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WOMEN'S EMPOWERMENT IN AGRICULTURE STUDY

FEED THE FUTURE SENEGAL–NAATAL MBAY

CONTRACT AID-685-C-15-00001

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Prepared for:
Abdoulaye Dia
Contracting Officer's Representative (COR)
Feed the Future Senegal Naatal Mbay Project
Economic Growth Office, USAID/Senegal

Prepared by RTI International*
3040 East Cornwallis Rd.
Post Office Box 121294
Research Triangle Park, NC 277009-2194 USA
+1 (919) 541-6000

*This report was prepared by researchers from the *Initiative Prospective Agricole et Rurale* (IPAR) under contract with RTI International. IPAR Researchers included Madické Niang, Oumoul Khaïry Coulibaly, and Cheikh Faye, with contributions from Feed the Future Senegal Naatal Mbay team members Matar Gaye, Coumba Dem Samb, Sarah Miller Frazer, Annah Latané, Jo Anne Yeager Sallah, and Denise Mainville (Consultant).

Cover photograph

SAINT LOUIS – SENEGAL. Women buying/selling rice. Photo by Xaume Olleros/RTI International

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ACRONYMS

5DE	Five Dimensions of Empowerment
A-WEAI	Abbreviated - Women's Empowerment in Agriculture Index
AfDB	African Development Bank
AKNB	Association Kawral Ngenar Bossea
ANSD	Agence Nationale de la Statistique et de la Démographie (National Statistics and Demography Agency)
CD	Census District
CNCAS	Caisse Nationale de Crédit Agricole du Sénégal (National Agricultural Credit Fund of Senegal)
CBO	Community-Based Organization
FEPROMAS	Fédération des Producteurs de Maïs du Saloum
GIE	Groupement d'Intérêt Economique (Economic Interest Group)
GPI	Gender Parity Index
IFPRI	International Food Policy Research Institute
IPAR	Initiative Prospective Agricole et Rurale
GCO	Grassroots Community Organization
ODK	Open Data Kit
NGO	Non-Governmental Organization
OPHI	Oxford Poverty and Human Development Initiative
PCE	USAID Projet Croissance Economique (Economic Growth Project)
RTI	Research Triangle Institute International
SGB	Southern Groundnut Basin
USAID	United States Agency for International Development
SRV	Senegal River Valley
SFZ	Southern Forest Zone
ZOI	Zone of Influence (of Feed the Future)

Executive Summary

In 2016 and 2017, the Feed the Future Senegal Naatal Mbay project, funded by the United States Agency for International Development (USAID), conducted a study on women's empowerment in agriculture to determine the level of empowerment among participating households and to identify the main constraints to empowerment. The two-phase study reached 938 respondents – 495 women and 443 men – who are the primary decision makers within their households, over the three geographic areas that make up the Naatal Mbay Zone of Influence (ZOI): the Senegal River Valley (SRV), the Southern Groundnut Basin (SGB), and Casamance. The study supplemented the quantitative data collected through the Abbreviated Women's Empowerment in Agriculture Index (A-WEAI) survey with qualitative methods, including 12 focus groups, 96 individual household interviews, and 80 interviews with other value chain actors.

The study found that, overall, women surveyed within the project's ZOI were relatively empowered, with an overall score of 0.783 out of a possible 1.0, and where 0.80 is considered adequately empowered. Some of the main constraints to empowerment identified by respondents included a lack of participation in household decision making on production, lack of involvement in community groups, and inadequate access to and management of agricultural credit. The data suggests that workload is not a major constraint to empowerment, though it has a greater burden on women in the rainy season, when agricultural activities are more time consuming. While land ownership was not found to be a major contribution to women's disempowerment based on the quantitative data, women reported in interviews and focus groups that access to land is a major constraint. As expected, across all regions, the empowerment score for men is, on average, higher than the score for women.

The study found a statistically significant positive correlation between education level and women's empowerment, as well as between the ability to read and write and women's empowerment. For the men surveyed, there is little correlation between education level, ability to read and write, and empowerment. There is also a statistically significant correlation between empowerment and age group for men and women, where the percentage of individuals who are empowered increases with age. Higher wealth is correlated, though not statistically significantly, with men's empowerment. It should be noted that the extent to which current and previous USAID programming has had an impact on this score is not able to be measured through the A-WEAI – which measures women's empowerment at a specific point in time – and is therefore outside of the scope of this study.

Based on the findings of the study, the study team proposed several recommendations to promote women's economic empowerment in future programming in Senegal:

- Promoting more flexible intermediary credit systems for women
- Raising awareness on fair access to agricultural land, specifically targeting women's organizations, traditional authorities, and the *marabout* class
- Supporting women to diversify their incomes
- Reinforcing support measures and follow-up after training
- Promoting and supporting women's organizations that provide resources to members and facilitate women's advancement to leadership positions
- Promoting women's leadership in mixed-gender organizations
- Helping farmer organizations and independent producers access the market
- Expanding programming to young women

By taking these steps into consideration to reduce gender-specific constraints in agriculture, projects can better focus interventions and ensure that activities are inclusive and promote the well-being of both men and women.

1. INTRODUCTION AND BACKGROUND

The USAID-funded Feed the Future Senegal Naatal Mbay project aims to improve food security, nutrition, and economic opportunities for the most vulnerable households in the ZOI. Naatal Mbay is a four-year project that began in March 2015 and builds on the lessons and achievements of its predecessor project, Projet Croissance Economique (PCE), in order to scale up the models and approaches designed for the development of cereal value chains for the benefit of smallholder farmers. The project works with staple cereal value chains: rice (both irrigated and rain-fed), maize, and millet. Project activities include technical assistance; training through subcontracted, predominantly local organizations to promote the adoption of technologies and good practices; access to finance; increased private investments in target value chains; and long-lasting business relationships. Project interventions seek to increase the income of smallholder farmers, reduce hunger, empower women farmers, build local capacity, and strengthen resilience to economic and environmental shocks.

Women play a vital role in agriculture, and because they are faced with persistent economic constraints, their empowerment is a major objective for Feed the Future. The WEAI was developed jointly by USAID, IFPRI (International Food Policy Research Institute), and OPHI (Oxford Poverty and Human Development Initiative) and launched in February 2012 to monitor the changes in women's level of empowerment that have occurred as a direct or indirect consequence of project interventions. The WEAI score is one of several indicators of the Feed the Future initiative.

The WEAI score is calculated with individual-level data collected from men and women of the same households, as well as women living in households with no adult men. The WEAI is composed of two sub-indexes: the 5DE (5 Dimensions of Empowerment) and the GPI (Gender Parity Index). The 5DE sub-index covers (1) agricultural production, (2) management of productive resources (productive assets and credit), (3) control of use of income, (4) leadership in the community, and (5) time allocation. The GPI measures the empowerment gap for women to reach the empowerment level enjoyed by the men in their households. The WEAI is made up of 10 indicators, and its abridged version, A-WEAI, uses 8 out these 10 indicators. The Naatal Mbay team opted to use the A-WEAI version of the index to reduce the survey time.

A local research firm and Naatal Mbay partner, IPAR (Initiative Prospective Agricole et Rurale), carried out the project baseline study in 2015 and this women's empowerment in agriculture study in 2016 and 2017.

The purpose of this study is to gather quantitative and qualitative information on the current state of gender issues and women's empowerment in agriculture in the Zones of Influence of the project. The A-WEAI score provides a concrete measure – an indicator of women's empowerment – and the qualitative research to contribute to our understanding of the social and economic aspects impacting gender relations in the project zones.

2. METHODOLOGY

The A-WEAI for the ZOI can be disaggregated to the level at which the survey is representative. The study calculated the A-WEAI and sub-indexes (5DE and GPI) for the entire ZOI (including all three zones) and for each zone of the project.

Table 1. Survey Zones and Sub-Zones

Zones	Sub zones
Senegal River Valley (SRV)	Delta (Dagana)
	Middle Valley (Podor–Matam)
Southern Groundnut Basin (SGB)	Center (Fatick–Kaolack–Kaffrine)
Southern Forest Zone (SFZ) or Casamance	Lower Casamance (Ziguinchor)
	Higher and Middle Casamance (Kolda–Sédhiou)

2.1 Quantitative Study

Sampling

The sample utilized a combination of stratification and a two-stage random sampling to select 495 households with 938 individuals, which represent 25.6% of the 1,931 households from the project's baseline study. The stratified two-stage random sampling draws from the sampling plan from the project baseline survey. The six selected strata correspond to a zoning of the project's ZOI with various social, agricultural, and economic characteristics. Using the project baseline database of census districts and household types, a subsample of census districts (CDs) was drawn randomly. Since the purpose of the study was to measure the women's empowerment sub-index (5DE) and the parity gap between men and women (GPI), this study sought to sample "female adults only" and "male and female adults" households. Households with female adults only always have a woman as the head of household (HH). Households with male and female adults can have either a man or a woman as the head of household. To ensure enough female heads of households were surveyed, all census districts (CD) containing at least one "female adults only" household were selected, which caused an oversampling of female headed households by approximately 18% (as they represent 4.7% of the sample of 1,931 value chain households). Oversampling has been corrected in the calculations by applying a corrective sample weight. To avoid overestimating the A-WEAI score due to the overrepresentation of female-headed households, the study calculated the survey weight of each household, which is equal to the inverse of the frequency of that type of household in the original sample of the baseline survey. The household reflects the number of households it represents in the original baseline study. The weight calculation formula is as follows:

$$P_i = \frac{m_i}{n_i}$$

In which:

- P_i is the weight of the household
- m_i is the number of households in the *i* category in the original sample
- n_i is the number of households in the *i* category ("female adults only" or "male and female adults" household)

To connect the data points of this study with the project baseline study, the identification module repeated some questions, particularly the ones related to location, name of the head of household, telephone number, and household identification number. Furthermore, most of the enumerators who participated in data collection for the project baseline study were recruited again and assigned to the localities they had previously covered to minimize the risk of not finding the same households. The additional data collected in 2017, on time allocation in the rainy season, was from the same households as the 2016 data collection.

Because in Senegal there can be multiple configurations of household roles for men and women (such as polygamous households, monogamous households with a mother-in-law, etc.), the questionnaire was administered to primary and secondary respondents who were identified as the primary decision makers in the household for both economic and social decisions. In the "female adults only" households, the woman who is the head of household and decision maker completed the questionnaire. In the "male and female adults" households, then the questionnaire was administered to the decision maker man and woman simultaneously.[1] In 2016, data was collected from 495 households, from a total of 938 respondents (495 women and 443 men). In 2017, data was collected from 453 households, from a total of 836 respondents (453 women and 383 men). The collection gap between 2016 and 2017 is due to the inability of enumerators to access some of the targeted villages due to road conditions during the rainy season in the districts of Médina Yoro Foulah in the region of Kolda. It was deemed unnecessary to replace the missing households with new households because the study would not have had their responses for the first four domains of the 5DE sub-index. To compute the index, average workload values were imputed to these individuals based on their gender, age, and relation to the head of household.

Table 2. Data Collection: Individuals Surveyed by Gender

	2016 Data Collection	2017 Data Collection
Number of men surveyed	443	383
Number of women surveyed	495	453
Total individuals surveyed	938	836

[1] Note that a "male and female adults" household may have a man or a woman as the head of household. For example, this is the case in households with widowed mothers and their married sons.

Figure 1. Map of Surveyed Locations

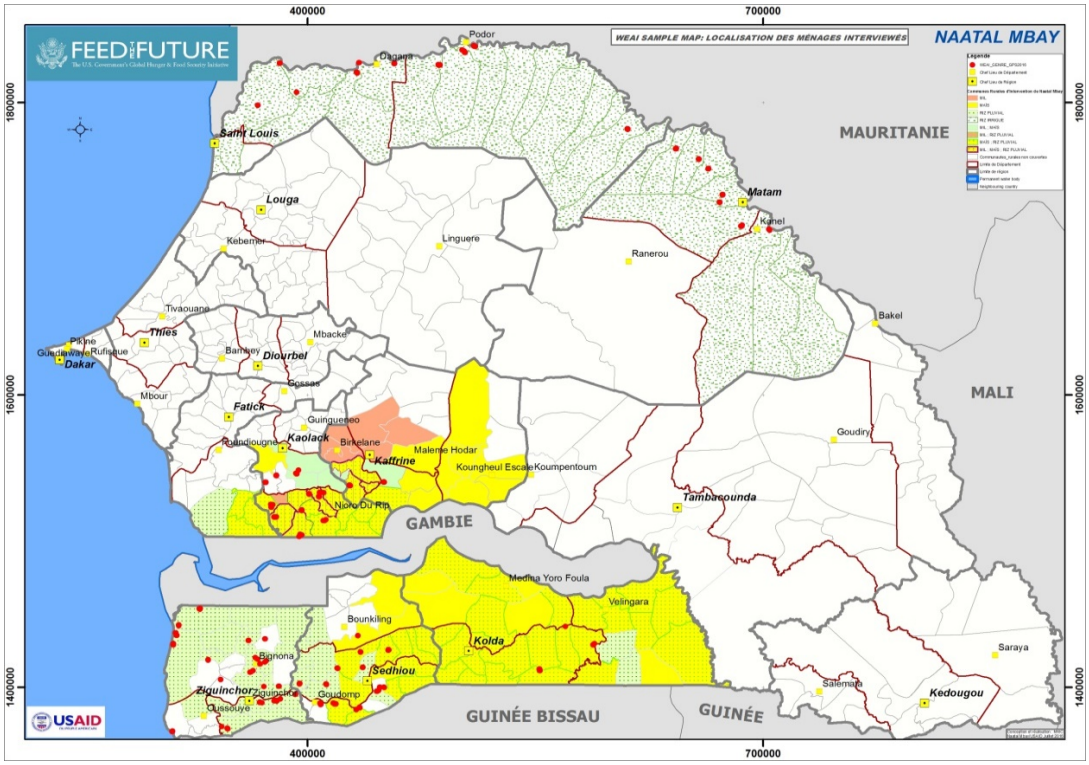


Table 3. Quantitative Data Collection: Households by Zone

Zone	Sub zone	Number of households		
		Project baseline	2016 AWEAI data	2017 AWEAI data
Senegal River Valley (SRV)	Delta (Dagana)	86	46	43
	Middle Valley (Podor–Matam–Kanel)	375	94	91
Southern Groundnut Basin (SGB)	Groundnut Basin (Fatick–Kaolack–Kaffrine)	604	149	149
Casamance (Casa)	Lower Casamance (Ziguinchor)	265	100	100
	Higher and Middle Casamance (Kolda–Sédhiou)	601	106	70
TOTAL HOUSEHOLDS		**1,931**	**495**	**453**

See APPENDIX 1: IPAR STUDY PROTOCOL for additional sampling details.

