	37.2	47.0	38.8
		Total	49.5	47.0	49.5

Table 0.25   Average daily per capita consumption deficit of the poor in relation to the poverty line (FCFA) by gender and household type by region and horticultural value chain

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	Adult women without adult men (FNM)	Together
ATV	Fatick	Male	-196		-196
		Female	-155	-18	-115
		Total	-193	-18	-187
	Kaolack	Male	-118		-118
		Female			
		Total	-118		-118
	Kaffrine	Male	-140		-140
		Female			
		Total	-140		-140
	Sedhiou	Male	-248		-248
		Female	-326		-326
		Total	-250		-250
	Kolda	Male	-220		-220
		Female	-336	-274	-332
		Total	-222	-274	-223
	Ziguinchor	Male	-195		-195
		Female	-125	-143	-126
		Total	-170	-143	-170
	Matam	Male	-138		-138
		Female	-151		-151
		Total	-140		-140
	Saint-Louis	Male	-169		-169
		Female	-231	-403	-241
		Total	-181	-403	-183
Total ATV		Male	-189		-189
		Female	-158	-198	-161
		Total	-184	-198	-184
Mango	Sedhiou	Male	-235		-235
		Female			
		Total	-235		-235
	Kolda	Male	-106		-106
		Female			
		Total	-106		-106
	Ziguinchor	Male	-154		-154
		Female	-131	-120	-123
		Total	-151	-120	-142
Total mango		Male	-132		-132
		Female	-131	-120	-123
		Total	-132	-120	-130

Table 0.26   Average daily per capita consumption deficit of the poor in relation to the poverty line (FCFA) by gender and household type by region and small ruminants (%)

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
Small ruminants	Fatick	Male	-189		-189
		Female	-193		-193
		Total	-190		-190
	Kaolack	Male	-117		-117
		Female	-240	-102	-208
		Total	-118	-102	-118
	Kaffrine	Male	-173		-173
		Female	-72		-72
		Total	-173		-173
	Sedhiou	Male	-236		-236
		Female	-326	-185	-222
		Total	-237	-185	-236
	Kolda	Male	-224		-224
		Female	-172	-274	-179
		Total	-223	-274	-223
	Ziguinchor	Male	-177		-177
		Female	-147		-147
		Total	-174		-174
	Matam	Male	-179		-179
		Female	-202	-154	-176
		Total	-181	-154	-179
	Saint-Louis	Male	-162		-162
		Female	-177	-193	-178
		Total	-164	-193	-165
Total small ruminants		Male	-183		-183
		Female	-176	-160	-172
		Total	-183	-160	-183

Table 0.27   Average percentage of the deficit in average daily per capita consumption of the poor in relation to the poverty line (%) by gender and household type by region and horticultural value chain

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
ATV	Fatick	Male	-36.6	0.0	-36.6
		Female	-29.9	-3.6	-25.7
		Total	-36.2	-3.6	-35.8
	Kaolack	Male	-25.0	0.0	-25.0
		Female	0.0	0.0	0.0
		Total	-25.0	0.0	-25.0
	Kaffrine	Male	-25.2	0.0	-25.2
		Female	0.0	0.0	0.0
		Total	-25.2	0.0	-25.2
	Sedhiou	Male	-53.9	0.0	-53.9
		Female	-62.9	0.0	-62.9
		Total	-54.1	0.0	-54.1
	Kolda	Male	-41.7	0.0	-41.7
		Female	-64.8	-52.8	-63.9

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
		Total	-42.1	-52.8	-42.1
	Ziguinchor	Male	-37.0	0.0	-37.0
		Female	-19.7	-27.7	-19.9
		Total	-31.6	-27.7	-31.5
	Matam	Male	-26.8	0.0	-26.8
		Female	-31.5	0.0	-31.5
		Total	-27.6	0.0	-27.6
	Saint-Louis	Male	-33.2	0.0	-33.2
		Female	-55.4	-77.6	-56.3
		Total	-37.5	-77.6	-37.9
Total ATV		Male	-36.4	0.0	-36.4
		Female	-30.6	-44.0	-31.1
		Total	-35.5	-44.0	-35.5
Mango	Sedhiou	Male	-44.2	0.0	-44.2
		Female	0.0	0.0	0.0
		Total	-44.2	0.0	-44.2
	Kolda	Male	-29.5	0.0	-29.5
		Female	0.0	0.0	0.0
		Total	-29.5	0.0	-29.5
	Ziguinchor	Male	-33.2	0.0	-33.2
		Female	-26.0	-23.2	-24.0
		Total	-32.4	-23.2	-30.6
Total mango		Male	-33.5	0.0	-33.5
		Female	-26.0	-23.2	-24.0
		Total	-33.3	-23.2	-32.6

Table 0.28   Average percentage of the deficit in average daily per capita consumption of the poor in relation to the poverty line (%) by gender and type of household by region and small ruminants (%)

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
Small ruminants	Fatick	Male	-32.9	0.0	-32.9
		Female	-36.6	0.0	-36.6
		Total	-32.9	0.0	-32.9
	Kaolack	Male	-24.3	0.0	-24.3
		Female	-44.9	-19.6	-43.7
		Total	-24.6	-19.6	-24.6
	Kaffrine	Male	-34.1	0.0	-34.1
		Female	-13.9	0.0	-13.9
		Total	-34.1	0.0	-34.1
	Sedhiou	Male	-48.9	0.0	-48.9
		Female	-62.9	-35.7	-48.8
		Total	-49.0	-35.7	-48.9
	Kolda	Male	-45.2	0.0	-45.2
		Female	-32.3	-52.8	-34.2
		Total	-45.1	-52.8	-45.1
	Ziguinchor	Male	-33.2	0.0	-33.2
		Female	-30.4	0.0	-30.4
		Total	-32.9	0.0	-32.9
	Matam	Male	-35.4	0.0	-35.4
		Female	-41.6	-29.7	-34.9

Value chain	Region	HOH gender	Type of household		
			Adult men and women (M&F)	adult women without adult men (FNM)	Together
		Total	-35.9	-29.7	-35.3
	Saint-Louis	Male	-31.0	0.0	-31.0
		Female	-40.3	-39.9	-40.2
		Total	-32.5	-39.9	-32.5
Total small ruminants		Male	-35.4	0.0	-35.4
		Female	-38.3	-30.6	-36.9
		Total	-35.5	-30.6	-35.4

Annexe-a.5.   Characteristics of the producers

Table 0.29   Distribution of producers by gender by region and horticultural value chain (%)

Type of horticultural value chain	Region	Gender		
		Male	**Female**	**Total**
ATV	Fatick	20.2	79.8	100.0
	Kaolack	19.7	80.3	100.0
	Kaffrine	27.2	72.8	100.0
	Sedhiou	24.0	76.0	100.0
	Kolda	14.0	86.0	100.0
	Ziguinchor	23.3	76.7	100.0
	Matam	33.4	66.6	100.0
	Saint-Louis	53.2	46.8	100.0
Total ATV		**27.5**	**72.5**	**100.0**
Mango	Sedhiou	94.8	5.2	100.0
	Kolda	93.4	6.6	100.0
	Ziguinchor	69.8	30.2	100.0
Total mango		**83.5**	**16.5**	**100.0**

Table 0.30   Distribution of producers by gender by region and small ruminant value chain (%)

Value chain	Region	Gender		
		Male	**Female**	**Total**
Small ruminants	Fatick	54.5	45.5	100.0
	Kaolack	47.1	52.9	100.0
	Kaffrine	47.3	52.7	100.0
	Sedhiou	70.4	29.6	100.0
	Kolda	57.7	42.3	100.0
	Ziguinchor	61.6	38.4	100.0
	Matam	56.2	43.8	100.0
	Saint-Louis	58.4	41.6	100.0
Total small ruminants		53.6	46.4	100.0

Table 0.31   Distribution of producers by gender and age by region and value chain (%)

Value chain	Region		Producer age group		
			15–29 years old	30–64 years old	65 years and older
ATV	Fatick	Male	9.3	87.6	3.0
		Female	15.1	84.2	0.8
		Total	13.9	84.9	1.2
	Kaolack	Male	4.3	95.2	0.4
		Female	19.6	72.2	8.2
		Total	16.6	76.8	6.7
	Kaffrine	Male	22.7	65.6	11.7
		Female	30.9	65.0	4.1
		Total	28.7	65.2	6.2
	Sedhiou	Male	3.3	73.3	23.4
		Female	20.9	77.9	1.3
		Total	16.6	76.8	6.6
	Kolda	Male	0.6	92.0	7.4
		Female	40.7	56.9	2.3
		Total	35.1	61.9	3.0
	Ziguinchor	Male	18.6	77.4	4.0
		Female	16.5	77.8	5.7
		Total	17.0	77.7	5.3
	Matam	Male	0.0	94.8	5.2
		Female	3.9	91.5	4.6
		Total	2.6	92.6	4.8
	Saint-Louis	Male	0.8	88.1	11.1
		Female	12.5	73.4	14.1
		Total	6.2	81.2	12.5
Mango	Sedhiou	Male	0.9	75.0	24.1
		Female	13.6	86.4	0.0
		Total	1.6	75.6	22.9
	Kolda	Male	2.3	76.2	21.5
		Female	0.0	100.0	0.0
		Total	2.2	77.8	20.1
	Ziguinchor	Male	2.1	86.9	11.0
		Female	0.0	97.4	2.6
		Total	1.4	90.1	8.5
Breeding	Fatick	Male	3.8	82.2	14.0
		Female	14.1	85.8	0.1
		Total	8.5	83.8	7.7
	Kaolack	Male	11.2	82.8	6.0
		Female	28.2	67.8	4.0
		Total	20.2	74.9	4.9
	Kaffrine	Male	4.9	87.2	7.9
		Female	19.5	77.6	2.9
		Total	12.6	82.1	5.3
	Sedhiou	Male	3.7	79.1	17.1
		Female	6.8	93.2	0.0
		Total	4.6	83.3	12.1
	Kolda	Male	4.6	86.5	8.9
		Female	20.1	78.9	1.1
		Total	11.2	83.2	5.6
	Ziguinchor	Male	2.1	81.3	16.7
		Female	16.9	81.4	1.7
		Total	7.8	81.3	10.9
	Matam	Male	1.7	86.8	11.5

Value chain	Region		Producer age group		
			15–29 years old	30–64 years old	65 years and older
		Female	5.1	92.5	2.4
		Total	3.2	89.3	7.5
	Saint-Louis	Male	1.3	81.4	17.3
		Female	9.6	85.9	4.4
		Total	4.8	83.3	12.0

Table 0.32 Distribution of producers by education level by region and horticultural value chain (%)

Value chain	Region	Level of education						
		No.	Koranic school/ Daara	Literate in national language	Elementary	Middle school/ college	Secondary	Higher education
ATV	Fatick	28.4	60.6	2.7	7.7	0.6	0.0	0.0
	Kaolack	7.7	86.6	2.6	2.7	0.4	0.0	0.0
	Kaffrine	26.9	48.6	2.4	11.3	4.4	3.2	3.2
	Sedhiou	46.8	28.9	0.6	21.2	2.2	0.3	0.0
	Kolda	39.7	12.4	4.3	25.4	15.0	0.4	2.8
	Ziguinchor	19.4	8.4	6.7	30.0	10.2	17.7	7.7
	Matam	56.1	17.9	1.3	15.5	3.5	4.1	1.6
	Saint-Louis	44.1	23.3	5.8	20.3	2.9	2.7	0.9
Mango	Sedhiou	20.9	27.0	0.5	10.2	31.3	2.8	7.2
	Kolda	20.8	34.1	0.8	40.8	0.0	1.2	2.4
	Ziguinchor	14.5	14.9	0.0	27.0	25.2	16.5	2.0
Breeding	Fatick	8.5	84.5	0.7	4.4	1.8	0.0	0.0
	Kaolack	8.6	70.0	1.1	11.1	6.8	2.1	0.4
	Kaffrine	34.9	49.6	2.7	6.8	2.7	2.4	0.8
	Sedhiou	35.4	31.7	1.9	15.6	10.4	3.2	1.9
	Kolda	50.8	17.5	5.9	11.1	11.3	1.6	1.8
	Ziguinchor	15.3	11.7	0.9	27.4	23.0	14.1	7.6
	Matam	48.1	29.3	2.4	13.0	5.4	1.2	0.6
	Saint-Louis	37.8	29.3	7.3	12.0	4.4	7.0	2.2

Table 0.33 Distribution of producers according to network membership by region and horticultural value chain (%)

Type of horticultural value chain	Region	Member of a network/gender		
		Male	Female	Total
ATV	Fatick	9.6	0.0	1.9
	Kaolack	0.0	18.7	15.0
	Kaffrine	28.9	0.0	7.9
	Sedhiou	8.4	2.4	3.8
	Kolda	26.3	11.2	13.3
	Ziguinchor	3.0	7.5	6.5
	Matam	6.8	6.0	6.3
	Saint-Louis	74.3	46.9	61.5
Total ATV		30.9	12.5	17.6
Mango	Sedhiou	13.7	13.6	13.7
	Kolda	3.9	33.2	5.8
	Ziguinchor	10.1	35.1	17.6
Total mango		9.5	20.3	11.3

Table 0.34   Distribution of producers according to network membership by region and small ruminant value chain (%)

Value chain	Region	Member of a network/gender		
		Male	**Female**	**Total**
Small ruminants	Fatick	3.1	8.2	5.4
	Kaolack	4.3	7.5	6.0
	Kaffrine	6.6	10.0	8.4
	Sedhiou	6.4	5.5	6.1
	Kolda	5.5	19.2	11.3
	Ziguinchor	6.7	6.6	6.7
	Matam	17.5	8.8	13.7
	Saint-Louis	44.6	25.8	36.8
Total small ruminants		10.6	12.1	11.3

Table 0.35   Distribution of project beneficiaries by region and horticultural value chain (%)

Horticultural value chain	Region	Project					
		Together	**PCE**	**CLUSA**	**PAFA**	**NM**	**Other**
ATV	Fatick	2.5	0.0	0.0	0.0	0.0	2.5
	Kaolack	16.7	0.0	0.0	3.6	0.0	15.2
	Kaffrine	6.8	0.0	0.0	5.6	0.0	2.7
	Sedhiou	0.0	0.0	0.0	0.0	0.0	0.0
	Kolda	5.2	0.0	0.0	1.4	4.3	0.1
	Ziguinchor	6.3	0.1	0.0	2.9	0.0	4.5
	Matam	4.0	0.0	0.0	0.2	0.0	3.9
	Saint-Louis	7.6	0.0	0.0	0.0	0.0	7.3
Total ATV		6.7	0.0	0.0	2.0	0.7	4.7
Mango	Sedhiou	30.0	0.0	0.0	0.0	0.0	30.0
	Kolda	3.0	0.0	0.0	0.0	0.0	3.0
	Ziguinchor	5.3	0.0	0.0	0.0	0.0	5.3
Total mango		11.0	0.0	0.0	0.0	0.0	0.0

Table 0.36   Distribution of project beneficiaries by region and small ruminant value chain (%)

Horticultural value chain	Region	Project					
		Together	**PCE**	**CLUSA**	**PAFA**	**NM**	**Other**
Small ruminants	Fatick	3.6	0.0	0.0	0.3	0.0	1.4
	Kaolack	4.3	0.0	0.0	0.3	0.1	3.4
	Kaffrine	6.8	0.0	2.5	1.2	0.0	3.2
	Sedhiou	7.9	0.0	0.0	0.0	0.0	1.7
	Kolda	7.1	0.7	0.4	0.2	4.1	2.6
	Ziguinchor	3.7	0.0	0.0	0.0	0.0	1.3
	Matam	0.9	0.0	0.0	0.2	0.0	0.9
	Saint-Louis	7.0	0.0	0.0	0.0	1.9	4.5
Total small ruminants		5.4	0.2	0.5	0.3	1.2	2.8

Annexe-a.6. Cultivated plots

Table 0.37 Distribution of plots by type and HOH gender by region and horticultural value chain (%)

Value chain	Region	HOH gender	Nature of the plot					
			Irrigated perimeter	Rainfed lands	Low land	Flood recession	Not operated	Total
ATV	Fatick	Male	5.8	88.3	5.8	0.0	0.0	100
		Female	40.6	22.5	37.0	0.0	0.0	100
		Total	**16.3**	**68.4**	**15.2**	**0.0**	**0.0**	**100**
	Kaolack	Male	4.2	91.5	4.3	0.0	0.0	100
		Female	10.1	89.9	0.0	0.0	0.0	100
		Total	**6.7**	**90.8**	**2.5**	**0.0**	**0.0**	**100**
	Kaffrine	Male	2.3	93.8	3.9	0.0	0.0	100
		Female	5.4	94.6	0.0	0.0	0.0	100
		Total	**3.3**	**94.1**	**2.7**	**0.0**	**0.0**	**100**
	Sedhiou	Male	6.1	92.8	1.1	0.0	0.0	100
		Female	24.9	60.6	14.5	0.0	0.0	100
		Total	**15.4**	**77.0**	**7.7**	**0.0**	**0.0**	**100**
	Kolda	Male	5.7	92.2	2.1	0.0	0.0	100
		Female	35.7	58.3	6.0	0.0	0.0	100
		Total	**20.5**	**75.5**	**4.0**	**0.0**	**0.0**	**100**
	Ziguinchor	Male	15.7	64.6	19.7	0.0	0.0	100
		Female	48.5	37.3	14.2	0.0	0.0	100
		Total	**32.9**	**50.3**	**16.8**	**0.0**	**0.0**	**100**
	Matam	Male	32.0	63.9	4.1	0.0	0.0	100
		Female	47.1	49.4	3.5	0.0	0.0	100
		Total	**37.5**	**58.6**	**3.9**	**0.0**	**0.0**	**100**
	Saint-Louis	Male	76.1	10.7	11.7	0.4	1.0	100
		Female	79.0	15.1	5.6	0.3	0.0	100
		Total	**77.0**	**12.0**	**9.9**	**0.4**	**0.7**	**100**
Total ATV		Male	22.7	68.2	8.9	0.1	0.2	100
		Female	39.0	52.4	8.6	0.0	0.0	100
		Total	**29.8**	**61.3**	**8.8**	**0.1**	**0.1**	**100**
Mango	Sedhiou	Male	5.0	94.1	0.9	0.0	0.0	100
		Female	1.9	98.1	0.0	0.0	0.0	100
		Total	**8.8**	**89.2**	**2.0**	**0.0**	**0.0**	**100**
	Kolda	Male	2.5	96.8	0.6	0.0	0.0	100
		Female	2.6	95.6	1.9	0.0	0.0	100
		Total	**2.8**	**88.2**	**9.1**	**0.0**	**0.0**	**100**
	Ziguinchor	Male	21.1	70.3	8.6	0.0	0.0	100
		Female	20.3	72.8	6.9	0.0	0.0	100
		Total	**20.7**	**71.4**	**7.9**	**0.0**	**0.0**	**100**
Total mango		Male	9.0	86.6	3.8	0.6	0.0	100
		Female	18.2	69.9	11.9	0.0	0.0	100
		Total	**10.2**	**84.4**	**4.9**	**0.5**	**0.0**	**100**

Table 0.38   Distribution (%) of plots by ownership type and HOH gender by region and horticultural value chain

Value chains	Region	HOH gender	Type of property				
			Individual (own)	Family	Collective outside the family	Belongs to others	Total
ATV	Fatick	Male	47.7	49.2	0.8	2.3	100
		Female	64.8	17.4	7.4	10.4	100
		Total	**52.9**	**39.6**	**2.8**	**4.7**	**100**
	Kaolack	Male	62.6	23.1	0.0	14.3	100
		Female	10.6	69.9	7.9	11.6	100
		Total	**41.1**	**42.4**	**3.2**	**13.2**	**100**
	Kaffrine	Male	71.5	24.8	0.0	3.7	100
		Female	59.0	39.4	1.6	0.0	100
		Total	**67.4**	**29.6**	**0.5**	**2.5**	**100**
	Sedhiou	Male	61.7	37.6	0.0	0.7	100
		Female	38.7	51.4	1.5	8.4	100
		Total	**50.4**	**44.4**	**0.7**	**4.5**	**100**
	Kolda	Male	80.6	18.3	0.0	1.1	100
		Female	79.5	17.4	1.6	1.5	100
		Total	**80.1**	**17.8**	**0.8**	**1.3**	**100**
	Ziguinchor	Male	53.0	43.7	0.1	3.2	100
		Female	73.3	11.1	9.4	6.2	100
		Total	**63.7**	**26.5**	**5.0**	**4.8**	**100**
	Matam	Male	85.2	12.6	1.6	0.6	100
		Female	39.8	31.8	24.5	3.9	100
		Total	**68.8**	**19.5**	**9.9**	**1.8**	**100**
	Saint-Louis	Male	55.4	27.3	14.3	3.0	100
		Female	42.1	25.4	28.1	4.3	100
		Total	**51.5**	**26.8**	**18.4**	**3.4**	**100**
Total ATV		Male	64.3	28.9	2.8	4.0	100
		Female	57.3	27.9	9.4	5.5	100
		Total	**61.2**	**28.5**	**5.6**	**4.6**	**100**
Mango	Sedhiou	Male	33.6	47.3	19.1	0.0	100
		Female	24.9	75.1	0.0	0.0	100
		Total	**29.7**	**59.9**	**10.5**	**0.0**	**100**
	Kolda	Male	84.9	15.1	0.0	0.0	100
		Female	46.9	50.9	0.0	2.1	100
		Total	**79.3**	**20.3**	**0.0**	**0.3**	**100**
	Ziguinchor	Male	65.6	32.6	1.9	0.0	100
		Female	29.6	63.5	6.9	0.0	100
		Total	**50.6**	**45.5**	**4.0**	**0.0**	**100**
Total mango		Male	66.5	29.3	2.0	2.2	100
		Female	59.3	39.5	0.7	0.6	100
		Total	**65.6**	**30.6**	**1.8**	**2.0**	**100**

Table 0.39   Distribution of plots according to farming mode and HOH gender by region and horticultural value chain (%)

Value chains	Region	HOH gender	Mode of operation					
			Own occupation	Leasing	Sharecropping	Borrowing for free	Unused	Total
ATV	Fatick	Male	100	0.0	0.0	0.0	0.0	100
		Female	100	0.0	0.0	0.0	0.0	100
		Total	100	0.0	0.0	0.0	0.0	100
	Kaolack	Male	96.4	3.4	0.0	0.2	0.0	100
		Female	94.2	5.8	0.0	0.0	0.0	100
		Total	95.5	4.4	0.0	0.1	0.0	100
	Kaffrine	Male	100	0.0	0.0	0.0	0.0	100
		Female	100	0.0	0.0	0.0	0.0	100
		Total	100	0.0	0.0	0.0	0.0	100
	Sedhiou	Male	98.0	0.7	0.0	0.0	1.3	100
		Female	100	0.0	0.0	0.0	0.0	100
		Total	99.0	0.3	0.0	0.0	0.7	100
	Kolda	Male	98.0	2.0	0.0	0.0	0.0	100
		Female	99.0	1.0	0.0	0.0	0.0	100
		Total	98.5	1.5	0.0	0.0	0.0	100
	Ziguinchor	Male	100	0.0	0.0	0.0	0.0	100
		Female	99.7	0.3	0.0	0.0	0.0	100
		Total	99.9	0.1	0.0	0.0	0.0	100
	Matam	Male	89.2	0.0	10.8	0.0	0.0	100
		Female	91.9	1.4	6.6	0.0	0.0	100
		Total	90.2	0.5	9.3	0.0	0.0	100
	Saint-Louis	Male	97.8	0.0	1.5	0.8	0.0	100
		Female	96.9	0.0	3.1	0.0	0.0	100
		Total	97.5	0.0	1.9	0.4	0.0	100
Total ATV		Male	97.7	0.8	1.2	0.1	0.1	100
		Female	98.1	1.1	0.7	0.0	0.0	100
		Total	97.9	0.9	1.0	0.1	0.0	100
Mango	Sedhiou	Male	98.6	0.0	0.0	1.4	0.0	100
		Female	100	0.0	0.0	0.0	0.0	100
		Total	99.2	0.0	0.0	0.8	0.0	100
	Kolda	Male	100.0	0.0	0.0	0.0	0.0	100
		Female	100.0	0.0	0.0	0.0	0.0	100
		Total	100.0	0.0	0.0	0.0	0.0	100
	Ziguinchor	Male	100.0	0.0	0.0	0.0	0.0	100
		Female	98.6	1.4	0.0	0.0	0.0	100
		Total	99.4	0.6	0.0	0.0	0.0	100
Total mango		Male	99.1	0.3	0.1	0.3	0.1	100
		Female	100.0	0.0	0.0	0.0	0.0	100
		Total	99.2	0.3	0.1	0.3	0.1	100

Table 0.40   Average number of plots per producer and per household by gender, by region and value chain

Value chains	Region	Gender of the producer			HOH gender		
		Male	Female	Total	Male	Female	Total
ATV	Fatick	2.9	1.3	2.4	4.2	--	4.2
	Kaolack	3.1	1.9	2.6	7.9	--	7.9
	Kaffrine	4.7	2.1	3.9	6.7	--	6.7
	Sedhiou	2.9	2.6	2.8	4.0	6.0	4.1
	Kolda	3.1	1.5	2.3	3.6	2.0	3.5
	Ziguinchor	3.1	1.6	2.3	3.8	--	3.8
	Matam	2.9	1.5	2.4	2.8	5.0	2.9
	Saint-Louis	2.3	1.2	2.0	2.4	1.3	2.3
Total ATV		3.1	1.7	2.5	3.9	2.8	3.8
Mango	Sedhiou	5.3	5.5	5.4	3.8	--	3.8
	Kolda	2.9	1.0	2.6	3.9	5.0	4.0
	Ziguinchor	3.6	2.3	3.0	3.5	2.0	3.3
Total mango		3.6	2.6	3.4	3.1	3.0	3.1

Annexe-a.7.   Use of inputs, cultivation practices, and storage methods

Table 0.41   Distribution of producers by soil preparation method by horticultural value chain and region (%)

Value chain	Region	Use of certified seeds	Share of certified seeds
	Fatick	45.0	45.2
	Kaolack	36.9	36.3
	Kaffrine	34.2	31.1
	Sedhiou	41.0	39.6
	Kolda	50.7	49.5
	Ziguinchor	41.7	42.0
	Matam	69.1	60.7
	Saint-Louis	67.9	66.6
Total ATV		48.2	45.0

Table 0.42   Distribution of producers by seeding method by horticultural value chain and region (%)

Value chain	Region	Sowing method					
		Transplanting (nursery)	On the fly with pre-germination	Regrowth	Seeder (in line)	Other	On the fly without pre-seeding
ATV	Fatick	76.8	0.0	0.0	2.3	15.2	5.7
	Kaolack	33.0	22.8	14.2	9.7	20.1	0.3
	Kaffrine	24.3	4.8	11.3	48.4	6.2	5.0
	Sedhiou	48.2	1.2	8.6	7.7	27.5	6.8
	Kolda	24.5	35.0	2.7	21.6	7.9	8.2
	Ziguinchor	65.5	3.1	2.8	2.3	14.8	11.5
	Matam	46.1	0.1	7.9	11.5	14.2	20.2
	Saint-Louis	76.5	0.0	13.5	6.9	1.3	1.7
Total ATV		53.5	9.0	6.7	10.7	12.1	8.1

Table 0.43   Distribution of producers by seeding method by horticultural value chain and Mango by region (%)

Value chain	Region	Personal reservations	Program	Government agricultural program	Projects/ NGOs	Networks	Local market/ APS
ATV	Fatick	13.0	0.0	0.0	6.5	0.0	80.5
	Kaolack	23.1	0.5	6.5	12.1	1.9	56.0
	Kaffrine	37.6	3.5	4.5	0.7	3.5	50.2
	Sedhiou	33.5	0.0	0.3	0.0	4.2	62.0
	Kolda	25.0	0.7	0.2	2.2	0.3	71.6
	Zig	32.9	1.4	0.0	0.6	2.7	62.5
	Matam	4.0	7.6	0.3	4.7	0.6	82.8
	Saint-Louis	4.4	4.6	0.0	2.7	6.6	81.7
Total ATV		24.3	2.2	0.9	2.5	2.9	67.3
Mango	Sedhiou	82.5	0.0	12.6	0.0	0.0	4.9
	Kolda	73.4	0.0	0.2	1.1	0.0	25.3
	Ziguinchor	68.1	0.3	8.1	0.5	1.0	22.1
Total mango		70.0	1.0	4.3	0.4	1.2	23.0

Table 0.44   Distribution of producers by seeding method by horticultural value chain and region (%)

Value chain	Region	NPK use		Average amount of NPK used per hectare (kg/ha)	NPK application mode				
		No	Yes		One application	Two applications	Three or more applications	Deep placement	No application
ATV	Fatick	63.4	36.6	186	18.8	39.4	38.7	0.0	3.0
	Kaolack	39.0	61.0	92	51.3	13.8	33.6	1.3	0.0
	Kaffrine	62.1	37.9	80	66.5	9.4	9.5	0.0	14.6
	Sedhiou	85.1	14.9	268	74.9	10.5	9.9	4.7	0.0
	Kolda	77.9	22.1	126	57.8	18.2	14.1	0.8	9.1
	Zig	78.3	21.7	147	8.0	3.7	88.2	0.0	0.0
	Matam	78.5	21.5	182	37.5	47.3	15.2	0.0	0.0
	Saint-Louis	77.8	22.2	136	14.7	53.3	31.7	0.3	0.0
Total ATV		73.9	26.1	132	34.3	18.4	43.7	0.6	3.0
Mango	Sedhiou	62.3	37.7	126	53.8	12.9	33.3	0.0	0.0
	Kolda	64.1	35.9	183	26.8	44.7	23.1	3.2	2.2
	Ziguinchor	92.5	7.5	101	19.7	14.5	65.7	0.0	0.0
Total mango		61.9	38.1	162	68.3	18.9	11.6	1.0	0.3

Table 0.45   Distribution of DAP and mode of application by horticultural value chains and region (%)

Value chain	Region	Use of DAP No	Use of DAP Yes	Average quantity (kg/ha)	DAP application mode One application	Two applications	Three or more applications	Deep placement	No application
	Fatick	100.0	0.0		0.0	0.0	0.0	0.0	0.0
	Kaolack	100.0	0.0		0.0	0.0	0.0	0.0	0.0
	Kaffrine	100.0	0.0		0.0	0.0	0.0	0.0	0.0
	Sedhiou	100.0	0.0		0.0	0.0	0.0	0.0	0.0
	Kolda	99.4	.6	26	100.0	0.0	0.0	0.0	0.0
	Zig.	100.0	0.0		0.0	0.0	0.0	0.0	0.0
	Matam	97.6	2.4	181	28.8	24.6	46.6	0.0	0.0
ATV	Saint-Louis	75.5	24.5	149	47.0	29.6	23.4	0.0	0.0
Total ATV		95.7	4.3	148	47.7	28.7	23.6	0.0	0.0
	Sedhiou	100.0	0.0		0.0	0.0	0.0	0.0	0.0
	Kolda	98.7	1.3	25	100.0	0.0	0.0	0.0	0.0
Mango	Ziguinchor	100.0	0.0		0.0	0.0	0.0	0.0	0.0
Total mango		98.9	1.1	87	45.1	21.4	0.0	33.5	0.0

Table 0.46   Distribution of manure and application method by horticultural value chain (%)

Value chain	Regions	Use of manure No	Use of manure Yes	Manure application method One application	Two applications	Three or more applications	Deep placement	No application
	Fatick	48.8	51.2	9.6	45.8	44.6	0.0	0.0
	Kaolack	43.1	56.9	52.1	14.2	28.3	5.5	0.0
	Kaffrine	70.4	29.6	72.3	17.4	2.1	0.0	8.2
	Sedhiou	57.3	42.7	48.8	12.2	2.8	33.9	2.3
	Kolda	74.4	25.6	40.2	12.7	41.3	0.8	5.0
	Ziguinchor	15.7	84.3	30.0	14.8	41.6	12.1	1.5
	Matam	77.6	22.4	59.3	0.0	10.8	26.4	3.5
ATV	Saint-Louis	62.2	37.8	31.0	13.2	4.1	51.7	0.0
Total ATV		45.5	54.5	35.5	14.6	32.1	16.0	1.8
	Sedhiou	94.6	5.4	0.0	13.7	0.0	0.0	86.3
	Kolda	69.4	30.6	41.8	28.4	11.1	7.5	11.1
Mango	Ziguinchor	35.4	64.6	49.7	29.9	4.9	3.6	11.9
Total mango		50.4	49.6	48.9	18.8	20.6	3.4	8.2

Table 0.47   Distribution of manure and application method by horticultural value chain (%)

Value chain	Regions	Use of manure		Manure application mode				
		No	Yes	A spreading	Two applications	Three or more applications	Deep placement	No application
ATV	Fatick	48.8	51.2	9.6	45.8	44.6	0.0	0.0
	Kaolack	43.1	56.9	52.1	14.2	28.3	5.5	0.0
	Kaffrine	70.4	29.6	72.3	17.4	2.1	0.0	8.2
	Sedhiou	57.3	42.7	48.8	12.2	2.8	33.9	2.3
	Kolda	74.4	25.6	40.2	12.7	41.3	.8	5.0
	Ziguinchor	15.7	84.3	30.0	14.8	41.6	12.1	1.5
	Matam	77.6	22.4	59.3	0.0	10.8	26.4	3.5
	Saint-Louis	62.2	37.8	31.0	13.2	4.1	51.7	0.0
Total ATV		45.5	54.5	35.5	14.6	32.1	16.0	1.8
Mango	Sedhiou	94.6	5.4	0.0	13.7	0.0	0.0	86.3
	Kolda	69.4	30.6	41.8	28.4	11.1	7.5	11.1
	Ziguinchor	35.4	64.6	49.7	29.9	4.9	3.6	11.9
Total mango		50.4	49.6	48.9	18.8	20.6	3.4	8.2

Table 0.48   Urea distribution and application mode by horticultural value chain and region (%)

Value chain	Region	Urea use		Average quantity (kg/ha)	Urea application mode				
		No	Yes	Average	One application	Two applications	Three or more applications	Deep placement	No application
ATV	Fatick	82.0	18.0	195	30.6	28.5	40.9	0.0	0.0
	Kaolack	61.1	38.9	75	68.4	10.7	20.9	0.0	0.0
	Kaffrine	88.1	11.9	94	45.4	36.7	1.4	16.5	0.0
	Sedhiou	79.7	20.3	294	50.0	19.4	27.2	3.5	0.0
	Kolda	85.8	14.2	131	62.6	24.4	7.1	0.0	5.9
	Zig	61.7	38.3	132	24.6	35.3	35.0	5.0	0.0
	Matam	78.1	21.9	209	34.9	35.9	29.2	0.0	0.0
	Saint-Louis	50.2	49.8	231	16.8	55.1	27.7	.2	0.1
Total ATV		67.9	32.1	161	31.6	36.6	28.4	2.9	0.4
Mango	Sedhiou	45.8	54.2	145	51.2	23.2	25.7	0.0	0.0
	Kolda	52.3	47.7	117	73.7	24.6	0.0	0.0	1.6
	Ziguinchor	85.1	14.9	171	8.6	74.9	16.5	0.0	0.0
Total mango		68.0	32.0	129	62.8	27.5	8.9	0.4	0.3

Table 0.49   Distribution of producers by primary weed control by horticultural and mango value chain and region (%)

Value chains	Region	Herbicide use		Main method of weed control		
		No.	Yes	Hoe	By hand	Herbicides
ATV	Fatick	97.7	2.3	9.6	88.1	2.3
	Kaolack	99.6	0.4	5.0	95.0	0.0
	Kaffrine	83.8	16.2	51.7	48.3	0.0
	Sedhiou	97.8	2.2	2.3	95.6	2.2
	Kolda	88.2	11.8	9.3	79.2	11.5
	Ziguinchor	84.3	15.7	0.3	99.5	0.2
	Matam	99.0	1.0	22.4	77.4	0.2
	Saint-Louis	81.0	19.0	0.1	81.1	18.8
Total ATV		87.6	12.4	7.2	87.6	5.2
Mango	Sedhiou	85.8	14.2	9.5	76.3	14.2
	Kolda	94.1	5.9	47.4	46.7	5.9
	Ziguinchor	85.9	14.1	0.5	99.5	0.0
Total mango		91.0	9.0	22.8	74.2	3.0

Table 0.50   Distribution of growers by main harvesting and threshing method by horticultural value chain and region (%)

Value chains	Region	Main harvesting method			Main threshing method	
		No harvest	Manual	Mechanical	Manual	Mechanical
ATV	Fatick	1.4	98.6	0.0	0.0	0.0
	Kaolack	7.0	91.0	2.0	100.0	0.0
	Kaffrine	6.6	71.3	22.1	80.0	20.0
	Sedhiou	1.4	98.6	0.0	0.0	0.0
	Kolda	2.7	95.8	1.5	100.0	0.0
	Ziguinchor	2.6	97.4	0.0	100.0	0.0
	Matam	4.9	95.1	0.0	100.0	0.0
	Saint-Louis	5.4	94.6	0.0	100.0	0.0
Total ATV		3.8	94.3	1.9	96.9	3.1
Mango	Sedhiou	.7	99.3	0.0	100.0	0.0
	Kolda	2.3	97.7	0.0	86.2	13.8
	Ziguinchor	5.5	94.5	0.0	97.4	2.6
Total mango		5.4	92.9	1.7	70.7	29.3

Table 0.51   Table 0.51: Distribution of producers according to storage method by horticultural and mango value chain and by region (%)

Value chain	Region	Main storage mode								
		No storage	Open air	Under canvas	Personal shelter	Community shelter	Rented shelter	Traditional attic	Other	No storage
ATV	Fatick	71.7	0.9	6.3	21.1	0.0	0.0	0.0	0.0	0.0
	Kaolack	78.5	1.7	0.0	17.2	0.0	0.0	1.6	0.9	0.0
	Kaffrine	59.6	3.5	0.0	33.3	0.0	1.9	0.9	0.9	0.0
	Sedhiou	61.9	12.4	1.0	21.8	0.0	0.0	0.5	2.4	0.0
	Kolda	72.5	7.0	0.8	16.9	1.8	0.0	0.6	0.5	0.0
	Ziguinchor	80.1	3.2	0.0	16.1	0.1	0.0	0.1	0.4	0.0
	Matam	77.6	8.1	0.0	14.0	0.0	0.0	0.3	0.0	0.0
	Saint-Louis	87.9	2.4	0.1	7.8	1.6	0.0	0.1	0.2	0.0
Total ATV		77.2	4.4	0.3	16.4	0.6	0.1	0.4	0.5	0.0
Mango	Sedhiou	7.2	30.8	0.8	16.1	0.0	0.0	42.9	2.1	0.0
	Kolda	12.1	7.5	0.0	74.6	0.0	0.0	5.8	0.0	0.0
	Zig	33.2	0.6	0.0	33.0	0.0	0.0	31.8	1.3	0.0
Total mango		22.3	4.0	0.1	51.7	2.2	0.0	18.8	1.0	0.0

Table 0.52   Distribution of stock preservation methods by horticultural and mango value chains and by region (%)