A-WEAI Questionnaire

A French translation version of the A-WEAI questionnaire was used for data collection. In an effort to adapt the A-WEAI questionnaire to rural Senegal, IPAR, Naatal Mbay, and USAID made several minor revisions:

- Module G1 added questions regarding age, education level, ability to read and/or write, relationship with the head of household, and marital status.
- Module G2, question G2.02 (*When decisions are made regarding [ACTIVITY], who is it that normally makes the decision?*) was adapted to the Senegalese context, which led to the addition of 3 response categories. (See questionnaire in Appendix 2.)
- In Module G4, the question on "agriculture/livestock/fishing" was broken up into several questions: (1) Agriculture (millet, maize, rice); (2) Agriculture other than millet, maize, rice; (3) Livestock; and (4) Fishing. This allowed specific identification of each agricultural activity and the crops targeted by the project.
- Module G5 added question G5.05 "*To what extent do you participate in decision-making in this group?*" However, this data is not included in the computation of the A-WEAI index.

It is important to note that the adjustments made in the questionnaire do not affect the construction of the A-WEAI index.

Enumerator Training

Training workshops for enumerators took place before each round of data collection: February 23–25, 2016 and October 4–6, 2017. The study methodology required pairs of enumerators, one female and one male. Data collection teams were organized into 20 pairs of one male and one female, with 40 enumerators total (20 women and 20 men); the A-WEAI methods protocol require male interviewers to administer the questionnaire to male respondents and female interviewers to female respondents. The data collectors of the project's baseline study were engaged again for the A-WEAI – those who met the criteria on education level, language of assignment zone, and experience in this type of work.

The training covered gender concepts and the A-WEAI tool objectives, methodology, target household types, identification of respondents in the household, and the process of conducting interviews separately and in a confidential manner. Each questionnaire was explained and discussed by trainers and enumerators. The discussions were enriched by sharing experiences from the field to cover possible scenarios. The training used role-play exercises to simulate the interviews in local languages and incorporate specific characteristics of different regions. The enumerators completed practice sessions on tablets to familiarize the enumerators with the technology and provide them with a good understanding of the intricacies of the data input screens. The module on time allocation was given considerable attention and was the topic of many exchanges; this led to the reconfiguration of the format to be easier to use for the agents.

A field test of the questionnaire was carried out at the end of the training workshop (in both 2016 and 2017) to enable the team to practice the theoretical concepts presented during the training. The field test simulated all aspects of the data collection protocol and was followed by a debriefing session in which each pair of enumerators shared their experience of the test survey. The field test also helped clarify and further explain the most important aspects of training both on the content of the questionnaire and on the handling of the tablet data input screen.

Data Entry

A technical procedure similar to that used during the project's baseline survey was used for data entry. Data collected through the tablets was transferred via the Internet to a web platform created for that purpose. The application used was Open Data Kit (ODK), consisting of a package of data collection tools using mobile devices such as smartphones and tablets (with Android operating systems), followed by uploading this data to an online server. Data collected in the field with ODK Collect was imported and managed with ODK Aggregate, the web-based server. Data entry was coordinated by the supervisors of each team of enumerators, in collaboration with the IPAR collection team, including the IT manager of the web platform.

Data Quality Control and Analysis

Before analysis and calculations, standard checks were made to verify data quality. Using tablets meant that several checks were already integrated into the data entry template: non-responses, identification of outliers, and control of skip patterns. Cross-checks were also performed to ensure response consistency within a module and between modules. For example, in the section "Access to Productive Capital," the variables "existence of asset in a household" (g3.01) and "possession of that property by the individual" (g3.02) were cross-checked to ensure that an individual did not report owning property that did not exist in the household. Similarly, in the section "Membership in a Group and Leadership," the variables "group membership" (g5.03) and "existence of this group" (g5.04) were cross-checked to ensure that no one claimed membership in a group he or she declared nonexistent in the community. For the time allocation module, the data entry screen was designed so that the total time adds up to 24 hours because the respondent was asked about activity for every 15 minutes of the day.

Respondent identification also went through a specific check to merge the same households and individuals from the 2016 and 2017 data collection rounds. For analysis purposes and to gain time and efficiency, a grid was developed in agreement with the Naatal Mbay team, and it sufficed for the presentation of findings in the form of tables and graphics.

Calculating the A-WEAI Score

The A-WEAI consists of two parts: the 5DE sub-index, which reflects the five dimensions of empowerment targeted, and the GPI, which reflects gender parity. The 5DE sub-index assesses whether women are empowered across the each of the five domains examined in the A-WEAI (production, resources, income, leadership, and time allocation). Each domain has a corresponding indicator, except for Resources, which has two indicators, each of which is calculated independently. In sum, the 5DE is calculated using 6 indicators and their corresponding weights (see Table 4).

The indicators measure whether an individual has reached a certain threshold (adequate achievement). If the adequacy threshold is reached, the indicator is assigned a value of 1. If the threshold is not reached, the indicator is assigned a 0. Achieving empowerment in a particular domain means having an individual score above the threshold established for each indicator (see Table 4). An individual's empowerment score is the weighted average of these six indicators using the weights defined in Table 4. The empowerment score reflects the weighted percentage of dimensions in which a person has achieved adequacy. Thus, an empowerment score can range from

0% to 100%, with a higher the value obtained indicating a greater the level of empowerment. For the purposes of the A-WEAI index, individuals are classified as either *empowered* or *disempowered*. An individual is classified as empowered if he or she achieves a score of 80% or higher for the weighted dimensions. The 80% score is the empowerment threshold in the 5DE sub-index. If an individual does not reach 80% as the weighted average for the 5 domains, he or she is considered disempowered.

The 5DE is calculated by first constructing the disempowerment index (M_0) and then converting it into an empowerment index ($1 - M_0$). The multidimensional method developed by Alkire and Foster[2] enables the construction and calculation of the empowerment index. The disempowerment index (M_0) is calculated by multiplying the head count of disempowered individuals (H) by the average empowerment deficit (A) or ($M_0 = H*A$). The number of disempowered individuals (H) reflects the proportion of people (calculated for women and men) who are not yet empowered (according to the empowerment threshold). The average empowerment deficit (A) measures the percentage of domains for which disempowered women did not achieved the empowerment threshold. The sub-index 5DE is equal to ($1 - M_0$).

The second part of the A-WEAI is the GPI, which measures gender parity between the woman and man identified as primary decision makers within a same household. The GPI reflects the percentage of women who have an empowerment level equal to that of the men in their households. For households where gender parity does not exist, the GPI shows the gap that remains for women to reach the empowerment level of men. Therefore, this index is estimated based on women living in households with at least one male adult involved in decision making. The GPI sub-index is equal to ($1 - H_{GPI}*I_{GPI}$).

The full A-WEAI score is a weighted sum of the 5DE, with a weight of 90%, and the GPI, with a weight of 10%, based on the following formula: A-WEAI = 0.9*5DE + 0.1*GPI. Thus, a 5DE increase leads to faster growth of the A-WEAI value because of its high weight compared to that of the GPI sub-index. Additional information on the calculation of each indicator, the two sub-indexes, and the full index can be found in APPENDIX 1: IPAR STUDY PROTOCOL.

Additional information on the A-WEAI methods can be found in IFPRI's *Instructional Guide on the Abbreviated Women's Empowerment in Agriculture Index*.[3]

[2] Alkire, S., & Foster, J. (2011). "Counting and Multidimensional Poverty Measurement," *Journal of Public Economics, 95*(476-487).

[3] Malapit, H., Kovarik, C., Sproule, K., Meinzen-Dick, R., & Quisumbing, A. (2015). *Instructional guide on the abbreviated Women's Empowerment in Agriculture Index (A-WEAI)*. Washington, DC: International Food Policy Research Institute.

Table 4. Five Domains of Empowerment Indicators and Definitions[4]

Domain	Indicator	Survey Questions	Name of the Variable	Aggregation Method	Empowerment Threshold	Weight
Production	Input in agriculture decision making	• To what extent did you contribute to decision making on issues of subsistence farming, commercial agriculture, livestock breeding, fishing, or fish farming? • To what extent do you think you can make your own personal decisions on issues of subsistence farming, commercial agriculture, livestock breeding, fishing, or fish farming?	G2.03 A–C, F G2.04 A–C, F	Provides two adequate answers	Empowerment achieved if individual participates and contributes to some decisions and decides or feels he/she can make his/her own decisions	1/5
Resources	Ownership of assets	• Does anybody in your household own [ASSET]? Do you own it presently? ○ Agricultural land (plots, fields) ○ Large livestock (oxen, horse, donkey, camel) ○ Small livestock (goats, pigs, sheep) ○ Poultry (chicken, ducks, turkeys, pigeons)	G3.01–G3.02 A–N	Provides an adequate answer if it is not for small assets (poultry, traditional equipment, and non-durable consumer goods)	Empowerment achieved if the household owns at least a non-negligible asset and the individual is owner or co-owner of this asset	1/10

[4] IPAR. (2016). ADAPTED FROM ALKIRE ET AL. (2011). "Counting and Multidimensional Poverty Measurement," *Journal of Public Economics, 95*(476-487).

Domain	Indicator	Survey Questions	Name of the Variable	Aggregation Method	Empowerment Threshold	Weight
		○ Fish basins and fish farming equipment ○ Agricultural equipment (non-mechanized) ○ Agricultural equipment (mechanized) ○ Non-agricultural trading equipment (solar panels for recharging, sewing machine, brewing equipment, frying equipment, etc.) ○ Houses (and other structures) ○ Large, durable consumer goods (refrigerator, TV, furniture) ○ Small, durable consumer goods (radio, cookware) ○ Cell phone ○ Other non-agricultural land (residential, commercial) ○ Means of transport (bicycle, motorcycle, car)				
	Access to credit	• In the last 12 months, did someone in your household contract credit in cash or in kind from [SOURCE]? • Who made the decision to get credit from [SOURCE]?	G3.06–G3.08 A–F	Provides an adequate answer (attainment of defined relevance threshold)	Empowerment achieved if the household uses a source of credit for which the individual makes decisions on loan or on use of loan	1/10

Domain	Indicator	Survey Questions	Name of the Variable	Aggregation Method	Empowerment Threshold	Weight

		• Most of times, who decides on what to do with the credit money/goods from [SOURCE]?
		  ○ Non-governmental organization (NGO)
		  ○ Official lenders (bank/financial institution)
		  ○ Informal lender
		  ○ Friends or family
		  ○ Formal microfinance or credit groups
		  ○ Informal credit/savings groups such as tontines, cyclical loans, etc.				

Income	Control over the use of income or participation in decision making	• To what extent did you contribute to decisions on the use of income generated by subsistence farming; cash crop farming; livestock; non-agricultural economic activities; wage employment; major household expenditures; and minor household expenditures? • To what extent do you think you can make your own personal decisions on issues of non-agricultural economic activities, wage employment, and major household expenditures?	G2.05 A–F	Provides an adequate answer if it is not for minor expenditures only	Empowerment achieved if the individual participates in an activity and makes at least some input in decision making on the use of the income generated by this activity or feels he/she can make decisions on salary and major household expenditures	1/5

Domain	Indicator	Survey Questions	Name of the Variable	Aggregation Method	Empowerment Threshold	Weight
Leadership	Membership in a group	• Are you an active member of ○ a group of agriculture/livestock/fish farming producers? ○ a group of water users? ○ a group of forest users? ○ a credit or microfinance group? ○ an insurance or mutual group? ○ a trade and business association? ○ a civic and charity group? ○ a religious group?	G5.03–G5.04 A–J	Provides an adequate answer	Empowerment achieved if the individual is a member of at least one community group	1/5
Allocation of work time	Duration of work time	Does your work time exceed 10.5 hours during the previous 24 hours?	G4.01	N/A	Empowerment achieved if the individual works less than 10.5 hours a day	1/5

2.2 Qualitative Study

To establish a comprehensive baseline study of gender aspects and increase the understanding of the environment surrounding the households, interviews and focus groups were conducted concurrently. Qualitative data collection occurred primarily at the household level but also included several farmer organizations and women's groups. The interview and focus group guides are available in APPENDIX 2: DATA COLLECTION TOOLS.

Qualitative Sampling

Qualitative data collection occurred with "male and female adults" and "female adults only" households and with other key actors in the value chain, including farmer organizations (FOs), women's groups, water users' associations, trade and business associations, and community-based organizations (CBOs). Household interviews and focus groups were carried out in each of the sub-intervention zones of the project. Households interviewed included those with male heads of household and those with female heads of household. The profiles of actors were diversified to the maximum extent possible to include the greatest possible scenarios for purposeful sampling, regardless of their statistical frequency within the 4 selected value chains. Qualitative data was collected from 62 households for a total of 96 individuals (63 women and 33 men), 12 focus groups, and 80 other individual interviews, distributed by zone as follows:

Table 5. Qualitative Interview and Focus Group Sample

No. of	SRV	SGB	Casamance	Total
Households Interviewed	32 (32 headed by men)	21 (15 headed by men, 6 headed by women)	9 (6 headed by men, 3 headed by women)	62 (53 headed by men, 9 headed by women)
Individuals in Household Interviews	45 (16 men, 29 women)	36 (11 men, 25 women)	15 (6 men, 9 women)	96 (33 men, 63 women)
Other Individual (Non-household) Interviews	29 (16 men, 13 women)	36 (11 men, 25 women)	15 (6 men, 9 women)	80 (33 men, 47 women)
Focus Groups	5 (2 with women from targeted households; 3 with farmer organizations Association Kawral Ngenar Bossea (AKNB), Union des Femmes Productrices de Ross Béthio, and Réseau Femme Entreprise Rurale (REFER))	4 (3 with mixed farmer organizations – YAKHANAL, FEPROMAS, and BAYBAYAAT – and 1 gathering of different women's groups – 4 from Groupement Féminin SUDU WELI, and 5 from Groupement Féminin BOKK JOM de Nioro Alassane Tall)	3 (Fos Kissal Patim, Entente Diouloulou, and Kabonkétor)	12

Qualitative Data Processing and Analysis

The purpose of this analysis was to gather the information collected during the focus groups and interviews and analyze it to contextualize the quantitative survey findings and elicit any additional understandings. After transcribing the interviews and cleaning up the notes taken during fieldwork, this data was organized into a one file and analyzed using manual content analysis. The processing step consisted of establishing an evaluation matrix with categories, including the indicators and domains of empowerment. This provided the analytical framework for the qualitative data. The data was categorized and classified into the matrix according to zone, sub-zone, value chain, and gender. These categories and sub-categories were then grouped into themes for data interpretation, as shared below in the qualitative findings section of the report.

2.3 A-WEAI Study Team

The study was conducted by IPAR with a team comprising the following:

- A gender specialist whose main tasks were (1) developing data collection tools (interview manuals) and training materials for enumerators (facilitators' manual); (2) training enumerators on interview guides; (3) coordinating qualitative data collection, quality control, and processing; and (4) contributing to drafting the study report
- A statistician whose main tasks were (1) providing a data collection protocol, including sampling; (2) contributing to the development of collection tools and enumerator/supervisor training to ensure data quality; and (3) participating in data analysis and drafting the study report
- An IT specialist whose main tasks were (1) providing the structure for data entry; (2) setting data transfer to the online platform; (3) building data input screens for the tablets; (4) setting up a storage server; and (5) overseeing daily data transfer
- A data analyst whose main tasks were (1) contributing to the development of data collection tools; (2) training enumerators/supervisors; (3) contributing to the supervision of data transfer to the server; (4) contributing to data processing, analysis, and quality control; and (5) contributing to drafting the study report

IPAR and Naatal Mbay, with support from RTI specialists, ensured quality control at all stages of the process.