Value chain	Region	Main method of stock preservation			
		Chemical pesticides	Organic methods	Other	None
ATV	Fatick	1.4	1.1	2.7	94.7
	Kaolack	1.7	0.0	0.2	98.1
	Kaffrine	9.2	0.9	3.5	86.4
	Sedhiou	0.3	1.8	0.0	97.9
	Kolda	1.3	1.7	0.0	97.0
	Ziguinchor	0.4	0.0	0.7	98.9
	Matam	0.0	7.0	0.5	92.4
	Saint-Louis	0.0	0.2	0.0	99.8
Total ATV		1.2	0.9	0.6	97.3
Mango	Sedhiou	0.0	0.0	0.0	100.0
	Kolda	0.7	0.5	3.2	95.6
	Zig	18.4	2.5	0.0	79.1
Total mango		16.8	3.1	0.4	79.7

Annexe-a.8.   Use of climate information

Table 0.53   Distribution of households (%) by climate risk experienced by horticultural households

Value chain	Region	Drought	Excess rainfall	Temperature extremes	Wind	Other
ATV	Fatick	71.3	65.9	17.6	25.6	2.0
	Kaolack	41.8	30.2	29.2	34.5	0.0
	Kaffrine	66.7	24.6	43.7	49.5	7.8
	Sedhiou	41.8	34.3	22.9	30.3	10.0
	Kolda	38.0	39.5	34.3	29.2	5.7
	Ziguinchor	19.5	27.2	16.2	21.5	2.4
	Matam	50.1	34.1	25.5	42.4	2.0
	Saint-Louis	51.0	16.2	56.5	57.4	11.6
Mango	Sedhiou	28.7	38.8	33.4	40.0	1.9
	Kolda	36.5	52.9	25.4	13.4	0.0
	Ziguinchor	32.1	30.8	19.7	25.0	0.0

Table 0.54   Distribution of households (%) according to the climatic risk suffered by the herders

Region	Drought	Excess rainfall	Temperature extremes	Wind	Other
Fatick	85.4	90.5	52.0	67.9	2.5
Kaolack	25.6	13.0	14.3	41.5	3.0
Kaffrine	49.9	28.1	42.7	43.0	11.8
Sedhiou	45.0	38.5	32.8	37.1	5.8
Kolda	47.6	42.1	39.9	36.5	8.6
Ziguinchor	29.2	29.1	15.3	22.5	2.9
Matam	68.1	40.7	31.3	48.8	19.7
Saint-Louis	65.4	22.1	60.2	64.5	11.5

Table 0.55   Distribution of households (%) by business risk experienced by horticultural households

Value chain	Region	Selling price	Access to inputs	Pests (insects)	Your health	Other risks
ATV	Fatick	96.6	89.8	41.0	35.7	24.2
	Kaolack	70.8	96.6	36.8	33.3	13.0
	Kaffrine	76.4	93.4	66.2	48.9	26.3
	Sedhiou	51.9	78.9	56.3	20.4	17.5
	Kolda	78.7	86.0	49.3	33.9	32.2
	Ziguinchor	18.3	34.6	54.2	18.6	8.9
	Matam	19.9	48.3	82.0	42.3	27.6
	Saint-Louis	59.6	55.1	79.2	25.0	12.7
Mango	Sedhiou	78.9	80.4	74.3	27.0	16.4
	Kolda	63.5	78.7	25.4	17.8	26.3
	Ziguinchor	32.4	52.7	62.0	46.7	26.6

Table 0.56   Distribution of households (%) according to the economic risk suffered by the breeders

Region	Selling price	Access to inputs	Pests (insects)	Your health	Other risk
Fatick	91.4	98.4	82.8	58.5	45.6
Kaolack	81.8	93.8	32.1	22.8	29.1
Kaffrine	63.8	87.1	44.6	37.1	35.9
Sedhiou	49.2	81.4	62.0	24.1	21.9
Kolda	63.0	83.0	56.5	44.3	39.0
Ziguinchor	22.3	29.6	53.1	17.6	8.1
Matam	21.4	58.2	85.0	45.7	39.1
Saint-Louis	59.0	62.8	77.9	28.8	17.7

Table 0.57   Distribution of horticultural households (%) with access to agro-climatic information

Value chain	Region	Access	Use
ATV	Fatick	90.1	85.7
	Kaolack	91.3	91.3
	Kaffrine	83.3	83.3
	Sedhiou	42.2	40.7
	Kolda	66.7	61.6
	Ziguinchor	50.6	49.0
	Matam	63.0	63.0
	Saint-Louis	43.6	42.1
Mango	Sedhiou	70.1	70.1
	Kolda	30.3	30.3
	Ziguinchor	70.4	57.7

Table 0.58   **Distribution of livestock households (%) with access to climate information**

Region	Access	Use
Fatick	80.6	74.9
Kaolack	69.5	66.2
Kaffrine	53.1	51.7
Sedhiou	46.6	46.2
Kolda	50.9	48.8
Ziguinchor	60.5	54.8
Matam	67.6	63.9
Saint-Louis	55.6	53.9

Table 0.59   **Distribution of horticultural households (%) by cultivation operations where information is used**

Value chain	Region	Choice of the type of speculation	Seedlings	Spreading	Treatment	Harvest
ATV	Fatick	39.5	87.7	66.1	31.7	68.0
	Kaolack	75.9	100.0	86.1	51.0	88.4
	Kaffrine	84.9	100.0	89.4	59.2	87.7
	Sedhiou	84.8	83.2	8.4	5.2	42.5
	Kolda	78.1	87.2	79.1	79.0	33.5
	Ziguinchor	90.4	79.3	51.5	47.4	48.5
	Matam	40.4	92.4	56.7	47.3	67.6
	Saint-Louis	56.8	73.6	72.0	71.5	69.8
Mango	Sedhiou	84.3	91.3	26.2	8.2	37.7
	Kolda	92.6	100.0	88.2	70.9	92.6
	Ziguinchor	94.1	88.5	49.4	32.7	36.7

Table 0.60   **Distribution of livestock-raising households (%) by crop operation where they use information**

Region	Choice of the type of speculation	Seedlings	Spreading	Treatment	Harvest
Fatick	59.8	71.2	55.7	25.7	65.3
Kaolack	56.8	98.3	69.5	48.4	67.6
Kaffrine	80.1	90.5	86.9	61.2	86.1
Sedhiou	85.0	81.9	16.1	6.8	31.4
Kolda	88.6	94.0	89.4	88.0	80.9
Ziguinchor	72.5	71.0	17.5	39.4	31.3
Matam	36.7	92.6	59.0	53.4	70.7
Saint-Louis	52.5	74.0	72.8	58.4	75.9

Table 0.61 Distribution of horticultural households (%) by crop operations where climate information is used

Value chain	Region	Rain date forecast	Forecasting of rainfall break periods	Temperature	Wind	Other
ATV	Fatick	39.5	87.7	66.1	31.7	68.0
	Kaolack	75.9	100.0	86.1	51.0	88.4
	Kaffrine	84.9	100.0	89.4	59.2	87.7
	Sedhiou	84.8	83.2	8.4	5.2	42.5
	Kolda	78.1	87.2	79.1	79.0	33.5
	Ziguinchor	90.4	79.3	51.5	47.4	48.5
	Matam	40.4	92.4	56.7	47.3	67.6
	Saint-Louis	56.8	73.6	72.0	71.5	69.8
Mango	Sedhiou	84.3	91.3	26.2	8.2	37.7
	Kolda	92.6	100.0	88.2	70.9	92.6
	Ziguinchor	94.1	88.5	49.4	32.7	36.7

Table 0.62 Distribution of livestock-raising households (%) by crop operation where climate information is used

Region	Rain date forecast	Forecasting of rainfall break periods	Temperature	Wind	Other
Fatick	59.8	71.2	55.7	25.7	65.3
Kaolack	56.8	98.3	69.5	48.4	67.6
Kaffrine	80.1	90.5	86.9	61.2	86.1
Sedhiou	85.0	81.9	16.1	6.8	31.4
Kolda	88.6	94.0	89.4	88.0	80.9
Ziguinchor	72.5	71.0	17.5	39.4	31.3
Matam	36.7	92.6	59.0	53.4	70.7
Saint-Louis	52.5	74.0	72.8	58.4	75.9

Annexe-a.9.   Use of ICTs

Table 0.63   Distribution (%) of ICT adopted households by HOH gender by region and horticultural value chain

Value chain	Region	HOH gender		
		Male	Female	Total
ATV	Fatick	38.6	29.4	38.2
	Kaolack	86.6	100.0	87.6
	Kaffrine	70.0	100.0	72.6
	Sedhiou	73.8	59.5	73.2
	Kolda	52.4	4.3	51.2
	Ziguinchor	84.1	44.8	73.1
	Matam	47.7	65.1	49.5
	Saint-Louis	83.2	60.0	78.4
Total ATV		72.7	53.2	69.4
Mango	Sedhiou	82.9	100.0	83.3
	Kolda	71.5	--	71.5
	Ziguinchor	80.4	76.8	79.6
Total mango		76.5	77.5	76.6

Table 0.64   Distribution (%) of ICT -adopted households by HOH gender by region and small ruminants

Region	HOH gender		
	Male	Female	Total
Fatick	51.1	66.1	51.6
Kaolack	79.0	79.2	79.0
Kaffrine	58.6	100.0	59.5
Sedhiou	84.6	91.5	84.7
Kolda	62.8	31.2	62.7
Ziguinchor	86.6	39.6	79.1
Matam	49.8	33.4	48.3
Saint-Louis	81.2	78.3	80.8
Total small ruminants	68.9	61.6	68.4

Table 0.65   **Distribution (%) of households by type of equipment used to access ICT by region and horticultural value chain**

Value chain	Region	HOH gender	Service used in ICT				
			Computer	Simple phone	Android phone	iPhone	Television/radio
ATV	Fatick	Male	0.0	11.6	96.1	9.3	0.0
		Female	0.0	100.0	0.0	0.0	0.0
		Total	0.0	14.9	92.6	8.9	0.0
	Kaolack	Male	0.0	87.2	79.8	0.5	1.4
		Woman	0.0	87.9	12.1	0.0	0.0
		Total	0.0	87.3	74.1	0.4	1.3
	Kaffrine	Male	14.0	86.9	83.3	14.0	5.4
		Woman	0.0	100.0	100.0	0.0	0.0
		Total	12.3	88.5	85.4	12.3	4.7
	Sedhiou	Male	0.0	61.6	74.4	1.7	0.0
		Woman	0.0	33.5	100.0	0.0	0.0
		Total	0.0	60.9	75.1	1.6	0.0
	Kolda	Male	4.0	76.6	53.1	0.0	0.0
		Woman	0.0	100.0	100.0	0.0	0.0
		Total	4.0	76.7	53.2	0.0	0.0
	Ziguinchor	Male	1.8	29.1	92.9	0.0	4.3
		Woman	0.0	64.1	100.0	0.0	0.0
		Total	1.5	35.8	94.2	0.0	3.5
	Matam	Male	1.4	45.3	68.3	1.9	0.0
		Woman	0.0	20.2	100.0	0.0	0.0
		Total	1.2	41.7	72.7	1.7	0.0
	Saint-Louis	Male	2.6	54.3	77.1	0.0	0.0
		Woman	8.2	52.5	75.2	0.0	0.0
		Total	3.5	54.0	76.8	0.0	0.0
Total ATV		Male	2.6	54.5	78.3	1.2	1.6
		Woman	3.1	59.2	85.7	0.0	0.0
		Total	2.7	55.1	79.2	1.0	1.4
Mango	Sedhiou	Male	2.4	64.3	72.7	0.0	5.3
		Woman	0.0	0.0	100.0	0.0	0.0
		Total	2.3	62.3	73.6	0.0	5.1
	Kolda	Male	0.0	61.3	40.2	0.0	3.3
		Woman	0.0	0.0	0.0	0.0	0.0
		Total	0.0	61.3	40.2	0.0	3.3
	Ziguinchor	Male	10.6	20.2	65.3	5.3	28.5
		Woman	0.0	0.0	100.0	0.0	0.0
		Total	7.9	15.0	74.1	3.9	21.2
Total mango		Male	4.0	47.4	53.9	1.8	12.4
		Woman	0.0	0.0	100	0.0	0.0
		Total	3.6	42.2	59.0	1.6	11.0

Table 0.66   Distribution (%) of households by type of equipment used to access ICT by region and small ruminants

Region	HOH gender	Service used in ICT				
		Computer	Simple phone	Android phone	iPhone	Television/radio
Fatick	Male	15.6	65.1	69.0	1.8	0.0
	Female	0.0	6.3	100.0	0.0	0.0
	Total	15.0	62.7	70.3	1.7	0.0
Kaolack	Male	0.1	52.2	92.9	0.0	1.0
	Female	0.0	95.8	64.8	0.0	0.0
	Total	0.1	54.6	91.4	0.0	0.9
Kaffrine	Male	3.0	62.1	67.9	1.8	3.2
	Female	0.0	86.8	56.6	0.0	0.0
	Total	2.9	63.1	67.5	1.7	3.1
Sedhiou	Male	1.3	70.4	75.8	0.4	0.6
	Female	0.0	8.6	100.0	0.0	0.0
	Total	1.3	69.0	76.4	0.4	0.6
Kolda	Male	2.4	40.3	76.6	0.1	0.0
	Female	0.0	100.0	32.1	0.0	0.0
	Total	2.4	40.5	76.5	0.1	0.0
Ziguinchor	Male	13.8	18.3	84.1	1.4	10.4
	Female	0	17.0	100.0	0.0	0.0
	Total	12.5	18.2	85.6	1.3	9.4
Matam	Male	3.6	26.7	91.1	0.5	0.0
	Female	4.8	29.2	100	0.0	0.0
	Total	3.7	26.9	91.7	0.5	0.0
Saint-Louis	Male	2.6	46.8	83.7	0.7	1.7
	Female	2.2	73.1	74.4	0.0	0.0
	Total	2.5	50.6	82.3	0.6	1.4
Total small ruminants	Male	3.7	47.3	81.5	0.6	1.8
	Female	1.2	61.3	78.9	0.0	0.0
	Total	3.6	48.1	81.3	0.6	1.7
Total small ruminants			46.3		32.4	45.5

Table 0.67   Distribution (%) of households with access to the internet by HOH gender by region and horticultural value chain

Value chain	Region	HOH gender		
		Male	Female	Total
ATV	Fatick	23.9	0.0	22.7
	Kaolack	45.9	12.1	43.4
	Kaffrine	42.0	0.0	38.2
	Sedhiou	49.9	59.5	50.4
	Kolda	22.7	4.3	22.3
	Ziguinchor	64.0	31.4	54.9
	Matam	33.1	45.2	34.4
	Saint-Louis	53.5	36.7	50.0
Total ATV		47.1	32.3	44.6
Mango	Sedhiou	45.1	100.0	46.5
	Kolda	27.7	--	27.7
	Ziguinchor	60.9	76.8	64.5
Total mango		43.2	77.5	46.9

Table 0.68   Distribution (%) of households with internet access by HOH gender by region and small ruminants

Region	HOH gender		
	Male	Female	Total
Fatick	19.7	4.1	19.2
Kaolack	63.7	47.9	62.9
Kaffrine	30.0	13.2	29.6
Sedhiou	55.1	39.1	54.8
Kolda	41.7	10.0	41.6
Ziguinchor	68.2	17.5	60.1
Matam	34.0	18.1	32.6
Saint-Louis	50.6	50.9	50.6
Total small ruminants	46.3	32.4	45.5

Table 0.69   Distribution (%) of households by ICT use in agriculture by region and horticultural value chain

Value chain	Region	HOH gender	Agricultural uses of ICT	Service used in ICT						
				Rain forecast	Access to inputs	Temperature	Remote irrigation	Market price	Amount of rainfall	Cultivation techniques
ATV	Fatick	Male	17.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Female	0.0	--	--	--	--	--	--	--
		Total	17.1	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Kaolack	Male	13.5	85.6	0.0	0.0	0.0	11.6	0.0	2.8
		Woman	0.0	--	--	--	--	--	--	--
		Total	12.5	85.6	0.0	0.0	0.0	11.6	0.0	2.8
	Kaffrine	Male	30.2	32.4	15.2	0.0	0.0	39.8	12.5	0.0
		Woman	0.0	--	--	--	--	--	--	--
		Total	27.5	32.4	15.2	0.0	0.0	39.8	12.5	0.0
	Sedhiou	Male	9.4	53.6	0	46.4	0.0	0.0	0.0	0.0
		Woman	0.0	--	--	--	--	--	--	--
		Total	9.0	53.6	0.0	46.4	0.0	0.0	0.0	0.0

Value chain	Region	HOH gender	Agricultural uses of ICT	Service used in ICT						
				Rain forecast	Access to inputs	Temperature	Remote irrigation	Market price	Amount of rainfall	Cultivation techniques
	Kolda	Male	17.5	71.4	0.0	1.0	0.0	24.3	0.0	3.3
		Woman	0.0	--	--	--	--	--	--	--
		Total	17.1	71.4	0.0	1.0	0.0	24.3	0.0	3.3
	Ziguinchor	Male	12.7	89.4	1.2	4.7	0.0	4.7	0.0	0.0
		Woman	6.4	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	10.9	91.1	1.0	3.9	0.0	3.9	0.0	0.0
	Matam	Male	19.5	7.7	7.9	0.0	0.0	0.0	84.4	0.0
		Woman	13.2	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	18.9	14.3	7.4	0.0	0.0	0.0	78.4	0.0
	Saint-Louis	Male	5.7	19.7	0.0	26.9	0.0	0.0	0.0	53.3
		Woman	1.7	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Total	4.8	25.4	0.0	25.0	0.0	0.0	0.0	49.6
Total ATV		Male	9.8	90.3	0.0	0.0	0.0	3.6	6.1	0.0
		Woman	0.0	--	--	--	--	--	--	--
		Total	8.8	90.3	0.0	0.0	0.0	3.6	6.1	0.0
Mango	Sedhiou	Male	18.2	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Woman	0	--	--	--	--	--	--	--
		Total	17.7	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Kolda	Male	2.6	100.0	0.0	0.0	0.0	0.0	0.0	0.0
		Woman	0.0	--	--	--	--	--	--	--
		Total	2.6	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Ziguinchor	Male	15.7	84.9	0.0	0.0	0.0	5.6	9.5	0.0
		Woman	0.0	--	--	--	--	--	--	--
		Total	12.1	84.9	0.0	0.0	0.0	5.6	9.5	0.0
Total mango		Male	9.8	90.3	0.0	0.0	0.0	3.6	6.1	0.0
		Woman	0.0	--	--	--	--	--	--	--
		Total	8.8	90.3	0.0	0.0	0.0	3.6	6.1	0.0

Table 0.70   Distribution (%) of households by ICT use in agriculture by region and small ruminants

Region	HOH gender	Agricultural uses of ICT	Service used in ICT						
			Rain forecast	Access to inputs	Temperature	Remote Irrigation	Market price	Amount of rainfall	Cultivation techniques
Fatick	Male	5.4	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Female	0.0	--	--	--	--	--	--	--
	Total	5.2	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Kaolack	Male	11.5	92.2	1.3	1.3	0.0	4.9	0.0	0.3
	Female	1.7	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	11.0	92.3	1.3	1.3	0.0	4.8	0.0	0.3
Kaffrine	Male	13.7	51.6	3.4	1.9	0.0	25.1	18.0	0.0
	Female	4.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	13.5	52.0	3.4	1.9	0.0	24.9	17.9	0.0
Sedhiou	Male	12.3	76.4	0.0	3.9	0.0	18.5	1.2	0.0
	Female	0.0	--	--	--	--	--	--	--
	Total	12.1	76.4	0.0	3.9	0.0	18.5	1.2	0.0