Quantitative data collection from households was conducted twice: February 29 to March 4, 2016 and October 9–15, 2017 by a team of 40 enumerators (20 women and 20 men), who worked in pairs. The enumerators covered 120 households each day, with a workload of 6 questionnaires per day per team of enumerators. The deployment of the field enumerators considered the number of households to be interviewed per zone and the travel distances involved.

Qualitative data collection was completed by 6 facilitators who were recruited based on their education level (master's degree at minimum), background (mostly sociologists), experience, and proficiency in the main language in each zone. Under the coordination of the IPAR gender specialist, the facilitators contributed to the development of collection tools; conducted household interviews,

key informant interviews, and focus groups; and contributed to transcription, processing, and analysis of the qualitative data collected. The gender specialist and 6 facilitators (three women and three men) formed teams of two and conducted qualitative data collection over a period of 6 days in 2016 and 10 days in 2017 across the three selected zones.

2.4 Data Analysis

The analysis presented in this report includes data from the two rounds of data collection: February–March 2016 and October 2017. The results presented were calculated for the entire ZOI and where relevant, by zone, for all households surveyed in the corresponding area. See Table 3 in the sampling section for the breakdown of zones and sub-zones.

Please note that all statistical results presented and analyzed in this report are weighted to correct the effect of oversampling "female adults only" households (see Table 6). There is a notification whenever this is not the case.

Table 6. Weighted and Unweighted Head Counts by Gender and Zone

Zone	GENDER OF RESPONDENT					
	Unweighted Head Count			Weighted Head Count		
	Men	Women	Total	Men	Women	Total
Delta	44	46	90	21	22	43
Middle Valley	79	94	173	92	97	189
Southern Groundnut Basin	129	149	278	143	153	296
Casamance	191	206	397	217	222	439
Total Sample	**443**	**495**	**938**	**473**	**494**	**967**

3. DESCRIPTIVE STATISTICS

Given the detailed nature of the data collected, the team chose to only present the main findings that contributed to the estimation of the A-WEAI. Other tabular data is presented in the appendixes.

3.1 Sociodemographic Data

This section presents a summary of quantitative sociodemographic data on the survey respondents (the men and women considered primary decision makers in their households). Additional data tables are included in APPENDIX 3: ADDITIONAL DATA TABLES.

Table 7. Respondents by Gender, Household Type, Household Head, and Zone

Zone/Gender HH		RESPONDENT GENDER AND HOUSEHOLD TYPE					
		Male Respondents		Female Respondents		Total	
		Adult men and women	Adult women only	Adult men and women	Adult women only	Adult men and women	Adult women only
SRV	Male HH	121	0	123	0	244	0
	Female HH	2	0	12	5	14	5
	Total	123	0	135	5	258	5
SGB	Male HH	127	0	132	0	259	0
	Female HH	2	0	3	14	5	14
	Total	129	0	135	14	264	14
Casamance	Male HH	155	0	155	0	310	0
	Female HH	36	0	37	14	73	14
	Total	191	0	192	14	383	14
Total	Male HH	403	0	410	0	813	0
	Female HH	40	0	52	33	92	33
	Total	**443**	**0**	**462**	**33**	**905**	**33**

Table 8. Respondents by Gender and Social Status Within the Household

Relationship to the Head of Household	Gender of Respondent					
	Male Respondents		Female Respondents		Total	
	Number	% of respondents	Number	% of respondents	Number	% of respondents
HH-Husband	381	80.6	0	0	381	39.4
HH-Eldest Son	54	11.4	2	0.5	56	5.8
HH-Father/Mother	1	0.2	8	1.6	9	0.9
1st Wife	0	0	337	68.2	337	34.8
2nd Wife	0	0	52	10.5	52	5.4
3rd Wife	0	0	7	1.4	7	0.7
4th Wife	0	0	0	0	0	0
Son/Daughter of HH	13	2.7	9	1.8	22	2.2
Other	24	5.1	43	8.7	67	6.9
Mother of HH	0	0	36	7.3	36	3.8
Total	**473**	**100.0**	**494**	**100.0**	**967**	**100.0**

Table 8 shows that male respondents are mostly husbands and heads of household (80.6%), the rest being elder sons (11.4%), youngest sons, nephews, and so forth. Female respondents are mostly first wives (68.2%), followed by second wives (10.5%) and mothers of male heads of household. It should be noted that most female heads of household identified themselves as wives because the question asked focused on their relationship to the head of household.

Regarding age, a majority of male respondents were aged 50 years or older (59.5%), whereas 35% of female respondents were 50 years or older. Young adults aged 18–35 years made up 14.5% of the male respondents and 34.5% of the female respondents. Adults 36–49 years of age constituted 26% of the men and 30.1% of the women. These findings are relatively similar across the different zones (see Table in Appendix 3).

Regarding marital status, the majority of men were in monogamous marriages (50.7%), while 44.8% of women were in monogamous marriages. Forty-three percent of the men and women were in polygamous marriages. Widows constitute a relatively large proportion of respondents (almost 10% of women surveyed).

Table 9. Education Level of Respondents by Gender and Zone

Zone	Respondent Gender	Education Level (% row)							
		Literate in national language	Islamic/ Arabic school	Incomplete primary level	Complete primary level	Incomplete secondary level	Complete secondary level	Higher education	None
Total sample	Male	6.2	42.7	11.4	4.6	12.5	3.3	1.7	17.7
	Female	5.2	18.4	9.3	3.4	3.2	0.2	0.5	59.7
	Total	5.7	30.3	10.4	4.0	7.7	1.7	1.1	39.2
SRV	Male	13.1	50.1	6.7	5.1	4.8	2.1	1.5	16.8
	Female	5.9	15.4	6.8	3.8	2.4	0	0.8	65.0
	Total	9.4	32.3	6.8	4.4	3.5	1.0	1.1	41.4
SGB	Male	5.5	61.4	9.4	7.1	6.5	2.4	1.6	6.3
	Female	6.8	44.8	12.4	1.5	2.2	0	0.7	31.6
	Total	6.2	52.8	11.0	4.2	4.3	1.1	1.1	19.4
Casa	Male	3.0	26.5	15.2	2.7	20.4	4.5	1.9	25.7
	Female	3.8	1.9	8.6	4.5	4.4	0.4	0.1	76.3
	Total	3.4	14.0	11.9	3.6	12.3	2.4	1.0	51.3

Regarding level of education, 42.7% of men have Arabic and Islamic schooling, in comparison to 18.4% of women. Sixteen percent of men and 12.7% of women have French-language primary-level education, and 15.7% of men and 3.4% of women have French-language secondary-level education. Overall, 17.7% of men and 59.7% of women received no education (see Table 9).

There are some differences in education by zone. Overall, 59.7% of women received no education. This includes 76.3% of women in Casamance and 65% of women in SRV but only 31.6% of women in SGB. In the SGB zone, Arabic and Islamic schooling is fairly widespread – 61.4% of men and 44.8% of women – compared to 42.7% of men and 18.4% of women for the overall sample across zones.

For primary education, the lowest rates are observed among women in SGB, with a completion rate of 1.5%. Secondary education reaches a relatively sizable percentage of men in Casamance, with 20.4% having started but not completed secondary school and 4.5% having completed it. A very low proportion of respondents attended higher education for both genders and in all zones.

Regarding ability to read and write in the overall sample, the majority of men (60.9%) reported the ability to read and write, compared with 18.3% of women. Most women (71.1%) are unable to read or write, while only 27.2% of men are in the same situation. Findings are similar across all covered zones.

3.2 Participation in Economic Activities and Role in Decision Making

This section assesses respondents' participation in economic activities and household decision making on income-generating activities during the 12 months preceding the interview. The results show that respondents overwhelmingly participate in agricultural activities related to subsistence farming (food crops for household consumption), with 96.8% of men and 95.1% of women reporting participation. For commercial farming – crops destined to be sold – 71.5% of men and

51.2% of women report participation. Many respondents also participate in livestock breeding activities: 75.1% of men and 66.8% of women. For non-farming economic activities, respondents declared a lower participation: 40.2% of men and 40.6% of women. Only a minority of respondents, 9.4% of men and 7.1% of women, reported involvement in wage employment.

Overall, respondents are heavily involved in subsistence farming, are moderately involved in commercial farming and livestock breeding, and have little involvement in non-farming economic activities. A minority of respondents are involved in wage work, fishing, and fish farming. The strong participation of women and men in farming activities confirms that agriculture is the primary economic activity in the surveyed zones in Senegal, especially in rural areas.

Table 10. Percent of All Respondents Participating in Economic Activities

Gender of respondent		Subsistence farming (primarily household consumption)	Commercial farming (primarily for sale)	Livestock raising	Non farming economic activities	Wage employment	Fishing or fish farming
Sample total	Male	96.8	71.5	75.1	40.2	9.4	6.5
	Female	95.1	51.2	66.8	40.6	7.1	2.8
	Total	95.9	61.1	70.9	40.4	8.2	4.6
SRV	Male	97.9	38.2	61.7	21.6	7.3	5.1
	Female	96.6	33.0	62.4	28.4	5.6	1.2
	Total	97.3	35.5	62.1	25.1	6.5	3.1
SGB	Male	94.5	87.5	77.3	63.7	14.9	0
	Female	89.0	58.9	76.3	47.9	13.4	0
	Total	91.7	72.7	76.8	55.5	14.1	0
Casamance	Male	97.7	78.4	80.8	34.4	6.8	11.5
	Female	98.4	55.7	62.7	42.2	3.5	5.6
	Total	98.0	66.9	71.6	38.3	5.1	8.5

Respondents report that "primary male adults or husbands" are the primary decision makers across all activities. "Primary female adults" are involved most frequently in decision making around non-farming economic activities and wage employment. Decisions are made by "husband and wife jointly" approximately 15–25% of the time across the categories of activities (see Table 11).

For decisions regarding income use on major expenditures, the majority of decision makers are "male adults or husbands." Where minor expenditures are concerned, a large proportion of female respondents (44%) stated that "primary female adults" make the decisions. However, 21.8% of male respondents differed, stating minor expenditure decisions were made by the primary female adult (21.8%), the husband and wife collectively (31.5%), and the primary male adult or husband (29.7%).

Table 11. Distribution of Decision Makers (%) by Activity and Gender

Activities	Household Decision Maker	Sample Total		
		Male Respondents	Female Respondents	Total
Subsistence Farming	Primary male adult or husband	55.5	40.5	47.9
	Primary female adult	2.2	17.5	9.9
	Husband and wife jointly	19.5	33.0	26.3
	Other household member	1.6	3.1	2.4
	Jointly with other household member	20.4	5.6	12.9
	Jointly with non-household member	0.9	0.2	0.5
	No decision made	0	0	0
Commercial Farming	Primary male adult or husband	52.9	47.4	50.6
	Primary female adult	2.8	14.9	8.0
	Husband and wife jointly	18.4	29.0	22.9
	Other household member	2.8	3.9	3.3
	Jointly with other household member	21.5	4.8	14.4
	Jointly with non-household member	1.6	0	0.9
	No decision made	0	0	0
Livestock Breeding	Primary male adult or husband	56.5	37.3	47.2
	Primary female adult	6.4	17.8	11.8
	Husband and wife jointly	14.5	31.4	22.7
	Other household member	4.3	5.6	4.9
	Jointly with other household member	17.6	6.9	12.4
	Jointly with non-household member	0.7	1.1	0.9
	No decision made	0	0	0
Non-farming Economic Activities	Primary male adult or husband	85.1	10.8	46.7
	Primary female adult	1.5	60.2	31.9
	Husband and wife jointly	4.0	22.8	13.7
	Other household member	4.0	0.0	1.9
	Jointly with other household member	4.2	5.0	4.6
	Jointly with non-household member	1.2	1.1	1.2
	No decision made	0	0	0
Non-farm Wage Employment	Primary male adult or husband	71.2	16.1	47.6
	Primary female adult	0.0	55.0	23.6
	Husband and wife jointly	7.3	24.3	14.6
	Other household member	10.8	0.8	6.5
	Jointly with other household member	8.0	3.7	6.2
	Jointly with non-household member	2.7	0.0	1.5
	No decision made	0	0	0
Fishing or Fish Farming	Primary male adult or husband	77.9	54.4	70.6
	Primary female adult	3.8	5.6	4.4
	Husband and wife jointly	0	0	0
	Other household member	3.0	13.2	6.2

Activities	Household Decision Maker	Sample Total		
		Male Respondents	Female Respondents	Total
	Jointly with other household member	15.3	26.8	18.9
	Jointly with non-household member	0	0	0
	No decision made	0	0	0
Major Expenditures	Primary male adult or husband	52.9	53.5	53.2
	Primary female adult	1.6	7.0	4.4
	Husband and wife jointly	18.5	30.0	24.4
	Other household member	1.7	3.9	2.8
	Jointly with other household member	24.4	5.5	14.7
	Jointly with non-household member	0.8	0.1	0.5
	No decision made	0	0	0
Minor Expenditures	Primary male adult or husband	29.7	20.5	25.0
	Primary female adult	21.8	44.0	33.1
	Husband and wife jointly	31.5	26.6	29.0
	Other household member	1.8	3.0	2.4
	Jointly with other household member	14.7	6.0	10.3
	Jointly with non-household member	0.5	0	0.2
	No decision made	0	0	0

With regards to women's perception of their decision-making power, results show that a majority of women feel free to make their own decisions. This observation is confirmed by the qualitative interviews and focus groups and applies across all zones for the activity types and spending decisions.

Although the decision-making power in subsistence farming is dominated by men in the surveyed zones, qualitative interviews showed that women's role in decision making depends on their level of involvement in the subsistence farming activities. It varies according to sociocultural factors and is correlated to factors such as membership in an organization, economic power, and financial support to the household. The qualitative findings also suggest that women are not always able to freely use their own income without first informing their husband when it comes to major expenditures.

Moreover, some of the female respondents, especially in SGB and SRV, report that they give a portion of their income to their husband. Beyond their willingness to contribute to covering household expenditures, it seems that this practice is a means to negotiate their freedom to participate, particularly for women with responsibilities in community organizations. In Casamance, women report being able to use their own income more freely, although, like in the other zones, most of it is used to cover household needs, including children's schooling, household equipment, and health. This relative freedom might be derived from the egalitarian sociocultural system in the Diola society, where women are the main producers of rice, their ethnic staple food. The higher the contribution, the more women can negotiate some freedom in using their own income and the income of the entire household. The same logic applies for women's input in decision making regarding production.