Region	HOH gender	Agricultural uses of ICT	Service used in ICT						
			Rain forecast	Access to inputs	Temperature	Remote Irrigation	Market price	Amount of rainfall	Cultivation techniques
Kolda	Male	17.0	75.6	5.8	3.4	0.0	11.5	3.1	0.6
	Female	6.2	0.0	0.0	100.0	0.0	0.0	0.0	0.0
	Total	16.9	75.5	5.8	3.6	0.0	11.5	3.1	0.6
Ziguinchor	Male	21.7	92.1	0.0	2.2	0.0	3.5	2.2	0.0
	Female	8.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	19.5	92.6	0.0	2.1	0.0	3.3	2.1	0.0
Matam	Male	10.1	49.3	3.9	1.6	0.0	0.0	41.0	4.2
	Female	3.8	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	9.5	51.1	3.7	1.5	0.0	0.0	39.6	4.1
Saint-Louis	Male	8.2	51.5	22.1	23.1	0.0	1.4	1.8	0.0
	Female	1.4	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total	7.3	52.8	21.5	22.5	0.0	1.4	1.8	0.0
Total small ruminants	Male	13.0	74.2	4.4	3.9	0.0	9.6	7.2	0.6
	Female	3.6	96.7	0.0	3.3	0.0	0.0	0.0	0.0
	Total	12.5	74.6	4.4	3.9	0.0	9.5	7.1	0.6

Annexe-a.10. Shocks and coping strategies

Table 0.71 Distribution of households having experienced shocks/stress by value chain (%)

Value chain	Region	Too much rain	Too little rain	Land erosion	Loss of land	Sharp increase in the price of food	Theft or destruction of property by someone	Inability to access crop inputs	Disease affecting crops	Pests affecting crops	Crop theft	Inability to access livestock inputs	Disease affecting livestock	Theft of animals by someone	Inability to sell crops, livestock, or other products	Serious illness in the family	Death in the household
Total sample		25.5	36.5	18.2	7.0	76.3	11.7	61.1	24.9	31.7	6.4	23.9	35.1	15.1	30.3	25.8	9.0
Irrigated rice	Matam	29.1	72.1	10.6	0.0	72.4	24.1	53.9	24.5	30.2	14.0	8.3	20.2	9.4	17.7	14.8	19.2
	Saint-Louis	11.6	40.5	5.7	10.4	82.9	11.1	48.5	34.4	47.7	2.1	30.7	26.7	15.9	36.1	25.1	6.5
	Total irrigated rice	17.6	49.6	7.4	7.2	78.7	15.2	49.2	30.4	41.6	5.8	22.9	24.6	13.7	29.7	22.4	10.7
Rainfed rice	Sedhiou	21.7	24.6	24.2	28.1	84.6	6.9	58.2	16.9	34.0	0.0	16.2	43.6	12.2	31.4	37.6	6.0
	Kolda	39.7	48.0	22.3	5.2	78.1	10.5	85.3	30.0	41.8	4.8	14.0	31.4	7.0	29.5	26.7	1.3
	Ziguinchor	24.4	21.6	4.8	3.7	60.5	2.0	25.7	21.0	23.0	0.8	0.6	23.7	4.4	16.4	13.2	17.4
	Total rainfed rice	30.0	37.1	14.3	7.7	76.9	9.1	61.3	22.7	36.3	2.2	11.8	30.9	6.5	21.9	24.7	8.4
Millet	Fatick	46.2	28.1	25.0	0.5	98.9	2.1	69.4	7.1	5.4	1.9	12.5	24.2	12.3	23.0	25.2	5.8
	Kaolack	13.9	36.3	28.7	7.2	95.7	12.8	89.8	22.1	16.4	13.3	38.1	45.8	18.6	23.2	19.3	11.5
	Kaffrine	24.6	44.3	26.3	8.4	75.3	14.6	79.9	18.8	33.1	6.6	48.2	43.7	14.7	38.4	33.9	9.9
	Total Millet	23.7	38.2	24.1	7.6	83.7	13.3	71.6	21.6	25.7	9.6	33.1	42.1	16.8	30.2	26.4	9.7
Corn	Fatick	56.8	23.6	0.0	3.0	100.0	0.0	51.9	8.2	5.2	0.0	6.3	10.3	3.8	14.9	8.8	2.5
	Kaolack	23.6	48.6	40.2	2.1	93.5	24.7	84.7	18.9	15.7	9.4	33.0	63.2	31.5	36.0	28.1	4.3
	Kaffrine	39.1	30.0	34.0	12.4	83.9	25.4	73.7	22.8	34.0	6.7	38.3	52.1	17.8	43.3	23.7	18.3
	Sedhiou	17.8	20.1	28.6	26.7	76.6	10.7	66.6	8.3	24.4	1.1	12.1	49.3	31.8	31.3	39.1	25.0
	Kolda	30.7	30.1	20.0	1.6	61.7	10.3	77.7	35.0	21.1	7.3	23.3	41.3	12.9	38.9	45.4	4.4
	Ziguinchor	0.0	0.0	0.0	8.6	8.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.7	29.3	0.0	0.0
	Total corn	30.2	31.7	23.7	5.5	72.2	13.5	73.1	26.0	21.6	6.5	24.4	43.7	17.5	36.1	36.0	7.8
Total cereal		26.3	37.5	19.8	7.0	78.3	12.6	67.1	24.2	28.8	6.6	24.6	37.9	14.3	30.0	28.3	9.0
Total ATV		21.0	31.3	12.8	7.5	68.7	9.8	40.8	27.7	39.6	4.1	22.0	28.2	16.7	27.8	18.0	8.7

Value chain	Region	Too much rain	Too little rain	Land erosion	Loss of land	Sharp increase in the price of food	Theft or destruction of property by someone	Inability to access crop inputs	Disease affecting crops	Pests affecting crops	Crop theft	Inability to access livestock inputs	Disease affecting livestock	Theft of animals by someone	Inability to sell crops, livestock, or other products	Serious illness in the family	Death in the household
Total mango		41.1	32.6	8.4	9.2	70.2	11.2	47.0	13.6	30.0	6.5	16.4	16.1	21.5	37.6	19.0	11.2
Total livestock		23.5	39.0	19.4	7.3	78.7	12.6	63.6	24.4	32.7	7.1	28.9	42.0	17.3	29.6	25.5	9.0

Table 0.72 Distribution of households experiencing shocks/stress by horticultural value chains (%)

Value chain	Region	Too much rain	Too little rain	Land erosion	Loss of land	Sharp increase in the price of food	Theft or destruction of property by someone	Inability to access crop inputs	Disease affecting crops	Pests affecting crops	Crop theft	Inability to access livestock inputs	Disease affecting livestock	Theft of animals by someone	Inability to sell crops, livestock, or other products	Serious illness in the family	Death in the household
ATV	Fatick	39.8	44.3	10.5	8.4	94.3	5.1	54.8	6.8	6.8	0.0	48.7	55.5	15.1	41.1	13.0	4.3
	Kaolack	33.2	35.2	41.7	14.6	86.6	13.5	87.5	25.0	38.2	9.9	26.5	55.4	13.6	46.5	16.3	19.3
	Kaffrine	28.8	80.2	27.5	19.9	94.0	24.6	94.0	61.3	60.3	19.9	63.7	51.2	32.4	41.9	18.9	22.2
	Sedhiou	11.2	35.3	33.0	25.3	79.5	5.3	57.3	16.1	23.1	2.1	12.9	35.1	19.4	20.9	35.2	9.0
	Kolda	24.4	44.1	25.8	8.3	60.0	5.4	53.5	26.1	36.9	3.5	27.9	45.3	44.5	34.0	26.8	8.5
	Ziguinchor	20.4	9.5	0.6	1.7	61.0	7.8	6.6	23.6	38.2	0.5	3.1	13.3	4.1	8.2	14.3	3.7
	Matam	29.3	36.0	13.3	12.3	71.6	17.0	55.4	14.4	20.1	6.5	33.0	42.3	20.7	18.4	30.1	14.6
	Saint-Louis	13.5	36.6	5.3	3.6	68.2	9.4	42.4	36.9	52.7	4.3	28.7	17.0	12.0	44.7	9.2	7.6
Total ATV		21.0	31.3	12.8	7.5	68.7	9.8	40.8	27.7	39.6	4.1	22.0	28.2	16.7	27.8	18.0	8.7
Mango	Sedhiou	33.2	11.5	26.1	38.4	90.1	7.2	69.6	9.2	45.4	0.0	9.7	28.0	51.7	50.0	26.4	0.0
	Kolda	52.8	39.1	11.1	6.7	69.7	16.7	67.1	6.7	17.9	7.6	34.1	21.2	11.0	65.5	19.5	4.0
	Zig	32.4	32.1	1.4	4.2	65.6	7.1	22.9	21.0	37.1	7.1	1.9	8.5	23.5	9.0	16.8	20.6
Total mango		41.1	32.6	8.4	9.2	70.2	11.2	47.0	13.6	30.0	6.5	16.4	16.1	21.5	37.6	19.0	11.2

Table 0.73   Distribution of households experiencing shocks/stress by small ruminant value chain (%)

Value chain	Region	Too much rain	Too little rain	Land erosion	Loss of land	Sharp increase in the price of food	Theft or destruction of property by someone	Inability to access crop inputs	Disease affecting crops	Pests affecting crops	Crop theft	Inability to access livestock inputs	Disease affecting livestock	Theft of animals by someone	Inability to sell crops, livestock, or other products	Serious illness in the family	Death in the household
Livestock	Fatick	47.7	29.0	15.6	1.7	97.5	1.8	65.8	8.0	5.7	1.4	14.8	23.6	9.5	24.6	19.8	3.8
	Kaolack	17.6	41.9	33.9	6.3	94.6	15.2	88.2	21.8	23.0	14.0	36.7	52.2	23.2	27.1	21.5	12.2
	Kaffrine	26.7	44.8	27.6	9.8	79.9	17.7	79.1	23.7	33.8	6.9	48.2	47.2	17.3	37.2	29.8	12.9
	Sedhiou	18.4	28.9	28.6	25.6	79.9	6.6	57.0	14.7	30.9	0.2	11.4	47.2	20.0	28.4	31.6	10.9
	Kolda	32.0	41.5	21.0	5.7	66.6	13.0	68.2	29.4	32.2	9.4	29.0	51.0	20.3	36.0	33.3	4.6
	Ziguinchor	18.5	11.2	3.0	3.8	60.2	3.4	12.5	29.7	41.5	0.7	3.7	27.2	10.1	7.1	11.3	9.0
	Matam	20.7	51.5	7.2	3.3	83.5	20.1	57.7	15.9	30.6	7.0	20.2	31.2	11.3	16.1	25.1	11.2
	Saint-Louis	11.1	44.7	6.2	7.6	75.0	11.9	49.1	36.7	56.5	4.7	40.8	32.8	16.2	45.2	23.8	7.7
Total Livestock		23.5	39.0	19.4	7.3	78.7	12.6	63.6	24.4	32.7	7.1	28.9	42.0	17.3	29.6	25.5	9.0

Table 0.74 Distribution of household strategies after shock high food price increase by value chain and region (%)

Value chain	Region	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Inactive or unemployed adult members have taken	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusted her children to other households	Practice of off-season cultivation	Other strategy
Total sample		14.3	9.6	6.8	1.8	0.0	22.1	4.4	5.8	.5	.1	2.6	1.5	10.7	2.5	0.5	0.0	0.5	5.5	7.5	0.0	0.4	2.9
Irrigated rice	Matam	28.0	0.0	5.6	0.0	0.0	31.3	0.1	1.6	0.0	0.0	1.1	0.0	14.1	0.8	0.0	0.0	0.0	0.1	10.5	0.0	2.2	4.5
	Saint-Louis	14.0	2.2	5.2	4.2	0.0	46.3	2.8	9.5	0.0	0.0	2.6	2.1	3.9	0.7	0.0	0.3	0.0	2.3	0.7	0.0	2.9	0.2
	Total irrigated rice	17.9	1.5	5.5	2.9	0.0	42.1	2.0	7.1	0.0	0.0	2.1	1.4	6.8	0.7	0.0	0.2	0.0	1.7	4.0	0.0	2.7	1.5
Rainfed rice	Sedhiou	10.2	8.0	11.3	0.6	0.0	44.2	8.6	0.7	0.0	2.0	3.6	0.0	0.7	0.0	3.6	0.0	0.0	4.5	0.8	0.0	0.0	0.9
	Kolda	5.8	23.1	2.2	0.0	0.0	6.7	5.4	2.6	0.0	0.0	0.1	0.0	16.6	0.6	0.5	0.0	0.0	32.4	1.7	0.0	0.0	2.2
	Ziguinchor	33.5	2.0	13.6	0.0	0.0	44.9	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total rainfed rice	16.7	11.4	8.1	0.1	0.0	26.5	5.5	1.2	0.0	0.4	0.7	0.0	7.3	2.4	0.9	0.0	0.0	14.0	3.8	0.0	0.0	1.0
Millet	Fatick	15.4	6.5	11.0	0.0	0.0	8.7	1.2	3.4	0.0	0.0	0.0	0.0	22.2	10.5	0.0	0.0	0.0	0.0	7.7	0.0	0.0	13.3
	Kaolack	14.6	10.2	4.6	3.7	0.0	3.6	1.7	14.3	1.3	0.0	5.9	0.6	14.3	1.4	1.6	0.0	0.0	10.1	5.7	0.0	0.0	6.5
	Kaffrine	17.3	10.7	2.7	0.0	0.0	15.0	1.9	7.5	0.7	0.4	7.6	0.0	15.5	2.0	1.8	0.0	0.0	1.4	10.7	0.0	0.0	4.8
	Total Millet	14.7	9.7	6.0	2.5	0.0	11.9	2.6	8.0	0.7	0.2	4.2	0.2	14.6	2.9	1.0	0.0	0.0	4.6	9.9	0.0	0.0	6.2
Corn	Fatick	29.6	0.4	15.0	0.0	0.0	16.5	0.0	0.0	0.0	0.0	0.0	0.0	24.8	9.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	3.6
	Kaolack	4.0	10.4	2.8	0.0	0.0	0.8	0.0	2.8	1.3	0.0	17.2	0.0	30.2	3.0	0.8	0.0	0.4	7.4	11.9	0.0	0.0	6.9
	Kaffrine	18.5	15.2	0.0	0.0	0.0	20.8	0.0	12.9	0.9	0.0	1.7	0.0	9.7	6.0	1.7	0.0	0.0	7.2	5.5	0.0	0.0	0.0
	Sedhiou	1.5	3.8	11.2	0.0	0.0	39.5	19.7	4.4	0.0	0.0	0.0	0.0	11.1	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0	0.0
	Kolda	9.1	31.5	13.1	0.0	0.0	8.5	3.1	3.6	.3	0.0	0.1	7.2	4.9	3.3	0.0	0.0	0.0	2.5	12.3	0.0	0.0	0.6

Value chain	Region	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Inactive or unemployed adult members have taken	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusted her children to other households	Practice of off-season cultivation	Other strategy
	Ziguinchor	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total corn	10.9	19.1	9.2	0.5	0.0	12.4	3.5	4.3	0.5	0.0	3.7	3.3	12.6	3.7	0.4	0.0	0.1	3.7	9.9	0.0	0.4	1.9
Total cereal		14.5	11.6	7.3	1.5	0.0	18.9	3.4	5.4	.4	.2	3.0	1.1	11.5	2.7	0.7	.0	.0	6.1	7.8	0.0	0.4	3.4
Total ATV		15.5	2.1	6.5	3.6	0.0	36.7	7.5	2.8	1.0	0.0	1.3	3.1	7.3	1.6	0.0	0.0	0.0	3.3	5.2	0.0	0.5	1.9
Total mango		6.0	3.3	4.2	0.0	0.0	36.8	14.7	22.3	.5	0.0	0.0	0.0	7.6	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0
Total livestock		14.8	8.4	6.5	2.2	0.0	20.7	4.6	5.2	0.6	0.1	2.9	.8	10.2	3.0	0.5	0.0	0.6	6.7	8.7	0.0	0.4	3.2

Table 0.75   Distribution of households in post-shock strategies high food price increase by horticultural value chain and region (%)

Value chain	Region	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Adult members (at least 15 years old) who are inactive or unemployed have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusted her children to other households	Practice of off-season cultivation	Other strategy	Total
ATV	Fatick	15.5	0.0	4.5	0.0	0.0	7.2	14.2	6.2	0.0	0.0	0.0	0.0	1.5	41.2	0.0	0.0	0.0	0.0	9.6	0.0	0.0	0.0	100.0
	Kaolack	5.9	0.0	9.9	0.0	0.0	9.5	2.7	6.6	9.1	0.0	4.9	0.0	27.4	1.6	0.0	0.0	0.0	20.8	1.6	0.0	0.0	0.0	100.0
	Kaffrine	8.3	0.0	13.9	0.0	0.0	28.8	4.4	10.2	0.0	0.0	5.6	0.0	15.5	0.0	0.0	0.0	0.0	0.0	13.3	0.0	0.0	0.0	100.0
	Sedhiou	14.7	5.1	7.4	0.4	0.0	38.7	19.3	2.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	1.5	100.0
	Kolda	14.5	5.8	7.6	0.0	0.0	27.9	7.9	6.8	0.0	0.0	0.0	2.3	0.0	2.0	0.0	0.0	0.0	8.3	13.9	0.0	0.6	2.4	100.0
	Zig	3.7	2.1	1.8	0.0	0.0	66.5	11.6	0.0	0.0	0.0	0.0	9.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	100.0
	Matam	57.0	1.2	7.0	0.0	0.0	10.3	7.1	0.0	0.0	0.0	0.0	2.1	0.0	2.3	0.0	0.0	0.0	0.0	8.9	0.0	1.1	3.0	100.0
	Saint-Louis	17.0	1.1	7.6	13.9	0.0	32.7	1.5	1.8	1.1	0.0	2.1	0.0	14.3	0.4	0.0	0.0	0.0	0.2	5.2	0.0	1.1	0.0	100.0
Total ATV		15.5	2.1	6.5	3.6	0.0	36.7	7.5	2.8	1.0	0.0	1.3	3.1	7.3	1.6	0.0	0.0	0.0	3.3	5.2	0.0	0.5	1.9	100.0
Mango	Sedhiou	0.0	4.7	16.3	0.0	0.0	41.0	24.4	0.0	0.0	0.0	0.0	0.0	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
	Kolda	11.7	0.0	3.2	0.0	0.0	7.9	3.2	53.1	1.3	0.0	0.0	0.0	13.2	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0	100.0
	Zig	2.5	6.0	1.1	0.0	0.0	63.4	22.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0	100.0
Total mango		6.0	3.3	4.2	0.0	0.0	36.8	14.7	22.3	0.5	0.0	0.0	0.0	7.6	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	100.0

Table 0.76   Distribution of households in post-shock strategies high food price increase by livestock value chain and region (%)

Value chain	Region	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Inactive or unemployed adult members have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusted her children to other households	Practice of off-season cultivation	Other strategy	Total
	Fatick	18.9	4.8	10.7	0.0	0.0	11.0	1.8	2.9	0.0	0.0	0.0	0.0	20.9	13.3	0.0	0.0	0.0	.3	4.9	0.0	0.0	10.6	100.0
	Kaolack	10.4	9.8	4.4	2.5	0.0	3.4	1.6	10.0	2.0	0.0	7.5	.4	19.6	1.5	0.7	0.0	2.5	11.2	6.8	0.0	0.0	5.8	100.0
	Kaffrine	16.8	10.2	2.3	0.0	0.0	19.2	1.7	9.6	0.7	0.2	5.1	0.0	13.6	2.9	1.7	0.0	0.0	2.9	10.2	0.0	0.0	2.7	100.0
	Sedhiou	7.6	9.1	9.6	0.4	0.0	38.8	14.4	2.0	0.0	1.0	1.9	0.0	5.3	0.0	1.9	0.0	0.0	4.3	2.9	0.0	0.0	0.9	100.0
	Kolda	11.3	17.5	9.7	0.7	0.0	12.9	5.4	3.7	0.2	0.0	0.1	2.6	1.9	3.1	0.2	0.0	0.0	17.2	11.7	0.0	0.0	1.7	100.0
	Zig	14.6	3.4	2.1	0.0	0.0	60.5	16.7	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.3	100.0
	Matam	31.0	.7	8.7	0.2	0.0	21.5	3.1	0.6	0.0	0.0	0.3	0.5	4.7	4.5	0.0	0.0	0.0	.2	20.2	0.0	1.2	2.5	100.0
Livestock	Saint-Louis	12.3	2.2	5.2	11.7	0.0	38.3	2.3	4.7	0.0	0.0	2.8	1.3	9.2	.6	0.0	0.2	0.0	1.6	5.2	0.0	2.3	0.0	100.0
Livestock		14.8	8.4	6.5	2.2	0.0	20.7	4.6	5.2	0.6	0.1	2.9	0.8	10.2	3.0	0.5	0.0	0.6	6.7	8.7	0.0	0.4	3.2	100.0