Table 12. Perception of Decision Making by Activity

Economic activities	Perception that they can make their own decisions	Sample total		
		Men	Women	Total
Subsistence farming	Not at all	1.2	7.4	4.3
	Small extent	7.4	12.9	10.1
	Medium extent	50.2	46.9	48.5
	To a large extent	41.2	32.8	37.0
Commercial farming	Not at all	1.6	10.8	5.1
	Small extent	8.6	13.1	10.3
	Medium extent	45.1	30.8	39.7
	To a large extent	44.7	45.3	45.0
Livestock breeding	Not at all	4.5	5.6	5.1
	Small extent	11.7	17.2	14.6
	Medium extent	42.3	38.0	40.1
	To a large extent	41.4	39.1	40.2
Non-farming economic activities	Not at all	0	3.4	2.4
	Small extent	8.9	10.5	10.0
	Medium extent	64.7	32.9	42.5
	To a large extent	26.4	53.2	45.1
Wage employment	Not at all	0	19.3	7.9
	Small extent	15.7	12.9	14.6
	Medium extent	59.6	30.7	47.7
	To a large extent	24.7	37.1	29.8
Fishing or fish farming	Not at all	0	0	0
	Small extent	16.3	37.7	26.9
	Medium extent	57.8	16.5	37.2
	To a large extent	25.9	45.9	35.8
Major expenditures	Not at all	1.2	14.1	7.2
	Small extent	5.8	15.6	10.4
	Medium extent	44.8	36.2	40.8
	To a large extent	48.2	34.0	41.6

3.3 Access to Productive Resources

Productive resources include ownership of assets and access to capital that can help generate income.

Asset Ownership

Table 13 shows that, when it comes to individual ownership, men are the primary owners of productive assets, while women own less valuable property, such as small livestock, poultry, radios, cookware, and so forth. When combining individual ownership and shared ownership (with a partner), women have ownership levels exceeding 50% of productive assets, with the exception of large livestock, equipment, and means of transportation.

In general, highly valuable productive assets belong to men, particularly farmland, farm equipment, large livestock, houses, and means of transportation. Of the assets associated with agricultural production, farmland and land ownership in general are most important in the rural areas included in this study. Qualitative results show that women typically access farmland through their husband or in-laws, or to a lesser extent by renting and borrowing. In all three zones, the male head of household usually manages and controls access to the farmland. The reasons for this male privilege are linked to several factors including social, historical, cultural, and religious beliefs that underlie gender inequality. Similarly, women are often excluded from land inheritance.[5]

Ability to participate in agriculture activities depends on access to farming equipment, in addition to access to farmland. The results show that access to farming equipment is also managed by men. Thus, women must wait until work on the main household plots is completed before they are able to use farming equipment on their own plot of land, if they have one.

Table 13. Ownership of Productive Capital

Do you currently own this item?		Sample Total		
		Men	Women	Total
Agricultural land (plots, pieces of land)	Yes – Individual ownership	64.6	27.7	46.6
	Yes – Shared ownership	31.6	37.6	34.5
	No	3.8	34.7	18.9
Large livestock (cattle, horses, donkeys, camels)	Yes – Individual ownership	71.2	12.7	42.4
	Yes – Shared ownership	27.1	32.5	29.8
	No	1.7	54.9	27.8
Small livestock (goats, pigs, sheep)	Yes – Individual ownership	48.0	44.7	46.4
	Yes – Shared ownership	50.2	27.4	38.9
	No	1.8	27.9	14.7
Poultry (chickens, ducks, turkeys, pigeons)	Yes – Individual ownership	40.3	50.7	45.5
	Yes – Shared ownership	54.8	26.7	40.8
	No	4.9	22.5	13.7
Fishponds and equipment	Yes – Individual ownership	51.8	35.4	46.8
	Yes – Shared ownership	33.2	39.3	35.0
	No	15.1	25.2	18.2
Farm equipment (non-mechanized)	Yes – Individual ownership	73.9	26.9	49.4
	Yes – Shared ownership	24.4	38.4	31.7
	No	1.7	34.7	18.9
Farm equipment (mechanized)	Yes – Individual ownership	55.9	11.8	18.8
	Yes – Shared ownership	27.4	36.4	35.0
	No	16.7	51.8	46.2
	Yes – Individual ownership	56.1	19.8	41.7

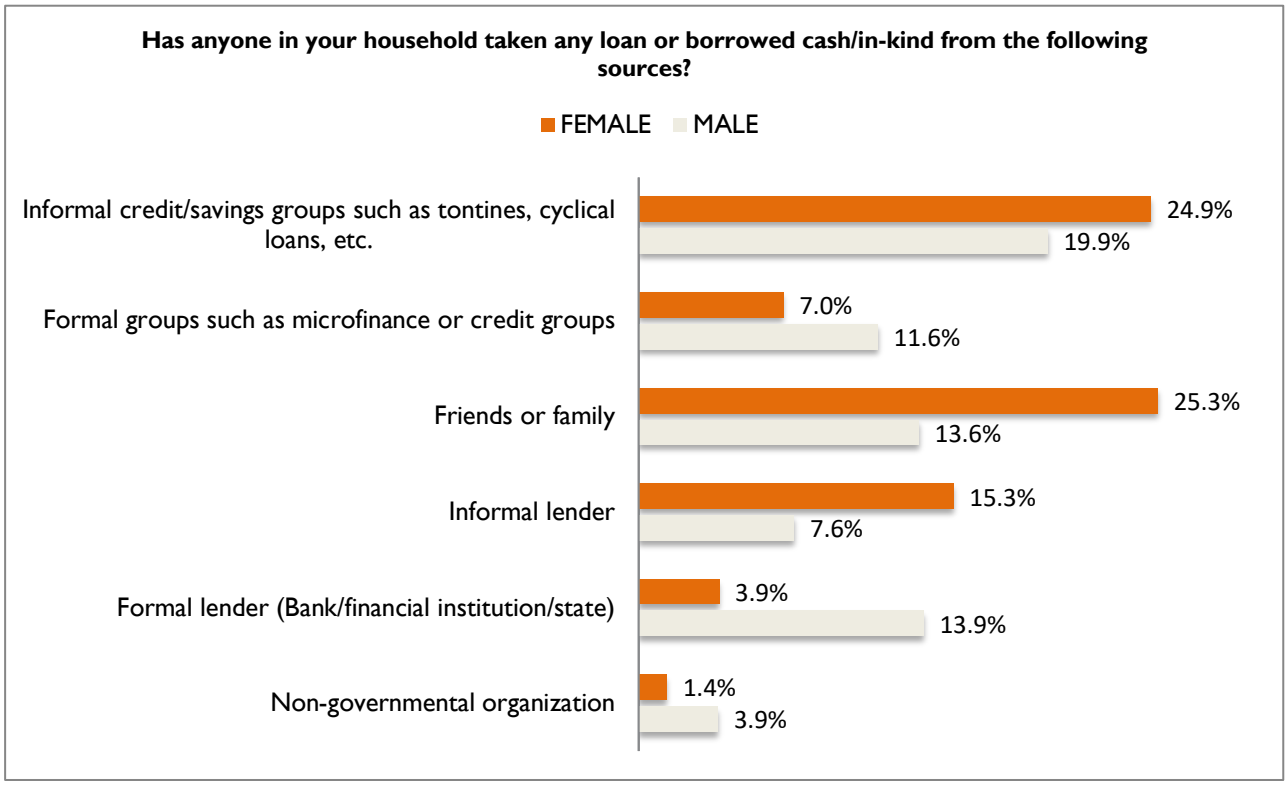
[5] Sall, F. D. (2012, April). L'accès des femmes à la terre au Sénégal : un chemin escarpé. *AGRIDAPE*, *28*(1).

Do you currently own this item?		Sample Total		
		Men	Women	Total
Non-farm business equipment (solar panels for recharging)	Yes – Shared ownership	40.7	26.7	35.2
	No	3.1	53.5	23.2
House (or other structures)	Yes – Individual ownership	70.3	9.7	39.6
	Yes – Shared ownership	26.3	38.6	32.5
	No	3.4	51.7	27.9
Large consumer durables (refrigerator, TV, sofa)	Yes – Individual ownership	58.2	15.6	35.5
	Yes – Shared ownership	34.6	47.5	41.5
	No	7.2	36.9	23.0
Small consumer durables	Yes – Individual ownership	69.8	52.1	61.0
	Yes – Shared ownership	25.1	26.7	25.9
	No	5.1	21.2	13.1
Cell phone	Yes – Individual ownership	89.2	47.9	68.3
	Yes – Shared ownership	8.2	22.3	15.3
	No	2.7	29.8	16.4
Other land not used for agricultural purposes (residential or commercial)	Yes – Individual ownership	48.4	14.8	33.6
	Yes – Shared ownership	46.7	23.4	36.4
	No	4.9	61.8	30.0
Means of transportation (bicycle, motorcycle, car)	Yes – Individual ownership	74.5	5.0	39.9
	Yes – Shared ownership	11.7	20.4	16.0
	No	13.8	74.6	44.0

Access to Credit

Overall, only a small proportion of household members have accessed credit in the past year (see Figure 2). The most used sources of credit are informal sources such as mutual credit and savings groups (24.9% of women and 19.9% of men) and friends or relatives (25.3% of women and 13.6% of men). Men are more likely than women to access credit from formal lenders.

Figure 2. Access to Credit by Source and Gender



Among respondents with access to credit, male heads of household are more likely than women or other household members to obtain credit, across all sources (see Table 14). Women with access to credit are more likely to obtain credit on their own when the sources are informal lenders (44.2%), friends or relatives (48.2%), and informal credit groups (44%).

Qualitative findings confirm that in all zones, men and women have limited access to credit. For formal credit, access barriers for men and women include low presence of small credit institutions and guarantee requirements (land title, pay slip, etc.). However, constraints to accessing credit have a greater impact on women. They face discriminatory banking practices, legal obstacles, and sociocultural assumptions (e.g., "fear of not being able to repay"). In such situations, bundled loans obtained through farmer organizations are the main solutions for female producers. Women tend to resort to obtaining revolving credit through women's or community groups and informal credit from traders or relatives.

Table 14. Distribution of Respondents (%) Who Obtained Credit

Lending Source/Contractor (Multiple Answers Allowed)		Total Sample		
		Men	Women	Total
Non-governmental organizations (NGOs)	Self-financing	72.0	19.4	46.5
	Partner/spouse	4.3	35.2	19.3
	Other HH member	51.5	47.3	49.5
	Other non-HH member	2.3	48.0	24.4
Formal lenders (banks/financial institutions/state)	Self	65.7	23.9	50.7
	Partner/spouse	9.4	48.2	23.3
	Other HH member	36.1	49.0	40.7
	Other non-HH member	9.8	45.2	22.5
Informal lenders	Self	78.9	44.2	58.5
	Partner/spouse	5.1	41.8	26.7
	Other HH member	46.5	29.8	36.7
	Other non-HH member	2.0	29.1	17.9
Friends or relatives	Self	76.8	48.2	59.5
	Partner/spouse	4.1	29.3	19.3
	Other HH member	31.1	24.1	26.9
	Other non-HH member	1.4	18.3	11.6
Formal groups (microfinance or credit)	Self	62.0	27.9	44.0
	Partner/spouse	18.8	32.6	26.1
	Other HH member	40.8	31.7	36.0
	Other non-HH member	2.2	31.0	17.4
Informal credit/savings groups (tontines, rotating credit, etc.)	Self	50.8	44.0	46.7
	Partner/spouse	36.8	21.9	27.8
	Other HH member	27.2	22.4	24.3
	Other non-HH member	3.1	14.6	10.0

3.4 Group Membership and Leadership

This section looked at membership in community groups, whether formal, informal, or religious. The findings in Table 15 show that men have higher levels of membership than women in almost all types of community groups. Beyond women's groups specifically, there was participation among 60.8% of women surveyed, women are most present in religious associations (60%), age-based groups (39.5%), credit or microfinance groups (38.2%), and mixed farmer groups (34.4%).

Across zones, the data show no major differences between men and women in group membership. However, in terms of regional trends, the Senegal River Valley (the delta in particular) and the Senegal Groundnut Basin have more community groups in compared to Casamance, a fact confirmed by the qualitative interviews and focus groups.

The qualitative data found that most of the women interviewed belong to at least one organization. However, group membership is more firmly institutionalized and better organized in the North and

Center regions. Membership in an organization is more common among women than among men, although the men are more represented in farmer organizations.

Table 15. Percentage of Respondents as Members of Community Groups

Community Groups	Total Sample		
	Men	Women	Total
Agricultural, livestock, and fishery producer groups	58.5	34.4	45.3
Water users' groups	39.4	25.5	33.2
Forest users' groups	16.4	12.2	14.3
Credit or microfinance groups	14.5	38.2	30.6
Mutual help or insurance groups	8.5	11.5	10.9
Trade and business associations	25.2	24.1	24.4
Civic or charitable groups	51.4	24.6	42.8
Religious groups	70.8	60.0	64.8
Women's or men's groups	30.3	60.8	48.6
Other specific groups (age, political party, sports, etc.)	73.1	39.5	65.9

Both men and women join farmer organizations and receive support through them. Male and female members state that farmer organizations allow them to develop their activities and that they are better off than nonmembers. In principle, project-supported farmer organizations provide the same benefits to all members (e.g., credit, access to inputs, farm equipment, marketing channels, and training and capacity building in technologies and good farming practices) regardless of gender. However, the results of the qualitative interviews and focus groups show that men benefit the most from group membership. Men are the majority in farmer organizations, which helps them receive support targeted to their needs. One of the largest difficulties women face is access to land for farming, especially for those growing maize and millet, which is a precursor to benefiting from many of the services provided by farmer organizations. For example, some women interviewed in Foundiougne, a sub-zone of SGB, reported membership in a farmer organization, but they mostly benefit from support through women's advancement groups.

Moreover, although millet is the staple food in the SGB, Naatal Mbay interventions target maize, which is seen as a supplemental crop in that region. Without the resources necessary to grow both millet and maize, the few women who manage to grow cereals in the SGB choose millet and therefore do not benefit from maize-focused farmer organization support from the project. Thus, although benefits of farmer organization membership are offered to both men and women, local realities and access to land determine the ability to take advantage of opportunities.

Except for women's groups, women are in typically underrepresented in farmer organization leadership positions. Women are significantly underrepresented in the millet and maize value chains, related to their lower rates of membership in the farmer organizations of the SGB.

3.5 Time Allocation

Data collection on time allocation occurred at two points: February–March 2016, during the dry season (see Table 16), and October 2017, during the rainy season (see Table 17). The average workload hours in the dry and rainy seasons were used to calculate an average workload for the year for all sampled individuals. This yearly average was then used to compute the global A-WEAI index. Respondents reported their activities in the 24 hours preceding each interview. Agricultural work, non-farm work, and domestic activities are included in the index calculation. Leisure activities are not included in the calculation, but they are included in these data tables for informational purposes.

Overall, in all zones and in both seasons, women spend more time on income-generating and domestic activities and less time on leisure activities than men.