Table 0.77 Distribution of households after inability to access inputs by value chain and region (%)

Value chain	Region	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Inactive or unemployed adult members have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/ houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrust your children to other households	Practice of off-season cultivation	Other strategy
Total sample		42.2	8.3	6.9	1.3	.7	1.6	1.1	3.1	0.1	0.0	0.8	0.1	14.9	1.0	0.6	0.0	0.3	4.8	8.2	0.0	0.1	3.7
Irrigated rice	Matam	47.0	1.2	4.4	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	2.0	22.6	0.0	1.1	19.1
	Saint-Louis	30.2	0.8	20.0	11.7	0.0	2.4	0.6	5.4	0.0	0.0	0.0	0.0	14.2	0.0	0.0	0.0	0.0	0.5	14.2	0.0	0.0	0.0
	Total irrigated rice	36.3	0.9	14.5	7.6	0.0	1.6	0.4	4.2	0.0	0.0	0.0	0.0	9.3	0.0	0.0	0.0	0.0	1.0	17.1	0.0	0.4	6.6
Rainfed rice	Sedhiou	72.6	1.1	5.6	.9	0.0	2.7	12.8	0.0	0.0	0.0	0.0	0.9	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
	Kolda	67.8	17.9	5.0	1.5	0.0	2.1	1.7	1.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0
	Ziguinchor	67.4	0.0	30.7	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total rainfed rice	62.8	10.1	7.5	1.1	2.5	1.6	3.2	0.5	0.0	0.0	0.0	0.1	9.6	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.0	0.1
Millet	Fatick	43.5	10.2	0.7	0.7	0.0	0.0	0.0	3.4	0.0	0.0	0.0	0.0	25.4	4.0	0.0	0.0	0.0	0.0	11.5	0.0	0.0	0.5
	Kaolack	20.9	9.5	0.9	0.3	0.6	0.1	0.0	7.9	0.0	0.1	2.2	0.0	24.2	0.4	1.8	0.0	0.0	23.0	5.5	0.0	0.0	2.5
	Kaffrine	52.8	6.2	0.0	0.0	0.0	1.4	2.8	1.8	0.7	0.0	2.4	0.0	13.5	0.0	3.4	0.0	0.0	0.6	8.9	0.0	0.0	5.6
	Total Millet	34.5	8.7	1.9	1.1	0.2	0.5	0.9	5.2	0.3	0.1	1.6	0.2	19.5	0.9	1.7	0.0	0.0	10.2	9.4	0.0	0.0	3.0
Corn	Fatick	43.7	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1	3.5	0.0	0.0	0.0	0.0	29.0	0.0	0.0	0.0
	Kaolack	28.8	6.9	.5	0.0	0.0	1.5	0.0	1.3	0.0	0.0	2.8	0.0	17.3	0.9	0.6	0.0	0.0	25.4	9.3	0.0	0.0	4.8
	Kaffrine	34.6	7.3	0.0	0.0	0.0	0.0	4.9	17.8	0.0	0.0	1.8	0.0	8.7	3.3	0.0	0.0	0.0	4.2	8.4	0.0	0.0	8.8
	Sedhiou	53.1	0.0	17.2	0.0	0.0	3.7	4.9	0.0	0.0	0.0	0.0	0.0	9.8	0.0	0.0	0.0	10.3	0.0	1.0	0.0	0.0	0.0
	Kolda	48.7	18.6	16.8	0.0	0.0	1.2	0.0	1.1	0.0	0.0	0.0	0.0	2.4	0.5	0.0	0.0	0.0	0.4	7.0	0.0	0.0	3.3
	Total	43.2	12.8	11.2	0.2	0.3	1.2	1.1	3.0	0.0	0.0	0.7	0.0	7.1	1.0	0.1	0.0	0.8	5.3	8.2	0.0	0.0	3.8
Corn		43.2	9.6	7.1	1.4	.7	1.1	1.4	3.5	0.1	0.0	0.9	0.1	12.7	0.6	0.7	0.0	0.3	5.8	7.9	0.0	0.0	3.0

Value chain	Region	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Inactive or unemployed adult members have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrust your children to other households	Practice of off-season cultivation	Other strategy
Total ATV		41.5	2.6	7.1	1.5	0.0	4.1	0.0	2.3	0.0	0.0	0.9	0.0	14.4	2.9	0.0	0.0	0.0	1.2	11.9	0.0	0.5	9.0
Total mango		37.4	5.7	15.5	0.0	0.0	2.5	0.6	0.0	0.0	0.0	0.0	0.0	34.6	0.0	0.0	0.0	1.1	0.0	1.3	0.0	0.0	1.3
Total livestock		40.8	8.0	5.1	1.6	.8	1.7	1.2	3.2	0.1	0.0	0.7	0.1	15.2	0.9	0.7	0.0	0.4	5.7	9.6	0.0	0.1	4.2

Table 0.78   Distribution of households after shock inability to access inputs by horticultural value chain and region (%)

Value chain	Region	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Adult members (at least 15 years old) who are inactive or unemployed have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusting children to other households	Practice of off-season cultivation	Other strategy
ATV	Fatick	18.8	13.1	0.0	0.0	0.0	10.4	0.0	0.0	0.0	0.0	0.0	0.0	7.9	20.0	0.0	0.0	0.0	0.0	13.3	0.0	0.0	16.6
	Kaolack	37.3	2.5	0.0	0.0	0.0	12.4	0.0	6.2	0.0	0.0	2.1	0.0	20.5	0.0	0.0	0.0	0.0	4.5	11.4	0.0	0.0	3.2
	Kaffrine	46.5	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	41.0
	Sedhiou	64.3	0.0	5.9	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	11.9	5.9	0.0	0.0	0.0	0.0	10.4	0.0	0.0	0.0
	Kolda	44.9	1.1	2.4	0.0	0.0	7.6	0.0	5.3	0.0	0.0	0.0	0.0	2.0	2.3	0.0	0.0	0.0	2.2	13.2	0.0	2.8	16.1
	Ziguinchor	27.5	0.0	68.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9
	Matam	46.1	1.5	10.8	1.4	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	1.0	35.5	0.0	0.0	2.5

Value chain	Region	Post-shock strategy-Inability to access crop inputs																					
		No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Adult members (at least 15 years old) who are inactive or unemployed have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusting children to other households	Practice of off-season cultivation	Other strategy
	Saint-Louis	33.9	5.8	4.8	4.8	0.0	2.3	0.0	0.4	0.0	0.0	0.0	0.0	36.4	5.7	0.0	0.0	0.0	0.0	5.3	0.0	0.0	0.6
Total ATV		41.5	2.6	7.1	1.5	0.0	4.1	0.0	2.3	0.0	0.0	0.9	0.0	14.4	2.9	0.0	0.0	0.0	1.2	11.9	0.0	0.5	9.0
	Sedhiou	49.3	0.0	41.3	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0	0.0	0.0
	Kolda	11.8	9.5	13.9	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	57.4	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	2.2
	Ziguinchor	96.9	0.0	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mango	Total Mango	37.4	5.7	15.5	0.0	0.0	2.5	0.6	0.0	0.0	0.0	0.0	0.0	34.6	0.0	0.0	0.0	1.1	0.0	1.3	0.0	0.0	1.3

Table 0.79 Distribution of households after inability to access inputs by livestock value chain and region (%)

Value chain	Region	Post-shock strategy-Inability to access crop inputs																					
		No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Adult members (at least 15 years old) who are inactive or unemployed have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusting children to other households	Practice of off-season cultivation	Other strategy
	Fatick	41.3	9.4	2.2	0.6	0.0	.6	0.0	2.0	0.0	0.0	0.0	0.0	22.6	5.4	0.0	0.0	0.0	0.0	15.4	0.0	0.0	0.7
Livestock	Kaolack	23.9	8.0	0.6	0.2	1.2	1.6	0.0	5.7	0.0	0.1	1.6	0.0	25.2	.5	1.3	0.0	0.0	20.2	7.0	0.0	0.0	2.8

Value chain	Region	Post-shock strategy-Inability to access crop inputs																					
		No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Adult members (at least 15 years old) who are inactive or unemployed have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusting children to other households	Practice of off-season cultivation	Other strategy
	Kaffrine	48.2	5.2	0.0	0.0	0.0	1.0	3.2	5.6	0.5	0.0	1.7	0.0	9.8	.8	2.5	0.0	0.0	1.5	8.8	0.0	0.0	11.2
	Sedhiou	64.0	0.5	10.2	0.5	0.0	1.8	6.9	0.0	0.0	0.0	0.0	2.0	4.5	1.5	0.0	0.0	4.8	0.0	3.0	0.0	0.0	0.4
	Kolda	48.7	16.8	8.4	1.4	0.0	3.3	0.8	2.7	0.0	0.0	0.0	0.0	3.4	.8	0.0	0.0	0.0	0.6	8.8	0.0	0.4	3.9
	Zig	82.3	0.0	15.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9
	Matam	40.9	0.5	5.5	0.3	5.2	0.0	0.1	0.7	0.0	0.0	0.0	0.0	16.9	0.0	0.0	0.0	0.6	0.4	22.1	0.0	0.3	6.5
	Saint-Louis	31.5	3.2	13.1	10.9	0.0	1.5	0.3	0.2	0.0	0.0	0.0	0.0	29.2	0.0	0.0	0.0	0.0	0.3	9.5	0.0	0.0	0.3
Livestock		40.8	8.0	5.1	1.6	0.8	1.7	1.2	3.2	0.1	0.0	0.7	0.1	15.2	0.9	0.7	0.0	0.4	5.7	9.6	0.0	0.1	4.2

Table 0.80   Distribution of households after rainfall rarity shock by value chain and region (%)

		No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Inactive or unemployed adult members have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrust your children to other households	Practice of off-season cultivation	Other strategy
	Total sample	51.1	1.9	5.2	0.0	0.7	8.7	1.4	4.0	0.4	0.0	2.7	0.1	6.7	0.2	0.6	0.1	0.0	3.3	8.0	0.0	2.3	2.5
Irrigated rice	Matam	48.5	0.0	20.8	0.0	13.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.6	0.0	0.0	0.0	0.0	0.0	13.9	0.0	3.0	0.0
	Saint-Louis	51.0	0.0	2.8	0.0	0.0	12.0	0.3	2.3	0.0	0.0	0.3	0.0	5.4	0.0	0.0	0.0	0.0	1.7	3.0	0.0	11.5	9.6
	Total irrigated rice	49.8	0.0	11.1	0.0	6.1	6.4	0.2	1.2	0.0	0.0	0.2	0.0	3.2	0.0	0.0	0.0	0.0	0.9	8.0	0.0	7.5	5.2
Rainfed rice	Sedhiou	37.5	4.0	10.2	2.1	0.0	1.8	0.0	15.6	2.5	0.0	0.0	0.0	10.6	0.0	0.0	0.0	0.0	0.0	12.5	0.0	3.1	0.0
	Kolda	82.4	2.1	1.3	0.0	0.0	3.6	0.9	1.3	0.0	0.0	0.0	0.5	2.7	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	3.7
	Ziguinchor	85.2	0.0	0.0	0.0	0.0	12.5	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total rainfed rice	81.4	1.5	1.8	0.2	0.0	4.2	0.9	2.4	0.3	0.0	0.0	0.3	2.5	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.6	1.9
Millet	Fatick	50.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	0.0	0.0	0.0	0.0	0.0	19.0	0.0	0.0	0.0
	Kaolack	44.2	0.0	3.5	0.0	0.0	1.3	3.7	12.1	1.0	0.0	4.2	0.0	8.1	0.0	0.0	0.0	0.0	20.8	0.7	0.0	0.0	.4
	Kaffrine	28.1	5.8	1.0	0.0	0.0	9.6	1.3	10.2	0.6	0.0	16.2	0.0	15.7	0.0	3.1	0.0	0.0	2.9	5.7	0.0	0.0	0.0
	Total Millet	36.8	2.5	2.8	0.0	0.0	6.8	1.8	7.2	0.5	0.0	6.1	0.0	12.6	0.0	0.9	0.0	0.0	7.7	10.7	0.0	1.9	1.7
Corn	Fatick	29.5	0.0	63.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6
	Kaolack	38.8	0.0	21.2	0.0	0.0	0.0	0.0	0.9	0.0	0.0	8.9	0.0	9.5	0.0	.8	0.0	0.0	15.9	0.0	0.0	0.0	4.1
	Kaffrine	32.9	1.2	2.4	0.0	0.0	12.1	0.0	8.9	5.2	0.0	4.7	0.0	0.0	0.0	4.7	0.0	0.0	0.0	27.9	0.0	0.0	0.0
	Sedhiou	41.9	0.0	3.4	0.0	0.0	4.7	0.0	2.3	2.3	2.3	0.0	0.0	30.3	0.0	0.0	0.0	0.0	0.0	10.5	0.0	0.0	2.3
	Kolda	58.8	1.6	0.6	0.0	0.0	12.5	1.6	1.3	0.7	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	2.7	10.5	0.0	1.1	4.4
	Total	47.8	1.0	8.6	0.0	0.0	8.5	0.8	2.0	1.1	0.1	2.6	0.0	6.2	0.2	0.7	0.0	0.0	5.1	10.4	0.0	1.2	3.7

	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Inactive or unemployed adult members have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrust your children to other households	Practice of off-season cultivation	Other strategy
Cereals	51.5	1.5	5.3	0.1	1.0	6.6	1.1	3.9	0.5	0.0	3.0	0.1	7.3	0.0	0.5	0.0	0.0	4.3	8.3	0.0	2.3	2.8
Total ATV	43.5	3.9	5.7	0.0	0.0	16.2	0.1	5.4	0.0	0.0	2.5	0.0	6.2	.6	1.4	0.5	0.0	.2	8.8	0.0	2.8	2.3
Total mango	48.4	0.0	1.6	0.0	0.0	23.2	11.9	0.0	0.5	0.0	0.0	1.4	4.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	5.4
Total livestock	49.2	1.9	5.6	0.0	0.0	8.2	1.5	4.6	0.4	0.0	2.8	0.0	6.6	0.2	0.8	0.1	0.0	3.9	9.1	0.0	2.3	2.8

Table 0.81 Distribution of households after rainfall shock by horticultural value chains and by region (%)

Value chain	Region	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Adult members (at least 15 years old) who are inactive or unemployed have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusting children to other households	Practice of off-season cultivation	Other strategy
ATV	Fatick	90.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0	0.0	0.0	0.0
	Kaolack	29.1	0.0	0.0	0.0	0.0	6.5	0.0	2.4	0.0	0.0	8.6	0.0	45.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0
	Kaffrine	32.0	0.0	16.3	0.0	0.0	11.1	0.0	7.2	0.0	0.0	11.8	0.0	0.0	5.2	11.1	0.0	0.0	0.0	5.2	0.0	0.0	0.0
	Sedhiou	37.7	3.4	5.4	0.0	0.0	32.3	0.0	16.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	3.4	0.0
	Kolda	48.8	4.4	4.4	0.0	0.0	5.8	0.0	12.6	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	11.4	0.0	1.7	6.1
	Ziguinchor	25.0	0.0	9.4	0.0	0.0	65.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Matam	62.4	3.7	5.9	0.0	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0	11.3	0.0	3.0	0.6
	Saint-Louis	44.6	7.6	2.9	0.0	0.0	14.0	0.4	2.1	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0	0.0	0.0	14.7	0.0	4.4	3.3
Total ATV		43.5	3.9	5.7	0.0	0.0	16.2	0.1	5.4	0.0	0.0	2.5	0.0	6.2	0.6	1.4	0.5	0.0	0.2	8.8	0.0	2.8	2.3
Mango	Sedhiou	0.0	0.0	0.0	0.0	0.0	65.2	0.0	0.0	11.7	0.0	0.0	0.0	23.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Kolda	48.5	0.0	0.0	0.0	0.0	4.2	23.6	0.0	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	10.7
	Ziguinchor	52.7	0.0	3.6	0.0	0.0	40.6	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Mango		48.4	0.0	1.6	0.0	0.0	23.2	11.9	0.0	.5	0.0	0.0	1.4	4.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	5.4

Table 0.82   Distribution of households after rainfall rarity shock by livestock value chain and by region (%)

Value chain	Region	No strategy	Using your savings	Help from relatives or friends	Government/State Assistance	Help from religious organizations or NGOs	Changing consumer habits	Purchase of cheaper food	Employed household members took additional jobs	Inactive or unemployed adult members have taken jobs	Children under 15 years of age were brought to work	Migration of household members	Reduction in health/education spending	Obtaining credit	Sale of agricultural assets	Sale of household durables	Sale of land/buildings/houses	Lease/pledge your land	Sale of food stock	Sale of livestock	Entrusting children to other households	Practice of off-season cultivation	Other strategy
	Fatick	49.7	0.0	13.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8	0.0	0.0	0.0	0.0	1.0	13.3	0.0	0.0	1.0
	Kaolack	48.5	0.0	7.8	0.0	0.0	1.3	2.1	7.2	.6	0.0	5.4	0.0	8.9	0.0	0.2	0.0	0.0	15.8	0.4	0.0	0.6	1.3
	Kaffrine	28.0	3.9	3.9	0.0	0.0	11.1	0.0	10.2	1.4	0.0	12.3	0.0	11.0	1.0	5.2	0.0	0.0	2.0	10.0	0.0	0.0	0.0
	Sedhiou	37.5	5.7	5.6	0.9	0.0	16.1	0.0	12.8	0.5	0.5	0.0	0.0	10.2	0.0	0.0	0.0	0.0	0.0	8.6	0.0	1.1	0.5
	Kolda	62.6	1.5	1.9	0.0	0.0	7.3	3.6	3.2	0.3	0.0	0.0	0.0	1.2	0.0	0.0	0.5	0.0	1.3	9.1	0.0	0.8	6.6
	Zig	29.8	0.0	11.0	0.0	0.0	56.1	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Matam	63.9	0.7	10.9	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.3	0.0	0.0	0.0	0.0	17.2	0.0	2.2	0.4
Livestock	Saint-Louis	41.4	4.0	2.1	0.0	0.0	12.9	0.8	1.9	0.0	0.0	0.2	0.0	7.6	0.0	0.0	0.0	0.0	0.9	12.6	0.0	10.5	5.3
Livestock		49.2	1.9	5.6	0.0	0.0	8.2	1.5	4.6	.4	0.0	2.8	0.0	6.6	0.2	0.8	0.1	0.0	3.9	9.1	0.0	2.3	2.8

Table 0.83   Percentage of producers with agricultural insurance by value chain and region (%)

Value chain	Region	Producer gender		
		Male	**Female**	**Together**
ATV	Fatick	5.7	20.6	17.3
	Kaolack	0.0	0.0	0.0
	Kaffrine	3.2	0.0	1.1
	Sedhiou	0.0	0.0	0.0
	Kolda	10.2	0.0	1.7
	Ziguinchor	1.1	0.7	0.8
	Matam	0.0	1.7	1.1
	Saint-Louis	50.0	10.5	33.9
	Total ATV	19.2	2.1	7.5

Table 0.84   Distribution (%) of insured area by insurer by horticultural value chain and region