Table 16. Dry Season: Average Time (in Hours) Spent on Activities

Dry season activities		Total Sample		Senegal River Valley		Southern Groundnut Basin		Casamance	
		M	F	M	F	M	F	M	F
Agricultural activities	Farming (millet, maize, rice)	1.0	0.2	3.9	0.8	0.1	0.1	-	-
	Farming (other than millet, maize, rice)	1.1	0.9	0.8	1.5	0.3	0.4	1.8	1.0
	Livestock raising	0.4	0.1	0.4	0.1	0.5	0.1	0.4	-
	Fishing	0.2	-	0.3	-	-	-	0.3	-
Non-farm work	Work as employed	0.5	0.1	0.2	0.1	0.7	0.3	0.5	-
	Work in own business (trade, transport, crafts, etc.)	0.1	-	-	-	0.2	-	-	-
	Weaving, sewing, textile care	-	-	-	-	0.1	-	0.1	-
Domestic work	Domestic work (including fetching wood and water)	0.4	2.3	-	1.4	0.2	2.6	0.9	2.7
	School (also homework)	0.2	-	0.1	-	-	0.1	0.3	-
	Shopping/getting service (including health services)	0.2	0.2	0.1	0.3	0.1	0.3	0.3	0.2
	Cooking	-	2.3	-	1.9	-	2.2	-	2.6
	Care for others (children/elderly)	0.1	0.5	0.2	0.6	-	0.5	0.2	0.5
Total time spent on income generating and domestic activities		4.3	6.8	6.0	6.7	2.2	6.5	4.7	7.0
Leisure activities	Sleeping, resting	8.7	9.3	7.7	8.7	8.3	9.3	9.4	9.7
	Eating, drinking	1.3	1.6	1.5	1.5	1.2	1.7	1.3	1.5
	Personal care	0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.6
	Traveling and commuting	0.3	0.1	0.5	0.1	-	0.2	0.3	-
	Watching TV/listening to radio/reading	0.6	0.2	0.9	0.4	0.3	0.2	0.6	0.2
	Exercising	0.1	-	0.1	-	-	-	0.1	-
	Social activities and hobbies	2.8	2.1	2.1	2.2	3.8	2.4	2.5	1.9
	Religious activities	3.4	1.5	3.2	1.8	4.2	1.4	3.0	1.5
	Other	0.4	0.4	0.9	1.1	0.3	0.3	0.3	-
Total time spent on leisure activities		18.3	15.9	17.5	16.4	18.7	16.2	18.2	15.4

Table 17. Rainy Season: Average Time (in Hours) Allocated to Activities

Rainy season activities		Total Sample		Senegal River Valley		Southern Groundnut Basin		Casamance	
		M	F	M	F	M	F	M	F
Agricultural activities	Farming (millet, maize, rice)	2.8	1.6	3.8	0.4	4.1	1.4	1.3	2.3
	Farming (other than millet, maize, rice)	0.6	0.2	0.3	0.1	-	0.2	1.2	0.3
	Livestock raising	0.4	0.2	0.2	0.4	0.5	0.1	0.4	0.1
	Fishing	0.2	-	0.1	-	0.1	-	0.4	-
Non-farm activities	Work as employed	0.3	-	0.1	0.1	0.4	0.1	0.3	-
	Weaving, sewing, textile care	-	0.1	-	0.2	-	-	-	0.1
	Work in own business (trade, transport, crafts, etc.)	1.0	0.5	0.4	0.6	1.2	0.9	1.2	0.2
Domestic work	Domestic work (including fetching wood and water)	0.1	2.1	0.3	1.9	0.1	1.6	0.1	2.6
	School (also homework)	0.1	-	0.1	-	0.2	-	0.1	-
	Shopping/getting service (including health services)	0.1	0.2	0.1	0.3	0.1	0.1	0.2	0.1
	Cooking	-	1.9	-	2	-	2	-	1.8
	Care for others (children/elderly)	0.4	1.5	-	1.4	1.2	2	0.1	1.3
Average time spent on income generating and domestic activities		6.2	8.3	5.4	7.4	7.9	8.4	5.5	8.8
Leisure activities	Sleeping, resting	9.6	10.3	9.1	9.3	8.9	9.7	10.3	11.2
	Eating, drinking	1.4	1.7	1.6	2	1.4	1.4	1.3	1.8
	Personal care	0.9	0.9	1.1	0.7	1.2	0.8	0.7	1
	Traveling and commuting	0.1	0.1	0.1	0.3	-	0.1	0.2	0.1
	Watching TV/listening to radio/reading	1.0	0.4	0.8	0.6	0.9	0.3	1.2	0.4
	Exercising	0.1	-	0.1	-	0.1	-	0.1	-
	Social activities and hobbies	3.2	1.9	2.3	3.0	2.9	2.5	3.9	1.0
	Religious activities	2.5	1.5	3.2	2.3	2.5	1.4	2.2	1.2
	Other	0.2	0.2	0.4	0.2	0.2	0.2	0.1	0.2
Total time spent on leisure activities		19	17	18.7	18.4	15.2	16.4	20	16.9

Table 18 provides a comparison of workload on income-generating and domestic activities during the dry and rainy seasons for men and women across zones. Overall, the workload is heavier in the rainy season, which is not surprising given the timing of agriculture activities in the year. For agricultural activities, men work more hours than women in both seasons and in all zones. The same is true for non-farm income-generating activities, except during the rainy season in the SRV, where women record an average workload of 1 hour compared to 0.6 hours for men. Domestic activities, however, are almost exclusively completed by women in all zones, regardless of the season (5.4 hours for women and 0.6 hours for men). This suggests that the high levels of domestic work are the reason, in all zones and both seasons, women record an average workload (7.6 hours) that is higher than the workload of men (5.2 hours) across all zones.

Table 18. Average Time (in Hours) Allocated to Activities

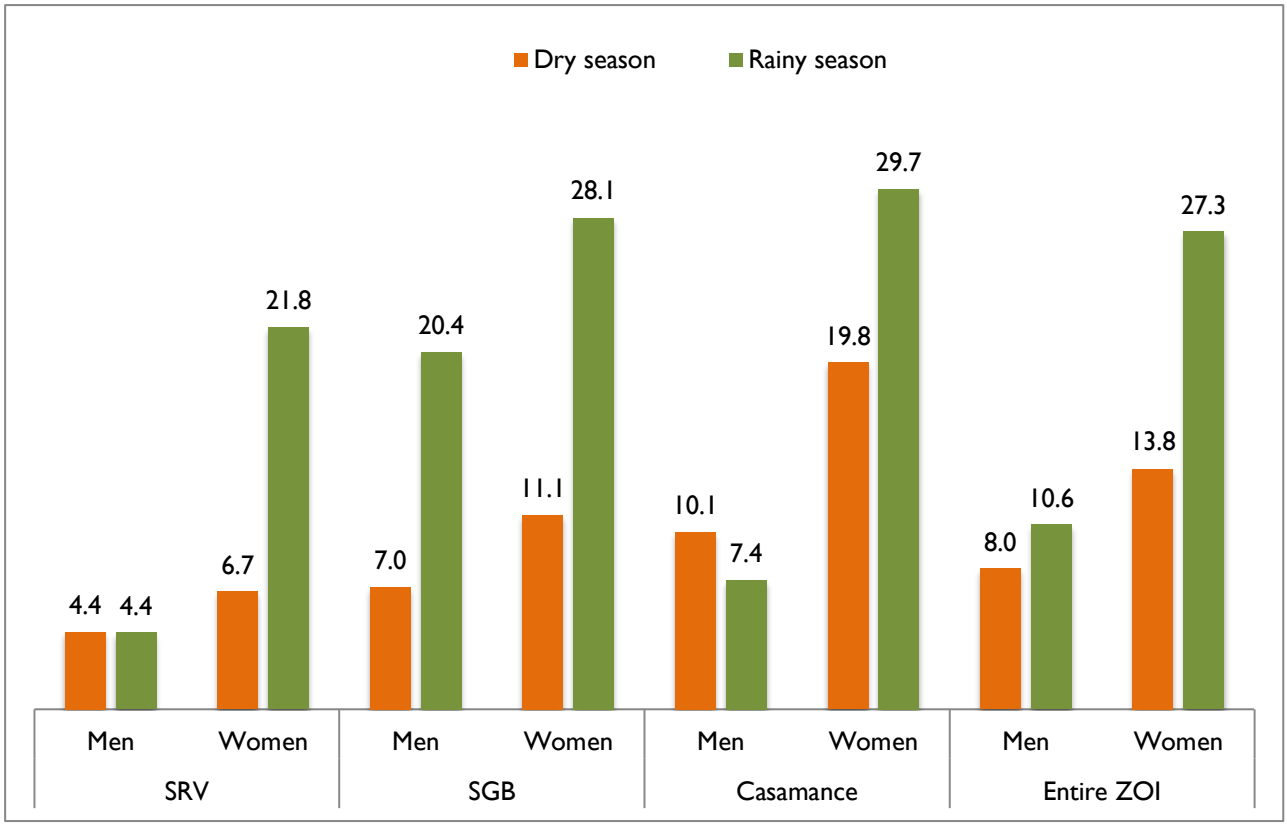
Activities	Season	Total Sample		Senegal River Valley		Southern Groundnut Basin		Casamance	
		M	F	M	F	M	F	M	F
Agricultural activities	Dry season	2.8	1.2	5.3	2.4	1.0	0.5	2.6	1.1
	Rainy season	4.0	2.0	4.4	1.0	4.8	1.8	3.4	2.7
	Year	3.4	1.6	4.9	1.7	2.9	1.1	3.0	1.9
Non-farm activities	Dry season	0.9	0.4	0.4	0.4	1.0	0.7	1.1	0.2
	Rainy season	1.6	0.7	0.6	1.0	1.9	1.1	1.8	0.3
	Year	1.2	0.6	0.5	0.7	1.5	0.9	1.5	0.2
Domestic work	Dry season	0.6	5.2	0.2	3.9	0.2	5.3	1.1	5.8
	Rainy season	0.6	5.6	0.3	5.4	1.3	5.5	0.2	5.8
	Year	0.6	5.4	0.3	4.7	0.7	5.4	0.7	5.8
Total time spent on income-generating and domestic activities	Dry season	4.3	6.8	6.0	6.7	2.2	6.5	4.7	7.0
	Rainy season	6.2	8.3	5.4	7.4	7.9	8.4	5.5	8.8
	Year	5.2	7.6	5.7	7.1	5.1	7.5	5.1	7.9

An individual is considered disempowered in the time allocation domain if the total time spent on income-generating and domestic activities exceeds 10.5 hours in a 24-hour period. The data shows that these workload averages for both men and women, in all zones, in both seasons are below that threshold (see Table 18).

Nevertheless, there were individuals in the study who crossed this threshold, with a work overload. Figure 3 provides the percentages of individuals with a work overload (workload over 10.5 hours), comparing men and women for each zone and for the entire ZOI. Across all zones, 27.3% of women are overworked in the rainy season, compared with 10.6% of men. In the dry season, 13.8% of women and 8% of men are overworked. The greatest rates of work overload are for women during the rainy season. In the SGB, men are overworked at greater rates during rainy season;

however, in the SRV the rates are the same in both seasons, and in Casamance more men are overworked in the dry season. While time spent on domestic work is similar in the rainy and dry seasons, women spend much more time on agriculture activities in the rainy season.

Figure 3. Percentage of Respondents With Work Overload



Balancing income-generating activities and domestic workload is one of the main challenges that women face, particularly in rural zones. Due to limited access to equipment that would alleviate their domestic workload and a lack of mechanized farming equipment, women have long, busy workdays, especially during the rainy season. For some women, this situation continues into the dry season because of their involvement in horticulture or because they live in a zone where it is possible to have two crop seasons per year (the SRV). Qualitative data show that a very heavy workload can prevent women from being effectively involved in income-generating activities and, as result, can become a significant obstacle to their empowerment in agriculture.

Also of note, the women in this study were surveyed because they contribute to decision making within their households; 63.2% of women surveyed were first wives, and 40.4% of women were in polygamous households. Women with a lower status in the household, or women who have little or no input in decision making in the household, might have different rates of work overload.

Women's workload varies with the age, marital status, household type, degree of involvement in agricultural activities, socioeconomic status of the household, and leadership in farmer organizations and other groups. The more time spent on domestic work, the less women will be involved in farmer organizations and the less likely they are to take on leadership roles.

4. THE A-WEAI RESULTS

This section presents the results (Table 19) of the calculation of the A-WEAI and its sub-indexes (5DE and GPI) for the entire ZOI, each of the three zones (SRV, SGB, and Casamance), and the sub-zones of the SRV (Senegal River Delta and Senegal River Middle Valley).

At the level of the entire ZOI, the A-WEAI score is 0.783 (see Table 19). Comparing this score with the index of the other countries where the A-WEAI has been conducted – Guatemala (0.692), Uganda (0.789), and Bangladesh (0.749) – reveals that the empowerment level of women in the project's ZOI is higher in Senegal than in Guatemala and Bangladesh but lower than in Uganda.

A comparison between the different zones shows that the highest score is recorded for women in the Middle Valley (0.800), followed by Casamance (0.793) and the SGB (0.764). Interestingly, the Senegal River Delta has the lowest A-WEAI score (0.732), yet qualitative data in that sub-zone suggests a higher level of empowerment among women in the Delta because of better access to agricultural resources, even though few women are members of farmer organizations.

Across the entire ZOI, 48.7% of women are empowered. The three zones have relatively similar percentages of empowered women: 51.2% in SRV, 47.8% in SGB, and 47.9% in Casamance. The empowerment deficit provides more insight into the situation of disempowered women, as it measures the percentage of domains for which disempowered individuals did not reach the empowerment threshold. For the entire ZOI, disempowered women have a deficit of 43.9% of the domains. There is minimal variety of the empowerment deficit across the zones.

These varied findings showcase the aggregate nature of the index, with its particularity of combining several socioeconomic parameters into a single number. The A-WEAI is a composite indicator that can provide an overall score and measure changes over time. For a more detailed analysis that can assist decision making and gender-sensitive programming, it is useful to look at each of the five domains of empowerment.

Table 19. A-WEAI Scores by Zone and Gender

Indexes	All		Senegal River Valley		Senegal River Delta		Senegal River Middle Valley		Southern Groundnut Basin		Casamance	
	W	M	W	M	W	M	W	M	W	M	W	M
Empowerment index: 5DE = (1 – M_0)	0.775	0.916	0.782	0.925	0.732	0.943	0.793	0.921	0.757	0.933	0.783	0.898
Percentage of individuals who are disempowered (H)	51.3	24.9	48.8	22.0	61.1	17.5	46.1	23.1	52.2	20.4	52.1	29.9
Percentage of individuals who are empowered (1 – H)	48.7	75.1	51.2	78.0	38.9	82.5	53.9	76.9	47.8	79.6	47.9	70.1
Empowerment deficit observed in X% of the 5 domains of not-yet-empowered individuals (A)	43.9	33.7	44.6	34.2	43.8	32.7	44.9	34.4	46.7	32.7	41.5	34.1
Disempowerment index: M_0 = H*A	0.225	0.084	0.218	0.075	0.268	0.057	0.207	0.079	0.243	0.067	0.217	0.102
Number of weighted observations (theoretical)	494	473	119	113	22	21	97	92	153	143	222	217
Number of observations used (theoretical)	94.9	94.3	99.2	99.0	95.5	100.0	100.0	98.9	94.5	100.0	93.0	88.1
Number of sample observations (unweighted)	495	443	140	123	46	44	94	79	149	129	206	191
Percentage of observations used (unweighted)	95.2	95.3	98.6	99.2	95.7	100.0	100.0	98.7	94.0	100.0	93.7	89.5
Gender parity index (GPI = 1 – HGPI*IGPI)	0.859		0.859		0.829		0.866		0.831		0.878	
Percentage of women without parity in their household (HGPI)	45.8		43.8		58.1		40.5		50.4		43.9	
Percentage of women with parity in their household (1-HGPI)	54.2		56.2		41.9		59.5		49.6		56.1	
Average empowerment gap between men and women	0.307		0.322		0.294		0.332		0.335		0.277	
Weighted head count of women in "male and female adults" adult households	477		113		21		92		147		217	
Number of observations used (theoretical)	100.0		100.0		100.0		100.0		100.0		100.0	
Number of women in "male and female adults" households of the sample (unweighted)	447		123		44		79		133		191	
Percentage of observations used (unweighted)	100.0		100.0		100.0		100.0		100.0		100.0	
Women's Empowerment in Agriculture Index: A-WEAI = 0.9*5DE + 0.1*GPI	0.783		0.790		0.742		0.800		0.764		0.793	

4.1 Comparing the Results for Women and Men

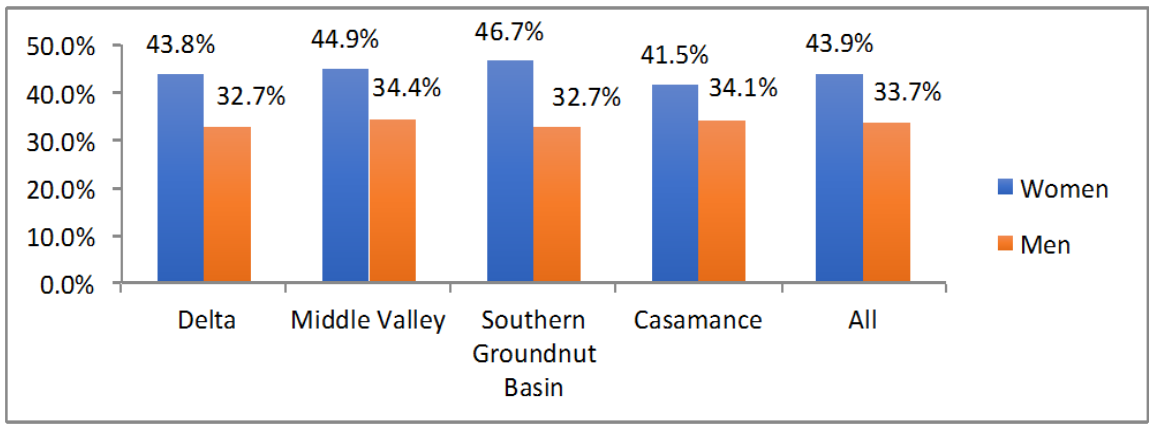
Across the ZOI for the project, women scored 0.775 on the 5DE empowerment index, and men scored 0.916. The A-WEAI calculated that 48.7% of women are empowered, compared with 75.1% of men, for the overall ZOI of the project (See Table 19). Out of the 51.3% disempowered women (H) the average empowerment deficit (A), the percentage of domains in which a disempowered individual did not reach the empowerment threshold was 43.9%. For the 24.9% of disempowered men, the average empowerment deficit is 33.7% of domains. This results in a disempowerment index (M_0) of 0.225 for women and 0.084 for men, with some variability by zone and sub-zone.

Overall, the three zones have relatively similar percentages of empowered women: 51.2% in SRV, 47.8% in SGB, and 47.9% in Casamance. The three zones also have relatively comparable results for the average empowerment deficit among disempowered women: 44.6% in SRV, 46.7% in SGB, and 41.5% in Casamance.

For men, SRV and SGB have a greater percentage of empowered men than Casamance. 78% of men in SRV and 79.6% of men in SGB are empowered, compared with 70.1% in Casamance. The three zones also have comparable results for the average empowerment deficit among disempowered men: 34.2% in SRV, 32.7% in SGB, and 34.1% in Casamance.

Figure 4 shows the average empowerment deficit (A), the percentage of domains where a disempowered individual did not reach the empowerment threshold, for the disempowered women and men in each region. Disempowered women in the SGB have the largest proportions of domains where they do not meet the adequacy threshold (46.7%). These findings are represented in qualitative interviews and focus groups as well. Overall, disempowered men have a lower empowerment deficit, meaning a lower percentage of domains where they are not empowered.

Figure 4. Average Empowerment Deficit (A) by Gender and Zone



4.2 Five Dimensions of Empowerment (5DE)

This section examines the contribution of the five domains of empowerment to the empowerment or disempowerment of both women and men. Table 20 shows the percent of disempowered individuals by domain (H); the disempowerment index by domain (M_0); and the contribution of each of the five domains, and indicator(s) within that domain, to the disempowerment index (M_0) of men and women across the ZOI. Contribution by domain and by indicator was calculated as the ratio of

the disempowerment index (M_0) for each domain and each indicator to the entire disempowerment index across all five domains.

Considering the contribution of each domain toward individual disempowerment helps understand the contributing factors to empowerment and helps inform project programming focused on women's empowerment. APPENDIX 3: ADDITIONAL DATA TABLES contains additional data tables on disempowerment by domain for each zone.

Table 20. Disempowerment by Domain for the Entire ZOI

	Production	Resources		Income	Leadership	Time
	Input in productive decisions	Ownership of productive assets	Access to and decisions on credit	Control over use of income	Group member	Workload
Women						
% Disempowered (H)	37.8	7.6	42.1	15.0	23.8	11.1
Disempowerment index (M_0)	0.076	0.008	0.042	0.030	0.048	0.022
% Contribution of indicator	33.6	3.4	18.7	13.4	21.1	9.8
% Contribution of domain	33.6	22.1		13.4	21.1	9.8
Men						
% Disempowered (H)	11.1	0.4	23.2	0.8	15.3	3.0
Disempowerment index (M_0)	0.022	0.000	0.023	0.002	0.031	0.006
% Contribution of indicator	26.5	0.5	27.6	1.8	36.5	7.1
% Contribution of domain	26.5	28.1		1.8	36.5	7.1

The domains that contribute the most to the disempowerment of women are, in order of contribution, input in household decision making over agricultural production (33.6%), access to resources (22.1%), and membership in a community group (21.1%), followed by control over income (13.4%) and workload (9.8%).

Table , Table , Table , Table , and Table in APPENDIX 3: ADDITIONAL DATA TABLES show the disempowerment by domain for each zone. There are a few notable differences when looking at the data for women's disempowerment across zones. Across all zones, the production domain has the greatest contribution to disempowerment (33.6% for ZOI, 36.8% in SRV, 33.8% in SGB, and 31.6% in Casamance), and the workload has the least contribution (9.8% for ZOI, 10.7% in SRV, 10.2% in SGB, 9.1% in Casamance). Membership in a community group plays a more significant role in disempowerment for women in Casamance (24.5%) and SGB (22%) than in SRV (14.1%). Within the SRV, the membership domain has greater contribution to disempowerment in the Middle Valley (17.2%) than in the Delta (13%). When it comes to resources, all zones have similar rates of contribution, yet there are some differences when looking at the contribution of the two indicators: ownership of productive assets and access to credit. Assets have the greatest contribution in the Delta (4.5%) and SGB (4%), and credit has the greatest contribution in the Delta (19.3%), the Middle Valley, (18.9%) and Casamance (20.2%).

Qualitative findings confirm these domains are key obstacles to women's empowerment. Across all zones, decision making on agricultural production is dominated by men, especially when it comes to food production for household consumption and for sale. The choice of crops, allocation of farming plots, purchasing fertilizer, and labor – in short, decisions on all productive operations – are usually in the hands of the primary male decision maker of the household. Women are generally confined to a supporting role in production, such as cooking, or labor for certain activities such as the preparation of groundnut seeds in the SGB.

Within the resources domain, access to credit is a significant factor in empowerment. Both men and women suffer from limited access to credit, but women are more constrained because they are only able to join farmer organizations, a primary channel to access funding, with the consent of their husbands. The quantitative data shows that access to credit is a larger factor than productive-asset ownership, with assets including land, farm equipment, livestock, and so forth, and ownership can be individual or joint. However, in the qualitative data, many women cited accessing land as a major constraint to their empowerment. Women reported land access as the main factor that determines their level of effective involvement in agricultural activities. Details on the qualitative data can be found in the Qualitative Findings section of this report. The discrepancy between the quantitative and qualitative data on the influence of asset ownership in empowerment could be an issue of how the question of *ownership* is phrased differently from *access*. This is an area for further exploration and research and highlights the value of using mixed methods in a study such as this one.

Group membership, the indicator used for the leadership domain of empowerment, is shown to be another significant contributor to women's empowerment. Membership in a community group, including farmer organizations, women's groups, water associations, and many more, is important because these groups connect members to resources and services. For example, membership in a farmer organization can provide members with access to credit, high-quality inputs such as seed or fertilizer, training, or markets. The data shows how these resources and services are a large factor in women's empowerment in agriculture.

For all men and women, across the ZOI, looking at the influence of each domain toward empowerment provides interesting insights about the different experiences of men and women. The average contribution of each domain toward disempowerment is shown below in **Error! Reference source not found.**5 and **Error! Reference source not found.**. It is notable that for women, each domain has a significant contribution, whereas for men the leadership domain, measured by membership in a group, has the greatest contribution, followed by resources and production. For men, control over income has very little contribution to their disempowerment.

Figure 6. Contribution (%) of Each Domain to Women's Disempowerment

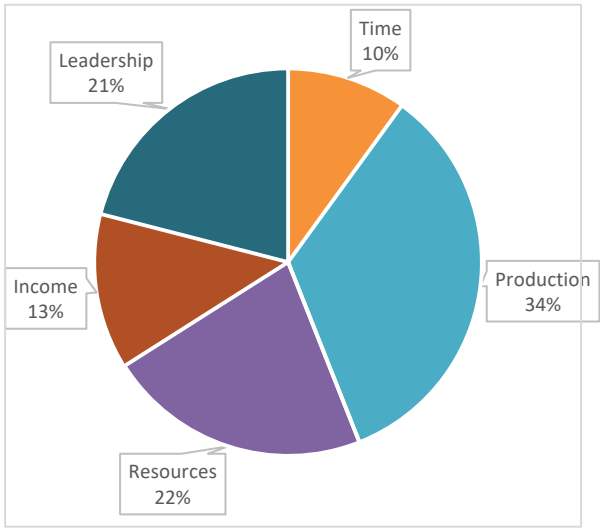


Figure 6. Contribution (%) of Each Domain to Men's Disempowerment

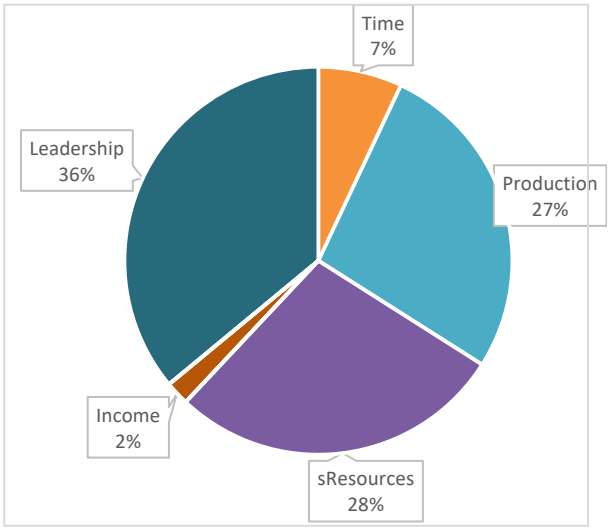
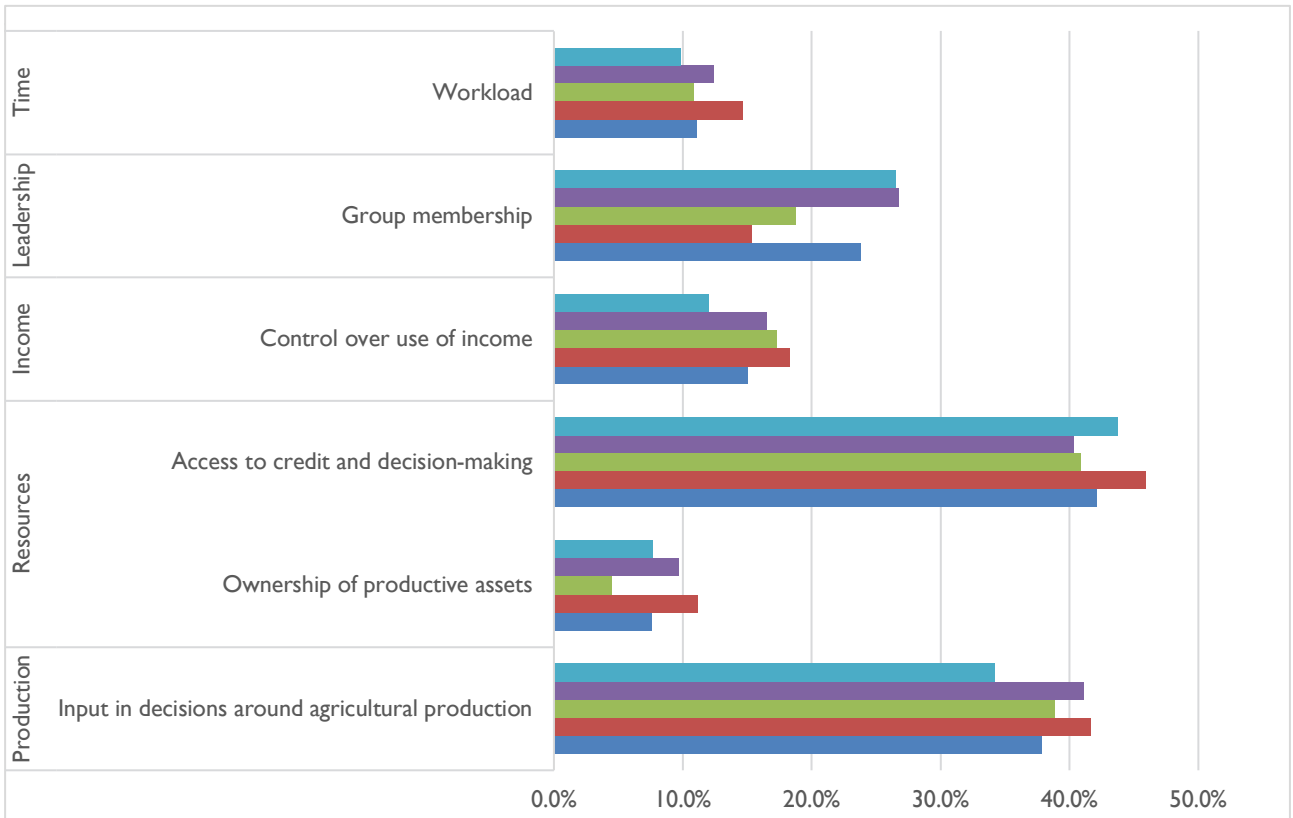


Figure 7 further dissects women's disempowerment by domain and by region. The percentage represents the percentage of disempowered women who are disempowered in that domain. An individual is disempowered in a particular domain when an individual does not meet the threshold established for each indicator (see Table 4 for the threshold level for each domain's indicator). Looking at the entire ZOI, as well as within each zone, the indicators with the greatest rates of disempowerment are access to credit and input in decision making. Women are disempowered in these domains at almost double the rates of disempowerment in the other domains. The data show that among disempowered women, less than 15% are disempowered in the time allocation domain. This seems to suggest that workload contributes less to empowerment than the other domains. However, the qualitative data suggest that many women, in all three zones, experience a heavy workload, which is an obstacle to empowerment.