Value chain	Region	Share of insured area	Distribution of insured area by insurer			
			Individually	**Network**	**WFP**	**Other**
ATV	Fatick	2.6	93.3	0.0	6.7	0.0
	Kaolack	0.0				
	Kaffrine	3.9	100.0	0.0	0.0	0.0
	Sedhiou	0.0	100.0	0.0	0.0	0.0
	Kolda	1.9	26.0	61.0	0.0	13.0
	Ziguinchor	0.1	38.5	13.7	46.2	1.6
	Matam	0.0	0.0	0.0	0.0	100.0
	Saint-Louis	4.4	28.2	71.5	0.3	0.0
	Total ATV	1.4	36.7	59.6	2.2	1.5

Annexe-a.12. Women's empowerment

Table 0.85 Women's empowerment index in the five areas by value chain and region

Value Chain	Region	Empowerment of women in the five areas
Dooleel Mbay area		0.52
Irrigated rice	Matam	0.47
	Saint-Louis	0.52
	Total irrigated rice	0.50
Rainfed rice	Sedhiou	0.48
	Kolda	0.46
	Ziguinchor	0.55
	Total rainfed rice	0.50
Millet	Fatick	0.71
	Kaolack	0.58
	Kaffrine	0.47
	Total Millet	0.54
Corn	Fatick	0.76
	Kaolack	0.56
	Kaffrine	0.52
	Sedhiou	0.41
	Kolda	0.38
	Ziguinchor	0.32
	Total corn	0.46
Total cereals		0.50
Total ATV		0.60
Total mango		0.56
Total small ruminants		0.57

Table 0.86   Women's empowerment index in the five areas by horticulture and small ruminant value chain and region

Value Chain	Region	Empowerment of women in the five areas
Total ATV	Fatick	0.55
	Kaolack	0.81
	Kaffrine	0.76
	Sedhiou	0.58
	Kolda	0.62
	Ziguinchor	0.55
	Matam	0.55
	Saint-Louis	0.60
	Total ATV	0.60
Total mango	Sedhiou	0.47
	Kolda	0.46
	Ziguinchor	0.52
	Total Mango	0.56
Livestock	Fatick	0.72
	Kaolack	0.61
	Kaffrine	0.53
	Sedhiou	0.50
	Kolda	0.54
	Ziguinchor	0.61
	Matam	0.51
	Saint-Louis	0.60
	Total livestock	0.57

APPENDIX B: SUMMARY TABLES OF BASELINE INDICATORS

Table 0.87   Prevalence of poverty: percentage of people living on less than $1.90/day in 2014 PPP (Indicator 1)

Value chain	Region	HOH gender								
		Male			**Female**			**Total**		
		M&F	**FNM**	**Together**	**M&F**	**FNM**	**Together**	**M&F**	**FNM**	**Together**
Dooleel Mbay area		50.2	--	50.2	46.2	64.3	49.4	50.0	64.3	50.2
Irrigated rice	Matam	18.0	--	18.0	8.9	--	8.9	17.8	--	17.8
	Saint-Louis	42.6	--	42.6	50.2	74.5	51.4	43.3	74.5	43.4
	Total	35.2		35.2	45.8	74.5	47.1	35.9	74.5	36.0
Rainfed rice	Sedhiou	41.2	--	41.2	63.3	100.0	75.5	42.0	100.0	43.0
	Kolda	57.9	--	57.9	22.5	0.0	19.8	57.7	0.0	57.7
	Ziguinchor	63.0	--	63.0	53.2	93.3	64.9	60.8	93.3	63.6
	Total	53.2%		53.2	46.5	91.9	63.3	52.7	91.9	54.5
Millet	Fatick	53.4	--	53.4	74.4	--	74.4	53.6	--	53.6
	Kaolack	45.1	--	45.1	10.1	36.9	12.1	43.1	36.9	43.1
	Kaffrine	55.8	--	55.8	9.1	--	9.1	54.4	--	54.4
	Total	51.3		51.3	22.8	36.9	23.4	50.3	36.9	50.3
Corn	Fatick	75.1	--	75.1	0.0	--	0.0	68.9	--	68.9
	Kaolack	49.3	--	49.3	0.0	0.0	0.0	48.1	0.0	47.8
	Kaffrine	70.1	--	70.1	0.0	--	0.0	69.8	--	69.8
	Sedhiou	48.8	--	48.8	--	--	--	48.8	--	48.8
	Kolda	57.9	--	57.9	100.0	0.0	48.0	58.0	0.0	57.8
	Ziguinchor	50.0	--	50.0	--	--	--	50.0	--	50.0
	Total	56.8		56.8	46.3	38.3	44.5	56.6	38.3	56.6
Total cereals		51.4	--	51.4	39.6	82.9	49.6	50.9	82.9	51.3
ATV	Fatick	40.8	--	40.8	100.0	100.0	100.0	42.8	100.0	43.6
	Kaolack	38.4	--	38.4	0.0	--	0.0	35.7	--	35.7
	Kaffrine	60.5	--	60.5	--	0.0	0.0	60.5	0.0	55.1
	Sedhiou	54.2	--	54.2	26.6	--	26.6	53.0	--	53.0
	Kolda	73.2	--	73.2	67.4	100.0	68.8	73.1	100.0	73.1
	Ziguinchor	42.6	--	42.6	62.5	100.0	64.1	48.0	100.0	48.6
	Matam	27.1	--	27.1	70.9	0.0	45.9	30.1	0.0	29.0
	Saint-Louis	35.4	--	35.4	37.6	12.4	33.5	35.8	12.4	35.0
Total ATV		45.7	--	45.7	52.7	24.6	49.3	46.8	24.6	46.3
Mango	Sedhiou	32.3	--	32.3	0.0	--	0.0	31.5	--	31.5
	Kolda	65.9	--	65.9	--	--	--	65.9	--	65.9
	Ziguinchor	45.9	--	45.9	88.1	100.0	97.0	48.8	100.0	57.5
Total mango		53.7	--	53.7	78.9	100.0	94.2	54.5	100.0	58.1
Small ruminants	Fatick	57.9	--	57.9	27.0	--	27.0	56.9	--	56.9
	Kaolack	43.8	--	43.8	7.7	24.2	9.1	42.0	24.2	42.0
	Kaffrine	60.9	--	60.9	15.4	0.0	8.7	60.3	0.0	59.8
	Sedhiou	46.8	--	46.8	27.9	100.0	59.6	46.6	100.0	47.1
	Kolda	59.3	--	59.3	70.6	13.7	54.7	59.3	13.7	59.2
	Ziguinchor	63.6	--	63.6	35.4	--	35.4	59.1	--	59.1
	Matam	27.9	--	27.9	55.5	71.2	63.2	29.2	71.2	31.1
	Saint-Louis	38.7	--	38.7	51.6	16.8	47.7	40.3	16.8	40.0
Total small ruminants		50.2	--	50.2	37.2	47.0	38.8	49.5	47.0	49.5

Table 0.88   Poverty level: average percentage of deficit relative to the poverty line of $1.90/day PPP 2014 (Indicator 2)

Value chain	Region	HOH gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
Dooleel Mbay area		-37.0	--	-37.0	-33.6	-29.5	-32.9	-36.9	-29.5	-36.8
Irrigated rice	Matam	-31.7	--	-31.7	-19.6	--	-19.6	-31.6	--	-31.6
	Saint-Louis	-28.5	--	-28.5	-19.4	-23.5	-19.6	-27.6	-23.5	-27.6
	Total	-29.9	--	-29.9	-19.4	-23.5	-19.6	-29.0	-23.5	-29.0
Rainfed rice	Sedhiou	-41.6	--	-41.6	-66.8	-35.7	-57.2	-42.5	-35.7	-42.4
	Kolda	-49.7	--	-49.7	-31.1	--	-31.1	-49.6	--	-49.6
	Ziguinchor	-34.8	--	-34.8	-51.8	-23.1	-40.3	-36.8	-23.1	-35.8
	Total	-43.3	--	-43.3	-53.9	-27.5	-37.8	-43.7	-27.5	-42.8
Millet	Fatick	-32.3	--	-32.3	-39.7	--	-39.7	-32.4	--	-32.4
	Kaolack	-24.8	--	-24.8	-44.9	-19.6	-43.7	-25.2	-19.6	-25.2
	Kaffrine	-32.4	--	-32.4	-13.9	--	-13.9	-32.3	--	-32.3
	Total	-33.4	--	-33.4	-46.0	-19.6	-45.4	-33.6	-19.6	-33.6
Cornt	Fatick	-39.1	--	-39.1	--	--	--	-39.1	--	-39.1
	Kaolack	-20.4	--	-20.4	--	--	--	-20.4	--	-20.4
	Kaffrine	-39.8	--	-39.8	--	--	--	-39.8	--	-39.8
	Sedhiou	-49.3	--	-49.3	--	--	--	-49.3	--	-49.3
	Kolda	-50.0	--	-50.0	-32.5	--	-32.5	-49.9	--	-49.9
	Ziguinchor	-23.7	--	-23.7	--	--	--	-23.7	--	-23.7
	Total	-41.4	--	-41.4	-30.2	-38.8	-32.1	-41.3	-38.8	-41.3
Total cereals		-37.6	--	--	-38.4	-28.1	-34.8	-37.7	-28.1	-37.5
ATV	Fatick	-36.6	--	-36.6	-29.9	-3.6	-25.7	-36.2	-3.6	-35.8
	Kaolack	-25.0	--	-25.0	--	--	--	-25.0	--	-25.0
	Kaffrine	-25.2	--	-25.2	--	--	--	-25.2	--	-25.2
	Sedhiou	-53.9	--	-53.9	-62.9	--	-62.9	-54.1	--	-54.1
	Kolda	-41.7	--	-41.7	-64.8	-52.8	-63.9	-42.1	-52.8	-42.1
	Ziguinchor	-37.0	--	-37.0	-19.7	-27.7	-19.9	-31.6	-27.7	-31.5
	Matam	-26.8	--	-26.8	-31.5	--	-31.5	-27.6	--	-27.6
	Saint-Louis	-33.2	--	-33.2	-55.4	-77.6	-56.3	-37.5	-77.6	-37.9
Total ATV		-36.4	--	-36.4	-30.6	-44.0	-31.1	-35.5	-44.0	-35.5
Mango	Sedhiou	-44.2	--	-44.2	--	--	--	-44.2	--	-44.2
	Kolda	-29.5	--	-29.5	--	--	--	-29.5	--	-29.5
	Ziguinchor	-33.2	--	-33.2	-26.0	-23.2	-24.0	-32.4	-23.2	-30.6
Total mango		-33.5	--	-33.5	-26.0	-23.2	-24.0	-33.3	-23.2	-32.6
Small ruminants	Fatick	-32.9	--	-32.9	-36.6	--	-36.6	-32.9	--	-32.9
	Kaolack	-24.3	--	-24.3	-44.9	-19.6	-43.7	-24.6	-19.6	-24.6
	Kaffrine	-34.1	--	-34.1	-13.9	--	-13.9	-34.1	--	-34.1
	Sedhiou	-48.9	--	-48.9	-62.9	-35.7	-48.8	-49.0	-35.7	-48.9
	Kolda	-45.2	--	-45.2	-32.3	-52.8	-34.2	-45.1	-52.8	-45.1
	Ziguinchor	-33.2	--	-33.2	-30.4	--	-30.4	-32.9	--	-32.9
	Matam	-35.4	--	-35.4	-41.6	-29.7	-34.9	-35.9	-29.7	-35.3
	Saint-Louis	-31.0	--	-31.0	-40.3	-39.9	-40.2	-32.5	-39.9	-32.5
Total small ruminants		-35.4	--	-35.4	-38.3	-30.6	-36.9	-35.5	-30.6	-35.4

Table 0.89   Average consumption deficit (in CFAF) of the poor (Indicator 3)

Value chain	Region	HOH gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
Dooleel Mbay area		-193	--	-193	-180	-146	-172	-192	-146	-192
Irrigated rice	Matam	-168	--	-168	-102	--	-102	-168	--	-168
	Saint-Louis	-147	--	-147	-88	-122	-90	-141	-122	-141
	Total	-154		-154	-88	-122	-90	-149	-122	-149
Rainfed rice	Sedhiou	-192	--	-192	-298	-185	-249	-198	-185	-197
	Kolda	-263	--	-263	-161	--	-161	-263	--	-263
	Ziguinchor	-192	--	-192	-265	-120	-204	-206	-120	-195
	Total	-226		-226	-268	-137	-198	-229	-137	-222
Millet	Fatick	-195	--	-195	-206	--	-206	-195	--	-195
	Kaolack	-119	--	-119	-240	-102	-208	-121	-102	-121
	Kaffrine	-168	--	-168	-72	--	-72	-168	--	-168
	Total	-179		-179	-235	-102	-225	-179	-102	-179
Corn	Fatick	-197	--	-197	--	--	--	-197	--	-197
	Kaolack	-99	--	-99	--	--	--	-99	--	-99
	Kaffrine	-196	--	-196	--	--	--	-196	--	-196
	Sedhiou	-250	--	-250	--	--	--	-250	--	-250
	Kolda	-252	--	-252	-173	--	-173	-251	--	-251
	Ziguinchor	-107	--	-107	--	--	--	-107	--	-107
	Total	-218		-218	-165	-201	-172	-217	-201	-217
Total cereals		-200	--	-200	-210	-139	-183	-200	-139	-199
ATV	Fatick	-196	--	-196	-155	-18	-115	-193	-18	-187
	Kaolack	-118	--	-118	--	--	--	-118	--	-118
	Kaffrine	-140	--	-140	--	--	--	-140	--	-140
	Sedhiou	-248	--	-248	-326	--	-326	-250	--	-250
	Kolda	-220	--	-220	-336	-274	-332	-222	-274	-223
	Ziguinchor	-195	--	-195	-125	-143	-126	-170	-143	-170
	Matam	-138	--	-138	-151	--	-151	-140	--	-140
	Saint-Louis	-169	--	-169	-231	-403	-241	-181	-403	-183
Total ATV		-189	--	-189	-158	-198	-161	-184	-198	-184
Mango	Sedhiou	-235	--	-235	--	--	--	-235	--	-235
	Kolda	-106	--	-106	--	--	--	-106	--	-106
	Ziguinchor	-154	--	-154	-131	-120	-123	-151	-120	-142
Total mango		-132	--	-132	-131	-120	-123	-132	-120	-130
Small ruminants	Fatick	-189	--	-189	-193	--	-193	-190	--	-190
	Kaolack	-117	--	-117	-240	-102	-208	-118	-102	-118
	Kaffrine	-173	--	-173	-72	--	-72	-173	--	-173
	Sedhiou	-236	--	-236	-326	-185	-222	-237	-185	-236
	Kolda	-224	--	-224	-172	-274	-179	-223	-274	-223
	Ziguinchor	-177	--	-177	-147	--	-147	-174	--	-174
	Matam	-179	--	-179	-202	-154	-176	-181	-154	-179
	Saint-Louis	-162	--	-162	-177	-193	-178	-164	-193	-165
Total small ruminants		-183	--	-183	-176	-160	-172	-183	-160	-183

Table 0.90   Per capita daily expenditures (in CFA francs) (Indicator 4)

Value chain	Region	HOH gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
Dooleel Mbay area		655	--	655	664	1,269	774	656	1,269	665
Irrigated rice	Matam	927	--	927	755	--	755	923	--	923
	Saint-Louis	697	--	697	518	535	518	681	535	680
	Total	774		774	543	535	542	758	535	758
Rainfed rice	Sedhiou	757	--	757	450	333	411	746	333	739
	Kolda	449	--	449	511	1,521	636	450	1,521	450
	Ziguinchor	521	--	521	541	435	510	526	435	518
	Total	568		568	589	438	533	570	438	564
Millet	Fatick	552	--	552	385	--	385	550	--	550
	Kaolack	622	--	622	1,318	621	1,266	661	621	661
	Kaffrine	576	--	576	1,135	--	1,135	593	--	593
	Total	600		600	1,106	621	1,084	617	621	617
Corn	Fatick	401	--	401	781	--	781	433	--	433
	Kaolack	829	--	829	750	750	750	827	750	827
	Kaffrine	450	--	450	750	--	750	451	--	451
	Sedhiou	709	--	709	--	--	--	709	--	709
	Kolda	630	--	630	345	1562	978	629	1,562	632
	Ziguinchor	471	--	471	--	--	--	471	--	471
	Total	633		633	576	915	653	632	915	634
Total Cereals		624	--	624	725	503	674	628	503	627
ATV	Fatick	630	--	630	364	500	404	621	500	619
	Kaolack	817	--	817	1,199	--	1199	845	--	845
	Kaffrine	790	--	790	--	980	980	790	980	807
	Sedhiou	589	--	589	973	--	973	607	--	607
	Kolda	497	--	497	324	245	320	492	245	492
	Ziguinchor	830	--	830	518	375	512	746	375	741
	Matam	953	--	953	453	1,273	742	918	1,273	931
	Saint-Louis	920	--	920	720	5,657	1,521	885	5,657	1043
Total ATV		786	--	786	603	2,898	887	759	2,898	803
Mango	Sedhiou	782	--	782	1,146	--	1,146	792	--	792
	Kolda	537	--	537	--	--	--	537	--	537
	Ziguinchor	663	--	663	460	398	414	649	398	606
Total mango		618	--	618	532	398	434	616	398	599
Small ruminants	Fatick	532	--	532	646	--	646	535	--	535
	Kaolack	689	--	689	1,246	666	1,196	715	666	715
	Kaffrine	566	--	566	1,291	980	1,156	575	980	579
	Sedhiou	668	--	668	710	333	544	668	333	666
	Kolda	591	--	591	408	1831	807	590	1,831	592
	Ziguinchor	551	--	551	625	--	625	563	--	563
	Matam	878	--	878	597	617	607	864	617	853
	Saint-Louis	739	--	739	602	6,475	1,273	721	6,475	814
Total small ruminants		652	--	652	745	1922	939	657	1,922	669

Table 0.91 Yields of targeted Crops (kg/ha) in target areas (at ZOI level) (Indicator 9)

Value chain	Region	Total	Producer gender		Producer age group			Plot area class			
			Male	Female	15–29 years old	30–64 years old	65 years and older	Less than 0.5 ha	0.5–1 ha	1–3 ha	More than 3 ha
Dooleel Mbay area		7602	4671	13136	9793	7810	5096	11254	2315	1375	3216
Irrigated rice	Matam	5383	5469	3827	4320	5595	4956	5445	5179	3502	
	Saint-Louis	4963	4957	5040	5710	5030	4605	5146	4755	4110	5375
	Total irrigated rice	5074	5091	4905	5375	5156	4765	5282	4775	3673	5375
Rainfed rice	Sedhiou	1197	1093	1204	1459	1151	1470	1370	791	713	
	Kolda	1576	1660	1453	1608	1560	1618	1551	1616	1455	1767
	Ziguinchor	1146	1292	964	1521	1088	1307	1370	609	697	500
	total rainfed rice	1337	1474	1192	1554	1285	1475	1455	1073	1059	1727
Millet	Fatick	848	851	638	528	888	815	964	801	863	802
	Kaolack	1022	1028	909	941	1020	1056	1195	1017	988	1006
	Kaffrine	732	731	765	618	738	765	1027	916	648	426
	Total millet	822	819	870	703	835	799	926	821	808	654
Corn	Fatick	1711	1703	2239	1223	1725	1865	1551	1789	2179	800
	Kaolack	1571	1572	1562	1031	1642	1370	1571	1572	1557	1855
	Kaffrine	1476	1476	1452	1200	1466	1538	1555	1415	1467	1369
	Sedhiou	1595	1604	1400	1400	1566	1712	1581	1712	1517	1400
	Kolda	2012	2013	1960	1702	2019	2098	2053	1953	2115	1819
	Ziguinchor	1723	1729	1603	1603	1751	1603	1717	1770	1603	
	Total corn	1804	1804	1802	1513	1812	1861	1837	1788	1770	1635
Total cereal		1662	1718	1394	1409	1653	1795	2118	1469	1101	1136
Onion	Saint-Louis	19568	19854	19111	19706	19500	20105	19524	20000	20000	20000
	Ziguinchor	20322	21028	20274	17835	20501	21493	20334	20000		20000
	Total	20069	20019	20097	20764	19965	20464	20074	20000	20000	20000
Tomato	Kaolack	31616	24560	33566	34032	31040	33578	31181	35000	34805	33887
	Saint-Louis	30314	29853	33044	27303	30598	29590	30281	30000	31874	35000
	Ziguinchor	29834	28672	30218	35000	29648	28408	29503	35000		
	Total	30750	29133	31765	33971	30499	29414	30535	33755	34037	34323
Okra	Kaolack	17594	9892	19756	28725	16356	8462	17138		21000	20322
	Kolda	17572	13747	17783	17773	17519	14427	17572			
	Matam	44689	142330	7802	21000	45377	21000	45992	21000	21000	21000
	Sedhiou	8734	16841	6989	8196	8838		8734	8700		
	Ziguinchor	15727	15567	15780	19736	15619	12369	15727			
	Total	18513	30510	15143	17906	19049	14656	18471	20258	21000	20504
Sweet eggplant	Saint-Louis	29547	31118	28758	30000	29238	30000	29455	30000	30000	30000
	Total	26286	21707	28630	21930	27786	29203	26190	27006	30000	30000
Bitter eggplant	Ziguinchor	23087	26656	22403	12960	24828	24054	23087			
	Total	22460	24934	21858	14436	23685	26217	22488	22955	3000	3000
Total ATV			19686	21295	18998	16412	20493	18673	20168	13492	8360	23379
Mango	Sedhiou	3 569	3 569	--	500	4 900	1 739	7 937	2 551	1 579	2 500
	Kolda	2 800	2 685	4 174	--	2 159	4 721	6 544	4 543	1 955	--
	Ziguinchor	2 538	2 404	3 578	--	2 517	2 845	4 370	868	1 847	1 555
Total mango		2 667	2 864	1 520	500	2 951	2 065	5 620	2 093	1 411	2 222

Table 0.92 Proportion (%) of production sold (Indicator 26)

Value chain	Region	Total	Producer gender		Producer age group			Plot area class			
			Male	Female	15–29 years old	30–64 years old	65 years and older	Less than 0.5 ha	0.5–1 ha	1–3 ha	More than 3 ha
Dooleel Mbay area		29.2	22.0	42.9	45.8	27.9	25.6	36.6	18.0	17.8	19.6
Irrigated rice	Matam	7.5	7.5	7.3	2.9	8.1	6.1	7.9	4.6	1.7	
	Saint-Louis	33.4	33.6	30.9	43.6	34.6	27.2	27.0	45.2	43.0	69.8
	Total irrigated rice	23.1	23.6	18.7	31.5	24.5	17.6	18.1	35.1	36.6	69.8
Rainfed rice	Sedhiou	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.1	
	Kolda	16.5	27.4	0.4	21.4	3.5	67.1	0.3	30.4	49.6	32.3
	Ziguinchor	0.5	0.6	0.4	0.1	0.6	0.3	0.6	0.3	0.4	0.0
	Total rainfed rice	5.6	10.7	0.3	11.6	1.5	23.2	0.7	12.1	21.5	31.3
Millet	Fatick	17.8	17.7	22.6	39.1	15.7	18.3	21.9	25.4	14.2	7.8
	Kaolack	20.7	20.7	19.1	16.0	21.1	18.6	17.3	18.6	22.3	22.8
	Kaffrine	15.4	13.6	46.4	34.8	13.9	13.1	34.1	11.0	13.2	13.9
	Total millet	15.8	15.3	24.4	23.4	15.7	13.6	16.7	14.6	16.7	13.1
Corn	Fatick	14.4	14.3	25.3	0.0	10.3	29.0	6.1	16.0	41.1	9.7
	Kaolack	16.2	17.2	0.4	6.0	18.4	8.3	13.0	19.0	15.5	21.3
	Kaffrine	8.9	8.5	24.0	7.0	8.9	9.0	9.3	13.9	2.3	3.4
	Sedhiou	3.5	3.6	0.7	0.0	2.8	6.2	2.4	7.5	2.5	0.0
	Kolda	9.4	9.4	9.8	14.5	9.6	7.0	4.1	13.5	9.8	31.1
	Ziguinchor	3.6	3.7	0.0	0.0	4.4	0.0	1.5	14.8	0.0	
	Total corn	10.1	10.2	6.9	10.0	10.4	8.9	6.2	14.5	9.7	19.4
Total cereal		12.1	13.7	4.4	15.7	11.2	14.9	7.4	15.2	16.5	18.6
Onion	Saint-Louis	62.2	67.2	54.1	65.4	59.9	80.8	63.9	61.5	7.0	0.0
	Ziguinchor	35.7	52.2	34.6	13.2	37.0	50.1	35.7	0.0		96.7
	Total	52.0	66.0	44.3	41.4	51.9	70.2	53.2	48.9	29.3	20.4
Tomato	Kaolack	55.4	30.5	62.3	62.6	52.0	79.9	59.1	6.5	48.3	49.1
	Saint-Louis	82.0	86.5	55.5	77.9	80.3	89.0	81.8	100.0	75.9	22.4
	Ziguinchor	73.0	79.3	71.0	79.1	70.2	91.6	73.4	67.3		
	Total	73.0	79.2	69.1	85.2	69.4	86.7	73.8	63.6	46.1	58.3
Okra	Kaolack	49.2	58.0	46.7	30.5	51.9	55.7	52.6		57.4	20.9
	Kolda	55.7	67.8	55.0	71.6	45.0	98.9	55.7			
	Matam	47.7	64.1	41.6	14.0	49.0	0.0	49.3	23.5	0.0	35.6
	Sedhiou	48.6	44.5	49.5	18.4	54.5		48.6	49.1		
	Ziguinchor	68.2	77.3	65.2	67.1	68.8	64.4	68.2			
	Total	58.7	69.4	55.7	58.7	59.2	54.7	59.4	47.7	23.4	17.8
Sweet eggplant	Saint-Louis	61.5	63.7	60.4	27.4	56.4	99.1	64.1	70.0	25.9	5.6
	Total	65.4	67.7	64.2	61.2	65.2	81.3	65.9	74.9	25.9	5.6
Bitter eggplant	Ziguinchor	70.6	71.0	70.5	83.5	68.5	66.5	70.6			
	Total	65.6	64.4	65.9	70.6	66.4	42.4	65.6	74.9	0.0	0.0
Total ATV		64.2	69.1	62.1	69.6	62.5	69.5	65.0	57.5	53.4	29.7
Mango	Sedhiou	57.7	55.3	97.8	100.0	57.8	50.3	46.1	72.6	62.4	57.7
	Kolda	50.1	50.0	51.3	0.0	53.4	32.1	65.1	38.2	42.5	50.7
	Ziguinchor	79.0	77.5	86.7	100.0	80.0	68.7	78.0	82.5	72.4	78.4
	Total mango	65.6	65.2	68.8	100.0	65.8	63.0	65.3	67.9	62.5	65.7

Table 0.93   Proportion (%) of farmers who sell at the market (Indicator 27)

Value chain	Region		Producer gender		Producer age group			Plot area class			
		Total	Male	Female	15–29 years old	30–64 years old	65 years and older	Less than 0.5 ha	0.5–1 ha	1–3 ha	More than 3 ha
Dooleel Mbay area		76.9	67.8	89.3	87.0	77.8	61.2	82.1	65.9	71.5	48.3
Irrigated rice	Matam	51.8	50.4	65.0	0.0	50.8	58.8	55.7	17.6	0.0	0.0
	Saint-Louis	61.4	62.0	55.1	100.0	65.9	31.3	69.0	65.9	26.4	16.2
	Total irrigated rice	59.8	60.2	56.4	100.0	63.4	34.1	65.9	63.6	25.9	16.2
Rainfed rice	Sedhiou										
	Kolda	5.1	0.0	100.0	0.0	17.5	0.0	100.0	0.0	0.0	0.0
	Ziguinchor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total rainfed rice	15.1	8.9	100.0	0.0	39.8	0.0	91.1	1.9	0.0	0.0
Millet	Fatick	82.4	82.1	100.0	100.0	81.7	76.6	100.0	98.9	63.2	92.9
	Kaolack	84.7	84.2	93.1	100.0	84.6	83.0	71.2	78.5	88.0	94.3
	Kaffrine	82.2	80.2	100.0	84.0	80.8	88.0	72.2	100.0	80.2	82.4
	Total millet	81.9	81.2	91.8	93.2	81.9	78.1	76.9	83.6	81.5	88.3
Corn	Fatick	34.9	32.4	100.0	0.0	50.2	23.1	100.0	34.7	3.5	0.0
	Kaolack	72.5	72.3	100.0	100.0	72.0	64.4	65.5	73.9	94.0	0.0
	Kaffrine	78.5	77.4	100.0	0.0	85.7	53.2	70.0	100.0	34.7	100.0
	Sedhiou	50.7	50.7	0.0	0.0	28.5	100.0	0.0	100.0	76.5	0.0
	Kolda	61.0	61.3	45.0	73.9	62.8	28.0	70.5	58.0	89.1	19.8
	Ziguinchor	100.0	100.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0
	Total corn	63.0	62.8	74.3	73.1	66.3	40.2	68.0	64.5	59.4	20.2
Total cereal		67.5	66.4	83.1	62.5	72.8	46.7	70.8	64.3	72.1	46.4
Onion	Saint-Louis	74.5	67.6	88.2	100.0	71.8	84.6	77.6	21.6	0.0	0.0
	Ziguinchor	84.9	64.2	87.0	100.0	83.8	100.0	84.4	0.0	0.0	100.0
	Total	80.4	76.3	83.8	88.6	79.5	85.0	81.9	21.6	100.0	70.4
Tomato	Kaolack	70.0	100.0	64.2	94.5	71.1	19.3	68.8	100.0	100.0	72.1
	Saint-Louis	17.4	11.9	79.2	7.8	10.9	50.5	15.7	70.7	0.0	0.0
	Ziguinchor	94.5	92.8	95.1	97.4	94.2	95.0	94.1	100.0	0.0	0.0
	Total	71.0	44.6	89.3	93.7	68.3	66.9	70.2	94.8	57.9	47.0
Okra	Kaolack	88.7	89.0	88.6	100.0	89.8	35.4	87.5	0.0	100.0	100.0
	Kolda	90.3	100.0	89.6	100.0	82.5	100.0	90.3	0.0	0.0	0.0
	Matam	98.1	96.8	100.0	0.0	98.1	0.0	98.0	100.0	0.0	100.0
	Sedhiou	84.1	100.0	80.1	100.0	83.4	0.0	83.9	100.0	0.0	0.0
	Ziguinchor	94.0	91.5	95.0	100.0	93.0	96.2	94.0	0.0	0.0	0.0
	Total	90.6	90.5	90.6	100.0	88.9	86.9	90.4	100.0	100.0	100.0
Sweet eggplant	Saint-Louis	83.9	56.3	100.0	100.0	70.4	100.0	82.4	100.0	0.0	100.0
	Total	88.6	85.6	90.3	88.4	87.2	100.0	88.7	83.8	0.0	100.0
Bitter eggplant	Ziguinchor	97.2	100.0	96.6	100.0	97.4	84.1	97.2	0.0	0.0	0.0
	Total	93.0	94.7	92.6	95.8	92.8	88.2	92.9	100.0	0.0	0.0
Total ATV		83.4	70.4	89.7	94.3	81.3	81.4	84.2	75.5	62.7	69.2

Table 0.94   Index of ability to recover from shocks and stresses (in units) (Indicator 36)

Value chain	Region	HOH Gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
Dooleel Mbay area		0.29	--	0.29	0.31	0.15	0.28	0.30	0.15	0.29
Irrigated rice	Matam	0.22	--	0.22	0.62	--	0.62	0.23	--	0.23
	Saint-Louis	0.22	--	0.22	0.26	0.15	0.26	0.23	0.15	0.22
	Total	0.22		0.22	0.30	0.15	0.29	0.23	0.15	0.23
Rainfed rice	Sedhiou	0.24	--	0.24	0.22	0.10	0.16	0.24	0.10	0.24
	Kolda	0.26	--	0.26	0.15	0.10	0.14	0.26	0.10	0.26
	Ziguinchor	0.82	--	0.82	0.15	0.09	0.13	0.63	0.09	0.58
	Total	.36		0.36	0.19	0.11	0.16	0.35	0.11	0.34
Millet	Fatick	0.19	--	0.19	0.15	--	0.15	0.19	--	0.19
	Kaolack	0.18	--	0.18	0.27	1.00	0.32	0.19	1.00	0.19
	Kaffrine	0.28	--	0.28	0.16	--	0.16	0.28	--	0.28
	Total	.22		.22	.24	1.00	.27	.22	1.00	.22
Corn	Fatick	0.18	--	0.18	0.59	--	0.59	0.21	--	0.21
	Kaolack	0.18	--	0.18	0.20	0.08	0.17	0.18	0.08	0.18
	Kaffrine	0.25	--	0.25	0.08	--	0.08	0.25	--	0.25
	Sedhiou	0.19	--	0.19	--	--	--	0.19	--	0.19
	Kolda	0.35	--	0.35	--	--	--	0.35	--	0.35
	Ziguinchor	1.12	--	1.12	--	--	--	1.12	--	1.12
	Total	0.29		0.29	0.29	0.05	0.25	0.29	0.05	0.29
Total cereals		0.27	--	0.27	0.23	0.15	0.22	0.27	0.15	0.27
ATV	Fatick	0.16	--	0.16	0.07	0.08	0.07	0.16	0.08	0.15
	Kaolack	0.17	--	0.17	0.60	--	0.60	0.20	--	0.20
	Kaffrine	0.11	--	0.11	--	0.09	0.09	0.11	0.09	0.11
	Sedhiou	0.27	--	0.27	0.18	--	0.18	0.26	--	0.26
	Kolda	0.99	--	0.99	0.33	0.21	0.32	0.97	0.21	0.97
	Ziguinchor	0.46	--	0.46	0.53	0.17	0.51	0.48	0.17	0.48
	Matam	0.40	--	0.40	0.12	0.10	0.11	0.38	0.10	0.37
	Saint-Louis	0.20	--	0.20	0.19	0.26	0.19	0.20	0.26	0.20
Total ATV		0.42	--	0.42	0.38	0.15	0.36	0.42	0.15	0.41
Mango	Sedhiou	0.20	--	0.20	0.21	--	0.21	0.20	--	0.20
	Kolda	0.23	--	0.23	--	--	--	0.23	--	0.23
	Ziguinchor	0.33	--	0.33	0.26	0.09	0.13	0.32	0.09	0.27
Total mango		0.26	--	0.26	0.26	0.09	0.13	0.26	0.09	0.24
Small ruminants	Fatick	0.18	--	0.18	0.43	--	0.43	0.19	--	0.19
	Kaolack	0.18	--	0.18	0.31	0.68	0.34	0.19	0.68	0.19
	Kaffrine	0.26	--	0.26	0.11	0.09	0.10	0.26	0.09	0.26
	Sedhiou	0.25	--	0.25	0.24	0.10	0.18	0.25	0.10	0.25
	Kolda	0.44	--	0.44	0.15	0.21	0.16	0.44	0.21	0.44
	Ziguinchor	0.41	--	0.41	0.54	--	0.54	0.44	--	0.44
	Matam	0.27	--	0.27	0.25	0.13	0.19	0.26	0.13	0.26
	Saint-Louis	0.20	--	0.20	0.23	0.19	0.23	0.20	0.19	0.20
Total Small ruminants		0.28	--	0.28	0.33	0.19	0.31	0.29	0.19	0.29

Table 0.95   Resilience: Increase in resilience (%) (measured by a set of economic variables: income stability or diversification. assets. savings and debt; among activity recipients) (Indicator 37)

Value chain	Region	HOH gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
Dooleel Mbay area		19.8	--	19.8	9.5	19.9	11.4	19.2	19.9	19.2
Irrigated rice	Matam	2.9	--	2.9	8.9	--	8.9	3.0	--	3.0
	Saint-Louis	16.8	--	16.8	8.9	25.5	9.7	16.0	25.5	16.1
		11.7%		11.7%	8.9%	25.5%	9.6%	11.5%	25.5%	11.6%
Rainfed rice	Sedhiou	19.7	--	19.7	17.6	0.0	11.8	19.6	0.0	19.3
	Kolda	24.1	--	24.1	22.5	100.0	32.1	24.0	100.0	24.1
	Ziguinchor	0.9	--	0.9	0.0	0.0	0.0	0.7	0.0	0.6
		16.5%		16.5%	2.6%	35.1%	14.6%	15.4%	35.1%	16.3%
Millet	Fatick	28.5	--	28.5	0.0	--	0.0	28.2	--	28.2
	Kaolack	33.9	--	33.9	69.0	0.0	63.8	35.8	0.0	35.7
	Kaffrine	22.8	--	22.8	0.0	--	0.0	22.1	--	22.1
		25.7%		25.7%	40.6%	0.0%	38.8%	26.2%	0.0%	26.1%
Corn	Fatick	14.7	--	14.7	0.0	--	0.0	13.5	--	13.5
	Kaolack	42.7	--	42.7	0.0	0.0	0.0	41.7	0.0	41.4
	Kaffrine	28.9	--	28.9	100.0	--	100.0	29.2	--	29.2
	Sedhiou	11.5	--	11.5	--	--	--	11.5	--	11.5
	Kolda	16.9	--	16.9	0.0	0.0	0.0	16.8	0.0	16.8
	Ziguinchor	0.0	--	0.0	--	--	--	0.0	--	0.0
		21.1%		21.1%	2.7%	0.0%	2.1%	20.8%	0.0%	20.7%
Total cereals		20.8	--	20.8	14.6	29.3	18.0	20.5	29.3	20.6
ATV	Fatick	9.9	--	9.9	0.0	0.0	0.0	9.6	0.0	9.4
	Kaolack	38.6	--	38.6	75.9	--	75.9	41.2	--	41.2
	Kaffrine	18.4	--	18.4	--	0.0	0.0	18.4	0.0	16.8
	Sedhiou	12.1	--	12.1	26.6	--	26.6	12.7	--	12.7
	Kolda	11.0	--	11.0	0.0	0.0	0.0	10.8	0.0	10.7
	Ziguinchor	0.3	--	0.3	0.0	0.0	0.0	0.2	0.0	0.2
	Matam	3.5	--	3.5	29.0	0.0	18.8	5.2	0.0	5.1
	Saint-Louis	18.9	--	18.9	0.7	0.0	0.6	15.7	0.0	15.2
Total ATV		11.8	--	11.8	4.5	0.0	3.9	10.7	0.0	10.5
Mango	Sedhiou	7.4	--	7.4	100.0	--	100.0	9.9	--	9.9
	Kolda	40.9	--	40.9	--	--	--	40.9	--	40.9
	Ziguinchor	4.6	--	4.6	0.0	0.0	0.0	4.3	0.0	3.5
Total mango		22.1	--	22.1	10.5	0.0	2.9	21.7	0.0	20.0
Small ruminants	Fatick	24.1	--	24.1	0.0	--	0.0	23.3	--	23.3
	Kaolack	37.2	--	37.2	63.6	0.0	58.1	38.5	0.0	38.3
	Kaffrine	23.8	--	23.8	7.9	0.0	4.5	23.6	0.0	23.4
	Sedhiou	18.1	--	18.1	55.7	0.0	31.2	18.5	0.0	18.4
	Kolda	12.6	--	12.6	8.6	0.0	6.2	12.6	0.0	12.6
	Ziguinchor	0.5	--	0.5	0.0	--	0.0	0.4	--	0.4
	Matam	5.6	--	5.6	11.9	71.2	40.8	5.9	71.2	8.8
	Saint-Louis	21.8	--	21.8	5.3	4.1	5.2	19.7	4.1	19.5
Total small ruminants		19.2	--	19.2	15.5	35.7	18.9	19.0	35.7	19.2