Figure 7. Percentage of Disempowered Women by Domain and Region

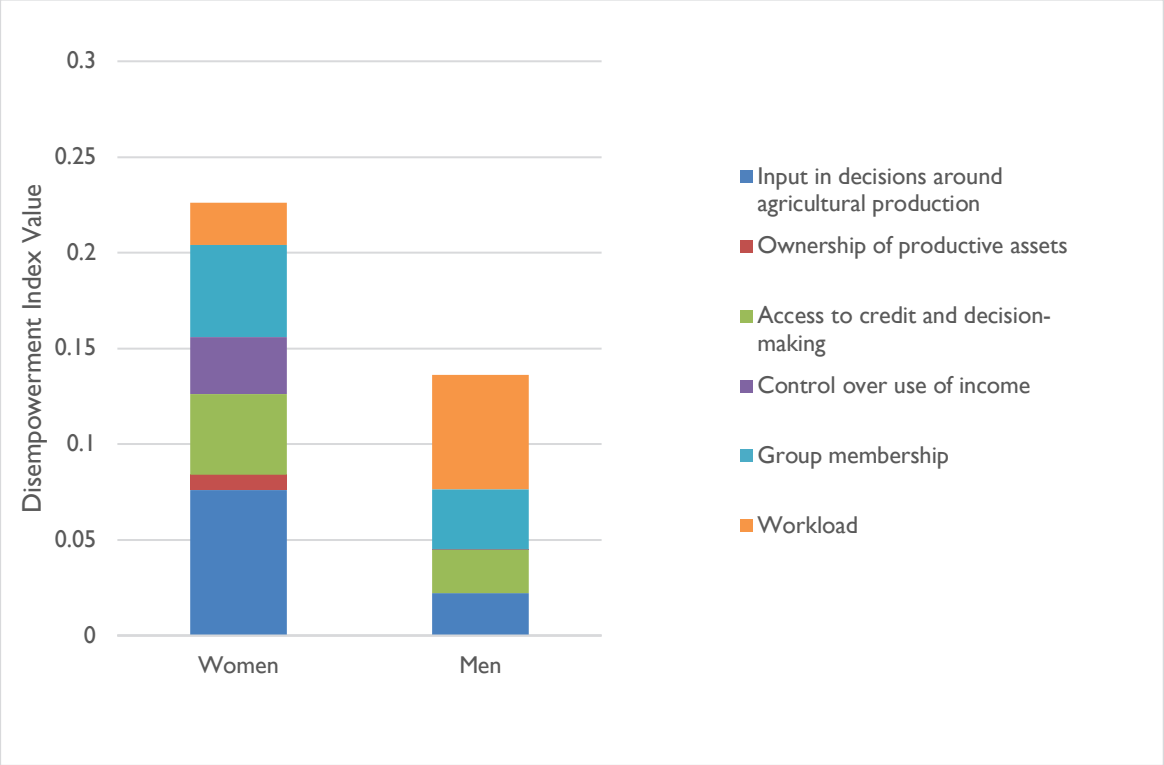


	Production	Resources		Income	Leadership	Time
	Input in decisions around agricultural production	Ownership of productive assets	Access to credit and decision-making	Control over use of income	Group membership	Workload
Casamance	34.2%	7.7%	43.7%	12.0%	26.6%	9.8%
SGB	41.1%	9.7%	40.3%	16.5%	26.7%	12.4%
M.Valley	38.9%	4.5%	40.9%	17.2%	18.7%	10.8%
Delta	41.6%	11.2%	45.9%	18.3%	15.4%	14.6%
All	37.8%	7.6%	42.1%	15.0%	23.8%	11.1%

For the six indicators that measure empowerment within the 5DE, a disempowerment index value for each indicator can be calculated, which provides valuable insights on the contribution of each indicator to empowerment. The disempowerment index (M_0) is calculated by multiplying the head count of disempowered individuals (H) with the average empowerment deficit (A) or ($M_0 = H*A$). Overall, men have a lower disempowerment index (0.084) than women (0.225). This is because there are more disempowered women than men (H) and the average empowerment deficit (A), the percentage of domains in which an individual is disempowered, is greater for women than men. Figure 8 provides a visualization of the total value of the disempowerment index (M_0) for women and men, and the contribution of each indicator.

When looking at the six different indicators for men and women, it is notable that the largest value (the largest contributor) for men is workload, and for women it is input in decisions around agricultural production. Group membership is a greater factor for men than for women. Notably, ownership of productive assets and control over use of income are absent from the men's disempowerment index – they do not play a role in men's disempowerment. Culturally, men in Senegal are the primary owners of assets and control household income.

Figure 8. Disempowerment Index Value for Each Indicator, by Gender



Data on the disempowerment index value and indicator contribution for each zone can be found in Table , Table , Table , Table , and Table in APPENDIX 3: ADDITIONAL DATA TABLES.

4.3 Gender Parity Index (GPI)

The GPI measures gender parity, the relative equality between a woman and man who are the primary decision makers within the same household. The GPI reflects the percentage of women who have a degree of empowerment equal to that of men in their households. For households without gender parity, the GPI shows the gap for women to reach the empowerment level of men.

For the entire ZOI of the project, the majority of women (54.2%) have parity with the primary male decision makers in their households. For the 45.8% of women who live in households without parity (H_{GPI}), the empowerment gap (I_{GPI}) is 30.7%. Consequently, the gender parity index (GPI = 1 – H_{GPI}*I_{GPI}) is 0.859 (See Table 19).

In the Senegal River Valley (SRV), the majority of women (56.2%) have parity with the primary male decision makers of their households. Interestingly, the sub-zones differ greatly in their rates of parity: 41.9% of women in the Delta and 59.5% of women in Middle Valley have parity. This mirrors

the findings of the 5DE: In the Delta, 38.9% of women are empowered, and in the Middle Valley, 53.9% of women are empowered (see Table 19). For the 43.8% of women in the SRV who live in households without parity, the empowerment gap is 32.2%. Within the sub-zones of the Delta and the Middle Valley, 58.1% and 49.5% of women have no parity, which is reflected in empowerments gaps at 29.4% and 33.2% respectively. The gender parity index is 0.859 in the SRV, 0.829 in the Delta, and 0.866 in the Middle Valley.

In the Southern Groundnut Basin (SGB), 49.6% of women have parity with the primary male decision makers of their households. For the 50.4% of women in the SGB who live in households without parity, the empowerment gap is 33.5%. Consequently, the gender parity index is 0.831.

In Casamance, 56.1% of women have parity with the primary male decision makers of their households. For the 43.9% of women who live in households without parity, the empowerment gap is 27.7%. Consequently, the gender parity index is 0.878 for women in Casamance.

Comparing the results across zones, the only zones in which the majority of households have gender parity are the SRV (56.2%) – specifically the Middle Valley (59.5%) and not the Delta – and Casamance (56.1%).

The qualitative results on gender parity suggest that the gender gap is more pronounced in the SRV and the SGB than in Casamance. Interestingly, a significant difference between ethnic groups was noted. Sérère women report greater involvement in decision making than Wolof women. The data also show that family status and age also have a substantial impact on gender parity and the level of involvement of women in decision making. Women from monogamous households appear to have greater decision-making power than women in polygamous households. Age is also a factor in household roles because the older women are, the more involvement they have in decision making in the household and in the community.

5. CROSS-VARIABLE ANALYSIS

This section seeks to identify possible correlations between empowerment and some individual or household characteristics. The cross-variable analysis compares rates of empowerment and respondents' age groups, ability to read or write, education levels, and wealth per quintile. Wealth quintiles were established on the basis of variables used to determine household poverty level – specifically, the PAT (poverty assessment tool) used in the baseline study.

To measure the correlation and level of association of variables, the team used the Pearson's chi-squared independence test and Cramer's V, respectively. The cross-references are established under the assumption that the rows and columns of a two-entry table are independent. The results of the tests are relative in cases in which head counts are low. The chi-square independence test measures whether there is a relationship between variables or whether they are independent of each other. If a chi-square value falls between expected levels in the chi-square distribution table (according to the degrees of freedom and probability levels), it suggests there is a relationship between variables. Moreover, if the p-value is statistically significant, then the null hypothesis – that there is no relationship between the variables – can be rejected. Generally, p-values less than 0.05 suggest that the chi-square value, or the finding of whether there is a relationship, is significant and not due to random chance. Cramer's V measures how close the relationship is between variables, also known as a *goodness of fit* measure. Cramer's V varies between 0 and 1, where 0 indicates no association between variables and 1 indicates a strong association.

The analyses of empowerment and age groups, education levels, and household wealth quintiles are displayed in presented Table 21 below for the entire sample in the ZOI.

There is a statistically significant correlation between empowerment and age group for men as well as for women. The percentages of women who are empowered increase linearly with age from 27.9% for 18–25 to 55.3% for 56–65 years. However, it falls to 14.3% for women over 65 years. The majority of men in each age group are empowered, with a peak at 80.8% for 46–55 years. The percentage of men who are empowered also decreases for the over 65 years to 60.5%. Therefore, it can be said that there is currently a threshold effect on age and level of empowerment for both women and men. This could be, in part, due to elder persons' transferring their responsibilities to other members of the household, such as one or more elder sons- or daughters-in-law.

The data shows a statistically significant correlation between the ability to read and write and women's empowerment. Among women who can only read, 55.3% are empowered, compared with 57.8% of women who can read and write. Only 42.9% of women who can neither read nor write are empowered.

Similarly, the study found a correlation between empowerment and level of education: 82.4% of women who have completed primary education are empowered, whereas only 44.3% of women with no education at all are empowered. For the men surveyed, there is little correlation between education level, ability to read and write, and empowerment.

Higher wealth is correlated, though not statistically significantly, with men's empowerment. In total, 66% of men living in the poorest quintile households (first quintile) are empowered, compared with 81.3% of men living in households in the richest quintile (fifth quintile). On the contrary, for women across the ZOI, wealth and empowerment have no apparent correlation.

Overall, the intensity of the relationship (Cramer's V) between the various characteristics of an individual (age, education) or households (wealth quintile) and empowerment does not exceed 0.2, on a scale of 0–1, suggesting that the correlations are not strong. In general, further research on the correlations between empowerment and some individual or household characteristics would prove useful to the field of study on empowerment.

Table 21. Cross-tabulation Between Empowerment and Other Variables

Characteristics	Female			Male		
Empowered?	Yes	No	Total	Yes	No	Total
Age groups						
16–25 years	12	31	43	11	7	18
	27.0%	72.1%	100.0%	61.1%	38.9%	100.0%
26–45 years	103	118	221	95	35	130
	46.6%	53.4%	100.0%	73.1%	26.9%	100.0%
46–55 years	59	50	109	80	19	99
	54.1%	45.9%	100.0%	80.8%	19.2%	100.0%
56–65 years	42	34	76	92	31	123
	55.3%	44.7%	100.0%	74.8%	25.2%	100.0%
Over 65 years	3	18	21	46	30	76
	14.3%	85.7%	100.0%	60.5%	39.5%	100.0%
Total	219	251	470	324	122	446
	46.6%	53.4%	100.0%	72.6%	27.4%	100.0%
Cramer's V	0.2			0.15		
Pearson chi^2 (statistic and p-value)	19.63	0.00		10.44	0.03	
Ability to read and write						
Can neither read nor write	143	190	333	72	37	109
	42.9%	57.1%	100.0%	66.1%	33.9%	100.0%
Can only write	2	4	6	4	0	4
	33.3%	66.7%	100.0%	100.0%	0.0%	100.0%
Can only read	26	21	47	37	15	52
	55.3%	44.7%	100.0%	71.2%	28.8%	100.0%
Can read and write	48	35	83	211	69	280
	57.8%	42.2%	100.0%	75.4%	24.6%	100.0%
Total	219	250	469	324	121	445
	46.7%	53.3%	100.0%	72.8%	27.2%	100.0%
Cramer's V	0.13			0.11		
Pearson chi^2 (statistic and p-value)	7.85	0.05		5	0.17	
Education level						
Literate in a national language	8	15	23	20	9	29
	34.8%	65.2%	100.0%	69.0%	31.0%	100.0%
Koranic /Arabic	41	47	88	146	53	199
	46.6%	53.4%	100.0%	73.4%	26.6%	100.0%
Incomplete primary cycle	23	21	44	39	14	53
	52.3%	47.7%	100.0%	73.6%	26.4%	100.0%
Complete primary cycle	14	3	17	18	4	22
	82.4%	17.6%	100.0%	81.8%	18.2%	100.0%

Characteristics	Female			Male		
Empowered?	Yes	No	Total	Yes	No	Total
Incomplete secondary cycle	6	7	13	42	15	57
	46.2%	53.8%	100.0%	73.7%	26.3%	100.0%
Complete secondary cycle	1	0	1	12	4	16
	100.0%	0.0%	100.0%	75.0%	25.0%	100.0%
University	1	2	3	2	6	8
	33.3%	66.7%	100.0%	25.0%	75.0%	100.0%
None	124	156	280	46	18	64
	44.3%	55.7%	100.0%	71.9%	28.1%	100.0%
Total	218	251	469	325	123	448
	46.5%	53.5%	100.0%	72.5%	27.5%	100.0%
Cramer's V	0.16			0.15		
Pearson chi^2 (statistic and p-value)	12.56	0.08		10.41	0.17	
Household Wealth						
1st quintile	47	61	108	70	36	106
	43.5%	56.5%	100.0%	66.0%	34.0%	100.0%
2nd quintile	51	47	98	67	24	91
	52.0%	48.0%	100.0%	73.6%	26.4%	100.0%
3rd quintile	44	52	96	70	19	89
	45.8%	54.2%	100.0%	78.7%	21.3%	100.0%
4th quintile	42	47	89	56	29	85
	47.2%	52.8%	100.0%	65.9%	34.1%	100.0%
5th quintile	35	43	78	61	14	75
	44.9%	55.1%	100.0%	81.3%	18.7%	100.0%
Total	219	250	469	324	122	446
	46.7%	53.3%	100.0%	72.6%	27.4%	100.0%
Cramer's V	0.06			0.14		
Pearson chi^2 (statistic and p-value)	1.71	0.79		8.79	0.07	

6. QUALITATIVE FINDINGS

This section presents the findings of the qualitative interviews and focus groups. The objective of the qualitative study was to gain a better understanding of the constraints and barriers to empowerment while highlighting the situations in which some women achieve increased empowerment.