Table 0.96 Percentage of women contributing to productive decisions in their households (Indicator 47)

Value chain	Region	Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
Dooleel Mbay area		39.6	--	39.6	77.4	59.1	74.3	42.0	59.1	42.2
Irrigated rice	Matam	36.3	--	36.3	97.9	--	97.9	37.6	--	37.6
	Saint-Louis	14.6	--	14.6	60.4	100.0	62.3	18.5	100.0	18.8
Rainfed rice	Sedhiou	44.7	--	44.7	36.7	100.0	57.7	44.4	100.0	45.4
	Kolda	39.6	--	39.6	100.0	0.0	81.3	39.7	0.0	39.7
	Ziguinchor	38.7	--	38.7	88.3	1.8	63.0	50.0	1.8	45.9
Millet	Fatick	53.6	--	53.6	100.0	--	100.0	54.1	--	54.1
	Kaolack	44.9	--	44.9	92.2	100.0	92.8	47.5	100.0	47.8
	Kaffrine	34.2	--	34.2	100.0	--	100.0	36.2	--	36.2
Corn	Fatick	58.3	--	58.3	69.6	--	69.6	59.2	--	59.2
	Kaolack	35.5	--	35.5	100.0	100.0	100.0	37.1	100.0	37.5
	Kaffrine	49.2	--	49.2	100.0	--	100.0	49.4	--	49.4
	Sedhiou	29.9	--	29.9	--	--	--	29.9	--	29.9
	Kolda	42.0	--	42.0	50.0	50.0	50.0	42.0	50.0	42.0
	Ziguinchor	41.4	--	41.4	--	--	--	41.4	--	41.4
Total cereals		40.6	--	40.6	84.0	57.9	78.7	42.8	57.9	43.0
ATV	Fatick	29.1	--	29.1	100.0	100.0	100.0	30.5	100.0	31.6
	Kaolack	77.3	--	77.3	100.0	--	100.0	77.7	--	77.7
	Kaffrine	54.9	--	54.9	--	100.0	100.0	54.9	100.0	58.9
	Sedhiou	54.8	--	54.8	72.8	--	72.8	55.5	--	55.5
	Kolda	52.2	--	52.2	33.2	100.0	36.2	51.7	100.0	51.8
	Ziguinchor	33.0	--	33.0	73.4	100.0	74.5	43.9	100.0	44.6
	Matam	60.0	--	60.0	66.7	78.1	70.7	60.4	78.1	61.1
	Saint-Louis	30.9	--	30.9	79.5	66.5	78.4	39.6	66.5	40.0
Total ATV		44.2	--	44.2	74.4	86.4	75.6	48.6	86.4	49.2
Mango	Sedhiou	46.1	--	46.1	100.0	--	100.0	47.6	--	47.6
	Kolda	31.1	--	31.1	--	--	--	31.1	--	31.1
	Ziguinchor	37.5	--	37.5	88.1	8.0	28.1	41.0	8.0	35.4
Total mango		35.6	--	35.6	89.4	8.0	30.2	37.3	8.0	35.0
Small ruminants	Fatick	55.3	--	55.3	78.6	--	78.6	56.0	--	56.0
	Kaolack	47.1	--	47.1	93.3	100.0	94.0	49.0	100.0	49.2
	Kaffrine	42.8	--	42.8	100.0	100.0	100.0	43.6	100.0	44.1
	Sedhiou	48.0	--	48.0	100.0	100.0	100.0	48.6	100.0	49.0
	Kolda	55.2	--	55.2	66.7	100.0	78.6	55.2	100.0	55.3
	Ziguinchor	45.7	--	45.7	84.0	--	84.0	51.8	--	51.8
	Matam	43.6	--	43.6	54.9	95.5	74.7	44.1	95.5	46.4
	Saint-Louis	28.6	--	28.6	86.0	100.0	86.7	35.6	100.0	36.0
Total small ruminants		46.3	--	46.3	83.5	97.5	85.6	48.1	97.5	48.5

Table 0.97 Percentage of women who have access to and make decisions about financial services in the home (Indicator 48)

		HOH gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
Dooleel Mbay area		51.9		51.9	68.4	34.2	62.5	53.0	34.2	52.7
Irrigated rice	Matam	15.2		15.2	98.6		98.6	17.0		17.0
	Saint-Louis	66.6		66.6	66.5	100.0	68.1	66.6	100.0	66.8
	Total irrigated rice	48.4		48.4	69.9	100.0	71.2	49.8	100.0	50.0
Rainfed rice	Sedhiou	42.3		42.3	35.2	0.0	23.5	42.1	0.0	41.4
	Kolda	46.3		46.3	22.5	0.0	19.8	46.2	0.0	46.2
	Ziguinchor	50.8		50.8	84.2	4.4	60.9	58.5	4.4	53.8
	Total rainfed rice	45.1		45.1	80.7	6.4	53.2	48.0	6.4	46.1
Millet	Fatick	76.8		76.8	100.0		100.0	77.1		77.1
	Kaolack	48.7		48.7	94.9	0.0	87.6	51.2	0.0	51.0
	Kaffrine	57.5		57.5	90.9		90.9	58.5		58.5
	Total Millet	51.3		51.3	84.2	0.0	80.3	52.4	0.0	52.3
Corn	Fatick	69.6		69.6	100.0		100.0	72.1		72.1
	Kaolack	65.1		65.1	100.0	100.0	100.0	65.9	100.0	66.1
	Kaffrine	57.3		57.3	100.0		100.0	57.5		57.5
	Sedhiou	37.3		37.3				37.3		37.3
	Kolda	45.9		45.9	0.0	0.0	0.0	45.8	0.0	45.6
	Ziguinchor	8.6		8.6				8.6		8.6
	Total corn	51.2		51.2	53.7	59.4	55.0	51.2	59.4	51.3
Total cereal		49.6		49.6	76.6	14.6	62.2	50.8	14.6	50.3
ATV	Fatick	76.5		76.5	100.0	0.0	70.6	77.4	0.0	76.3
	Kaolack	88.6		88.6	100.0		100.0	88.8		88.8
	Kaffrine	86.5		86.5		100.0	100.0	86.5	100.0	87.7
	Sedhiou	36.3		36.3	40.0		40.0	36.5		36.5
	Kolda	56.7		56.7	44.2	100.0	46.7	56.4	100.0	56.4
	Ziguinchor	75.2		75.2	60.3	100.0	62.0	71.2	100.0	71.5
	Matam	14.8		14.8	49.5	100.0	67.3	17.2	100.0	20.2
	Saint-Louis	57.4		57.4	62.0	57.7	61.6	58.2	57.7	58.2
	Total ATV	60.1		60.1	60.0	87.6	62.8	60.1	87.6	60.5
Mango	Sedhiou	34.5		34.5	100.0		100.0	36.3		36.3
	Kolda	76.5		76.5				76.5		76.5
	Ziguinchor	49.1		49.1	88.1	8.0	28.1	51.8	8.0	44.4
	Total mango	51.3		51.3	55.0	16.5	44.8	51.6	16.5	50.7
Livestock	Fatick	78.6		78.6	100.0		100.0	79.3		79.3
	Kaolack	54.4		54.4	95.6	34.5	89.7	56.2	34.5	56.1
	Kaffrine	60.0		60.0	84.6	100.0	91.3	60.4	100.0	60.7
	Sedhiou	34.0		34.0	69.8	0.0	39.1	34.4	0.0	34.1
	Kolda	52.6		52.6	8.6	13.7	10.0	52.4	13.7	52.4
	Ziguinchor	64.4		64.4	79.5		79.5	66.8		66.8
	Matam	23.6		23.6	57.0	28.8	43.2	25.2	28.8	25.4
	Saint-Louis	59.5		59.5	53.5	64.6	54.0	58.7	64.6	58.8
	Total livestock	53.0		53.0	70.8	40.0	66.2	53.9	40.0	53.7

Table 0.98   Percentage of women decision makers with control over household income use (Indicator 49)

		HOH gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Overall	M&F	FNM	Together
Dooleel Mbay area		37.0		37.0	76.3	57.9	73.1	39.5	57.9	39.7
Irrigated rice	Matam	35.8		35.8	97.1		97.1	37.2		37.2
	Saint-Louis	15.9		15.9	58.9	100.0	60.9	19.8	100.0	20.2
	Total irrigated rice	23.6		23.6	63.0	100.0	64.6	26.3	100.0	26.5
Rainfed rice	Sedhiou	43.4		43.4	17.6	100.0	44.9	42.4	100.0	43.4
	Kolda	39.2		39.2	22.5	0.0	19.8	39.1	0.0	39.1
	Ziguinchor	35.5		35.5	88.3	0.0	62.5	47.6	0.0	43.5
	Total rainfed rice	38.6		38.6	81.1	44.6	67.6	42.2	44.6	42.3
Millet	Fatick	52.3		52.3	100.0		100.0	52.9		52.9
	Kaolack	40.8		40.8	92.2	100.0	92.8	43.6	100.0	43.9
	Kaffrine	30.7		30.7	100.0		100.0	32.8		32.8
	Total millet	37.3		37.3	84.7	100.0	85.4	38.9	100.0	39.0
Corn	Fatick	59.9		59.9	69.6		69.6	60.7		60.7
	Kaolack	36.2		36.2	100.0	100.0	100.0	37.7	100.0	38.1
	Kaffrine	42.7		42.7	100.0		100.0	42.9		42.9
	Sedhiou	33.1		33.1				33.1		33.1
	Kolda	34.5		34.5	50.0	50.0	50.0	34.6	50.0	34.7
	Ziguinchor	41.4		41.4				41.4		41.4
	Total corn	38.5		38.5	82.0	41.4	72.7	39.2	41.4	39.3
Total cereal		36.3		36.3	78.9	48.3	71.8	38.2	48.3	38.3
ATV	Fatick	30.4		30.4	100.0	100.0	100.0	32.9	100.0	33.8
	Kaolack	72.8		72.8	100.0		100.0	73.2		73.2
	Kaffrine	50.9		50.9		100.0	100.0	50.9	100.0	55.3
	Sedhiou	54.0		54.0	61.0		61.0	54.3		54.3
	Kolda	50.5		50.5	32.6	100.0	35.5	50.1	100.0	50.1
	Ziguinchor	30.3		30.3	73.4	100.0	74.5	42.0	100.0	42.7
	Matam	60.1		60.1	66.7	78.1	70.7	60.5	78.1	61.2
	Saint-Louis	26.3		26.3	78.3	58.2	76.6	35.5	58.2	35.9
	Total ATV	41.8		41.8	73.7	84.2	74.8	46.4	84.2	47.0
Mango	Sedhiou	42.5		42.5	100.0		100.0	44.1		44.1
	Kolda	30.4		30.4				30.4		30.4
	Ziguinchor	36.9		36.9	88.1	8.0	28.1	40.4	8.0	34.9
	Total mango	40.2		40.2	91.0	16.5	71.2	43.9	16.5	43.2
	Fatick	54.9		54.9	79.9		79.9	55.7		55.7
	Kaolack	44.4		44.4	93.3	100.0	94.0	46.4	100.0	46.7
	Kaffrine	38.5		38.5	100.0	100.0	100.0	39.3	100.0	39.9
	Sedhiou	45.6		45.6	69.8	100.0	83.1	45.9	100.0	46.3
	Kolda	49.8		49.8	39.6	100.0	56.5	49.7	100.0	49.8
	Ziguinchor	44.2		44.2	84.0		84.0	50.6		50.6
	Matam	43.4		43.4	54.9	95.5	74.7	44.0	95.5	46.3
	Saint-Louis	26.0		26.0	85.4	100.0	86.1	33.5	100.0	33.9
Breeding	**Total livestock**	43.4		43.4	82.3	97.5	84.6	45.3	97.5	45.8

Table 0.99 Percentage of women decision makers in agriculture, livestock, or market groups (Indicator 50)

		HOH gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
Dooleel Mbay area		48.3		48.3	69.3	86.3	72.3	49.6	86.3	50.1
Irrigated rice	Matam	36.6		36.6	10.3		10.3	36.0		36.0
	Saint-Louis	58.8		58.8	70.2	100.0	71.6	59.8	100.0	60.0
	Total irrigated rice	50.8		50.8	63.9	100.0	65.5	51.6	100.0	51.8
Rainfed rice	Sedhiou	55.0		55.0	35.2	100.0	56.6	54.2	100.0	55.0
	Kolda	20.0		20.0	100.0	0.0	87.7	20.3	0.0	20.3
	Ziguinchor	76.8		76.8	86.6	91.5	88.0	79.0	91.5	80.1
	Total rainfed rice	43.1		43.1	83.6	94.9	87.8	46.5	94.9	48.8
Millet	Fatick	71.6		71.6	100.0		100.0	71.9		71.9
	Kaolack	68.9		68.9	89.1	0.0	82.3	70.0	0.0	69.7
	Kaffrine	35.7		35.7	90.9		90.9	37.3		37.3
	Total Millet	54.8		54.8	81.2	0.0	77.4	55.6	0.0	55.5
Corn	Fatick	82.0		82.0	100.0		100.0	83.5		83.5
	Kaolack	68.7		68.7	100.0	100.0	100.0	69.5	100.0	69.7
	Kaffrine	37.1		37.1	0.0		0.0	37.0		37.0
	Sedhiou	50.8		50.8				50.8		50.8
	Kolda	11.6		11.6	0.0	0.0	0.0	11.6	0.0	11.5
	Ziguinchor	50.0		50.0				50.0		50.0
	Total corn	33.1		33.1	65.9	59.4	64.4	33.6	59.4	33.7
Total cereal		45.4		45.4	77.2	86.8	79.4	46.7	86.8	47.3
ATV	Fatick	68.8		68.8	100.0	0.0	70.6	69.9	0.0	68.9
	Kaolack	69.3		69.3	50.0		50.0	68.9		68.9
	Kaffrine	65.3		65.3		100.0	100.0	65.3	100.0	68.4
	Sedhiou	65.2		65.2	40.0		40.0	64.1		64.1
	Kolda	35.1		35.1	0.0	100.0	4.3	34.2	100.0	34.3
	Ziguinchor	70.1		70.1	57.8	100.0	59.5	66.7	100.0	67.1
	Matam	38.9		38.9	37.7	59.3	45.3	38.8	59.3	39.5
	Saint-Louis	59.9		59.9	77.1	82.4	77.5	63.0	82.4	63.3
	Total ATV	57.8		57.8	61.3	85.0	63.7	58.3	85.0	58.7
Mango	Sedhiou	48.5		48.5	100.0		100.0	49.9		49.9
	Kolda	12.1		12.1				12.1		12.1
	Ziguinchor	70.4		70.4	88.1	100.0	97.0	71.6	100.0	76.4
	Total mango	62.8		62.8	50.4	98.4	63.2	61.9	98.4	62.8
Livestock	Fatick	77.4		77.4	100.0		100.0	78.1		78.1
	Kaolack	72.5		72.5	88.7	34.5	83.4	73.2	34.5	73.0
	Kaffrine	39.6		39.6	76.8	100.0	86.8	40.1	100.0	40.7
	Sedhiou	52.5		52.5	69.8	100.0	83.1	52.7	100.0	53.1
	Kolda	23.4		23.4	38.0	13.7	31.2	23.4	13.7	23.4
	Ziguinchor	68.4		68.4	73.7		73.7	69.2		69.2
	Matam	39.4		39.4	38.4	91.6	64.4	39.3	91.6	41.6

		HOH gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
	Saint-Louis	65.8		65.8	70.1	100.0	71.5	66.3	100.0	66.5
	Total Livestock	50.8		50.8	71.8	85.7	73.9	51.9	85.7	52.2

Table 0.100 Information and communication technology (ICT) adoption (%) (Proxy Indicator 60)

Value chains	Region	HOH gender								
		Male			Female			Total		
		M&F	FNM	Together	M&F	FNM	Together	M&F	FNM	Together
Dooleel Mbay area		69.6	--	69.6	66.1	64.6	65.9	69.4	64.6	69.3
Irrigated rice	Matam	51.5	--	51.5	45.7	--	45.7	51.3	--	51.3
	Saint-Louis	74.4	--	74.4	83.8	100.0	84.6	75.2	100.0	75.3
	Total	67.0		67.0	79.8	100.0	80.7	67.9	100.0	68.0%
Rainfed rice	Sedhiou	87.4	--	87.4	90.5	100.0	93.6	87.5	100.0	87.7
	Kolda	66.0	--	66.0	100.0	100.0	100.0	66.1	100.0	66.1
	Ziguinchor	87.7	--	87.7	88.7	98.2	91.5	87.9	98.2	88.8
	Total	74.0%		74.0	87.9	64.4	79.2	75.2	64.4	74.7%
Millet	Fatick	45.3	--	45.3	0.0	--	0.0	44.8	--	44.8
	Kaolack	76.0	--	76.0	97.0	0.0	89.8	77.2	0.0	76.8
	Kaffrine	54.2	--	54.2	100.0	--	100.0	55.6	--	55.6
	Total	62.9%		62.9	81.3	0.0	77.6	63.5	0.0	63.4
Corn	Fatick	73.4	--	73.4	100.0	--	100.0	75.6	--	75.6
	Kaolack	78.4	--	78.4	0.0	0.0	0.0	76.5	0.0	76.0
	Kaffrine	65.5	--	65.5	100.0	--	100.0	65.6	--	65.6
	Sedhiou	76.0	--	76.0	--	--	--	76.0	--	76.0
	Kolda	65.0	--	65.0	0.0	0.0	0.0	64.8	0.0	64.5
	Ziguinchor	100.0	--	100.0	--	--	--	100.0	--	100.0
	Total	69.5%		69.5	67.5	38.3	60.8	69.5	38.3	69.3
Total cereals		67.7	--	67.7	82.2	59.5	77.0	68.3	59.5	68.2
ATV	Fatick	38.6	--	38.6	0.0	100.0	29.4	37.3	100.0	38.2
	Kaolack	86.6	--	86.6	100.0	--	100.0	87.6	--	87.6
	Kaffrine	70.0	--	70.0	--	100.0	100.0	70.0	100.0	72.6
	Sedhiou	73.8	--	73.8	59.5	--	59.5	73.2	--	73.2
	Kolda	52.4	--	52.4	0.0	100.0	4.3	51.1	100.0	51.2
	Ziguinchor	84.1	--	84.1	46.8	0.0	44.8	74.0	0.0	73.1
	Matam	47.7	--	47.7	58.1	78.1	65.1	48.4	78.1	49.5
	Saint-Louis	83.2	--	83.2	53.7	92.4	60.0	78.0	92.4	78.4
Total ATV		72.7	--	72.7	50.1	75.4	53.2	69.3	75.4	69.4
Mango	Sedhiou	82.9	--	82.9	100.0	--	100.0	83.3	--	83.3
	Kolda	71.5	--	71.5	--	--	--	71.5	--	71.5
	Ziguinchor	80.4	--	80.4	31.5	92.0	76.8	77.0	92.0	79.6
Total mango		76.5	--	76.5	38.7	92.0	77.5	75.3	92.0	76.6
Small ruminants	Fatick	51.1	--	51.1	66.1	--	66.1	51.6	--	51.6
	Kaolack	79.0	--	79.0	86.7	0.0	79.2	79.3	0.0	79.0
	Kaffrine	58.6	--	58.6	100.0	100.0	100.0	59.1	100.0	59.5
	Sedhiou	84.6	--	84.6	84.9	100.0	91.5	84.6	100.0	84.7
	Kolda	62.8	--	62.8	38.0	13.7	31.2	62.7	13.7	62.7
	Ziguinchor	86.6	--	86.6	39.6	--	39.6	79.1	--	79.1
	Matam	49.8	--	49.8	42.1	24.3	33.4	49.5	24.3	48.3
	Saint-Louis	81.2	--	81.2	76.1	95.7	78.3	80.6	95.7	80.8
Total small ruminants		68.9	--	68.9	63.7	50.7	61.6	68.6	50.7	68.4