The findings of the qualitative surveys overall show that there are two main forms of farming in the ZOI. In the Southern Groundnut Basin, Casamance, and the Middle Senegal River Valley, there are mostly small family farms with little or no mechanization, where crops are mainly cultivated for household consumption. In the Delta region of the SRV, there are a number of commercial farms growing crops for sale, with a significant level of investment and modern mechanization.

In both of these farming operations, women play a vital role. The qualitative data showed that gender relations influence all five domains of empowerment considered in this study: access to resources, participation in decision making, control of income, time allocation, and group membership and leadership.

6.1 Participation in Economic Activities and Role in Decision Making

This section covers women's participation in various agricultural activities, as well as the factors that enable or inhibit their participation. Women participate to varying degrees and in diverse ways in income-generating activities, depending on the zone, the sub-zone, and the value chain. Women constitute a large part of the workforce on family farms and cultivate small plots of groundnuts, *bissap*, *niebe*, and other crops. Many are active in subsistence farming on family-owned land, and some women are the primary producers in their own right.

In general, men wield decision-making power on production within households in all the zones visited. It also appears from interviews that women's participation in decision making on production is sometimes proportional to their level of involvement in these activities. Women's levels of participation vary depending on sociocultural realities, level of participation of women in household expenditure, and also on whether or not the woman is a member of a program-supported farmer organization.

Throughout the ZOI, role division between males and females determines the participation in decisions. Based on the qualitative data and literature, participation in decision making appears to be less linked to an economic empowerment deficit than to sociocultural factors that place women in a position of dependence on men in agricultural activity decision making.[6] Comparing responses by

[6] Piraux, J. (2000). Groupements de femmes rurales au Sénégal : Espaces de liberté ou platesformes pour le changement ? *Bulletin de l'APAD, 20*.

ethnic groups, Serer and Diola women are more involved in decision making, whatever their levels of activity and participation in production. Indeed, although the whole Senegalese society is patriarchal, these ethnic groups are deemed relatively egalitarian.

Across zones, there is a gradual trend of increasing participation in decision making, though decision making remains a man's prerogative culturally. The literature also suggests that when women increase their economic contribution, they have greater influence on decision making within the household.[7]

Senegal River Valley (SRV)

The Senegal River Valley focuses on irrigated rice, with mostly a modern, highly mechanized, and market-oriented production in the Delta, and smaller, household-oriented production in the Middle Valley. While the Delta is considered a zone of modern and diversified agriculture with greater inclusion of women, the extent of women's participation varies. For example, in Mboundoum, women are more involved and empowered. They generally farm dozens of hectares of rice, with two harvesting seasons, and are involved throughout the farming process. In Kheune, however, women are limited to post-harvest gleaning, a practice called *taatunaaf*. It is common for women to gather the threshing residues left behind to sell for additional income.

Family farming is predominant in the Middle Valley of the SRV. Generally, under the authority of the male head of household, women work as domestic labor or have small plots that were given to them by their husband to cultivate. Because rice production is still mostly manual (compared to the mechanization in the Delta), there is a clear division of labor between men and women. Women are responsible for planting, weeding, and monitoring fields for pests. Men are more involved applying fertilizer and pesticides, harvesting, and post-harvest work.

In addition to irrigated rice production, horticulture (i.e., fruits and vegetables) is expanding in the SRV and is practiced by both men and women. In the Delta, horticulture generates a substantial income that covers household expenditures and finances rice production. In the Middle Valley, however, horticulture is practiced on a smaller scale and solely for household consumption. Horticulture can be very beneficial for women's empowerment as it enables women to supplement the food provided by the husband and make a financial contribution to the household.[8]

Related to decision making, women who work as labor on family farms claim to be informed of decisions but do not necessarily take an active part in them. Those who have their own farming activities, especially in the Delta, say they and their husbands jointly make decisions on matters such as the farming calendar, recruitment of workers, marketing, and participating in farmer organizations.

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[7] Hathie, I., & Ba, C. O. (2015). L'agriculture familiale à l'épreuve de la sécheresse et de la libéralisation au Sénégal. *Diversité des agricultures familiales : Exister, se transformer, devenir*, 199–212.

[8] Piraux, J. (2000). Groupements de femmes rurales au Sénégal : Espaces de liberté ou platesformes pour le changement ? *Bulletin de l'APAD, 20*.

Southern Groundnut Basin (SGB)

In the SGB, the majority of small farms are under the husbands' or elder sons' authority, even when women are heads of household. This zone is characterized by the cultivation of millet, maize, groundnuts, *niebe*, *bissap,* and micro-gardening. With the support of Naatal Mbay and other projects, rain-fed rice cultivation has spread throughout the SGB, but it is still smaller in scale than the production of other crops. Rain-fed rice has been identified by farmer organizations as a way to attract women to agricultural production. The division of labor by gender is very specific. Men perform the most physically demanding work, such as soil preparation and sowing, while women take on tasks that require more caution like weeding, fertilizing, harvesting, and processing.

In the subzone of Foundiougne, women's advancement groups, or *groupements de promotion féminine* (GPFs), predominantly cultivate rain-fed rice. This is the case of *GPF Sudu Weli* and *Dimbalanté,* which are members of *Yakhanal.* Each group cultivates about 2 ha, with 48 and 73 members respectively. They harvested 3.5 tons and 2.4 tons of rice respectively, which were sold to members at preferential prices.

Similarly, the president of the *Baybayaat* network of farmer organizations asserted during the focus group that the network, with the support of Naatal Mbay, was setting up a program to cultivate several hectares of rain-fed rice for the 2016 season, of which women would be the primary beneficiaries. Likewise, in the municipality of Toubacouta, particularly in Ndoumboudj, the women of *Groupement Benno,* after having received assistance from *Action Jeunesse et Environnement* (AJE), now grow rice without external aid. However, it was reported that some women have dropped out following the withdrawal of AJE, which now supports them in market gardening. The withdrawal of AJE is linked to difficulties in accessing inputs and water retention problems, as well as to conflicts between women. Presently, rice is produced on a collective field given to the women's group by the village.

Most of the women interviewed in SGB say they help with agricultural activities mainly for household consumption. The family is the production and consumption unit, and household members perform tasks and responsibilities as expected by society. The male head of household decides how productive resources, including land, are used.

Most of the women interviewed have individual plots granted to them by their husbands. In general, men produce millet, maize, and groundnuts, while women are limited to producing groundnuts as their main crop, only for household consumption. Some of the groundnuts produced by women are transformed into paste and flour for cooking, especially during the lean season. Access to land is a major issue to women's participation; their plots rarely exceed 0.5 ha.

> "Yields are unreliable, sometimes we harvest nothing. This is what happened to me this year (...) I did not even have enough to make groundnut paste and flour for cooking (....) I was forced to go to an uncle in a nearby village to help in harvesting and glean remains. In return, he offered me one groundnut bag and I gleaned one bag that now enables me to cook."
>
> (M. S., 35, Hamdalaye Mbeuleup)

Women often face challenges of low crop yield. In particular, a lack of certified seeds and fertilizer can cause low yields. Women shared that personal plots are planted and cultivated only after a household's cereal and groundnut fields are completed. In polygamous households, it seems that access to farming equipment is dependent on one's rank among wives.

Women in the SGB expressed a desire to diversify and participate in growing other crops such as *bissap*, *niebe*, and vegetables through gardening, as well as rain-fed rice through women's groups.

Women maize producers are found in the Kaolack region, especially in the department of Nioro around the town of Paoskoto. They are generally self-employed and have a relatively high level of empowerment. Many of these female maize farmers are members of the FEPROMAS producer organization (PO) and occupy leadership positions. Women may have individual plots and also contribute collectively to large fields through their organizations.

In the Birkilane zone, women of *GPF Manko*, a member of the Baybayaat network, produce millet seed that is sold to members of the network, to PAFA, and even in the Tambacounda region.

> "I'm alone with my children, my daughters-in-law and grandchildren (...) my two elder sons tend the field with the help of the whole family (...) but I am to find what is needed for the farm (...) the network (Yakhanal) assists us only for rice produced with my group. For millet, I keep the seeds from the previous harvest, but you know millet needs fertilizer (...) fertilizer and land are the main problems (...) for fertilizer, I borrow money from a trader in Touba Mouride and sometimes I manage to put aside money through gardening, but it is hard to save when you are the sole family provider."
>
> (F. S., 54, female head of household, Pakala)

The majority of female heads of households in this zone are widows aged 50–60 years. Their involvement in family farming is not very different from that of other women. Although they are often in charge of finding the resources necessary for production, they usually leave the management of the family farm to their elder son. The status of female head of household does not always equate to full involvement and empowerment in production. In most cases, it only increases women's vulnerability. In fact, female-headed households are generally the poorest in terms of productive resources. Most female heads of households inherit their deceased spouses' responsibility to find all the resources needed for their household, even if it is their sons who develop whatever land is available.

Micro-gardening is practiced across the SGB, and it is particularly common in Niombato, around the town of Toubacouta. Micro-gardening has attracted the interest of more development partners, and international organizations such as CARITAS, ANCAR, and AJE are beginning to support women by fencing fields, improving access to water by digging wells and building fish basins, and providing training on good agricultural practices. Most women in Niombato farm individual fields inherited from their mothers-in-law in addition to group "squares." Despite low yields, manual methods, and lack of resources, gardening is a source of income that enables these women to contribute financially to their family.

In the SGB, men overwhelmingly make the decisions on farming. While there is a growing trend of women participating in decision making, the final decision rests with the male head of household. The majority of women said they are only informed once decisions are made. In the case of female heads of household, they play a more significant role in decision making. Generally, they make the decisions, but always in consultation with the elder son. Women members of farmer organizations and decision-making bodies report being more involved in decision making on production activities. Still, these women say they continue to rely on final decisions made by their husbands.

Casamance

As in the SGB and the SRV, the results of the interviews and focus groups in Casamance show a predominance of small family farms where women actively participate. Rice production dominates agricultural activities because it is the traditional staple food of the region. A notable characteristic of this area is the overwhelming presence of women in rice planting, and Casamance is known as a

region where women dominate in rice farming. They produce rice mostly for household consumption and are also active in the production of seeds within Farmer Organizations, in particular *Kissal Patim* and *Entente Diouloulou*. In some localities, women are the only rice producers, either individually or in groups of multiple wives in a polygamous household. In addition to rice, women also grow maize, millet, and groundnuts, mainly for household consumption. In the department of Ziguinchor, women and men generally cultivate rice together, but each is responsible for different farming operations.

Although their rice is not for sale, most of the women seem to be empowered in this agricultural activity. The data show that women do not sell their rice since it is intended for household consumption and report that yields are not always enough to cover annual household rice needs.

Men only grow upland rice, while women work more in the low-lying lands, where horticulture is highly developed. Gardening seems to be dominated by women, with the exception of the Djifanghor area, where men also practice it. Arboriculture is more popular among men but is also practiced by women in Ziguinchor.

The division of tasks in farm work is fairly clear. Men plow the land with the *kadjandou*[9], a very heavy tool, and women plant rice seedlings. Similarly, the maintenance of land is left to women, who mostly use organic manure and compost.

In Casamance, findings on decision making are similar to other zones, but some local differences were noted. In the subzones where women work alone in their own fields, they say they are empowered to make all decisions. Indeed, given that women and men have separate fields, each is free to decide. For their own plots, even when women consult their husbands, they say they still make the final decision. Their freedom in decision making on rice planting is also due to their technical expertise in this sector. In the sub-zones where women and men farm together, decisions are said to be made jointly.

6.2 Use of Income

Income Generation

In the ZOI, cereal production is main source of income to meet household needs. Qualitative findings showed that, with the exceptions of the Delta and parts of the SGB, most households barely generate enough income through cereal production to meet their needs. In recent years, challenges in the agricultural sector require men and women to diversify their income sources. During the dry season, men often migrate to the city or work in other trades such as bricklaying, driving, motorcycle driving, dressmaking, and so forth. Women engage in petty trade, gardening

[9] The *Kandjandou* is the traditional tool of the Diola. It is used in rice cultivation in Casamance.

produce for consumption and for sale, and processing crops. Groundnuts are the main agricultural product for which women participate in processing. They turn groundnuts into a paste to use in cooking and sell in local weekly markets. The literature suggests that these changes in the rural economy have increased women's financial contributions to household needs.[10]

In Mboudoum Barrage, a part of the Delta, women reported feeling more empowered when they generate income for the family through participation in rice farming and horticultural activities. In the Middle Valley and the SGB zone, women generated extra income from sources such as selling cooked food, sewing, embroidery, farming small land plots allocated by the husband (in addition to the family farms), selling of crop residues (especially rice), micro-gardening, manufacture and sale of soap, cloth dyeing (in groups), and trade of cashew nuts.

In Casamance, the dominant role of women in rice farming gives them a large and strategic role in supporting households financially, but the zone does not have large rates of empowered women. When not farming, women engage in petty trading and other activities through their women's groups. In addition to food, they also contribute to expenditures like health, children's schooling, clothing, and home furnishings.

Despite the relatively small amount of this extra income, it allows women to play an important role in contributing to the household. Some women, particularly those who are first wives, replace the husband as the primary provider for household essentials such as daily food expenditures, household equipment, and clothing for children.

Income Use

Despite their significant and growing contribution to generating income, women often have little control over how income is used. Women reported that the more they are involved in production and its decision making, the more they participate in decisions around the use of income. Similarly, the greater their economic contribution to the household, the greater the role they are able to negotiate in decision making.

It also emerged from interviews and focus groups that women are unable to use their own income freely without the consent of their husband. This seems to be the case particularly in the SGB and the SRV. Moreover, most women interviewed in those two zones, especially in the SGB, say they give part of their income to their husbands.

The situation seems different in Casamance, where, in addition to providing the staple food, rice, women have

> "Sharing income with our husbands is the price for our freedom to continue activities (...) in training sessions, we are taught to negotiate our freedom with our husbands to give ourselves the opportunity to continue our activities. This is what all women, regardless of their income level, do. What happens if we do not give some of the income? They prevent us for continuing our activities. It is simple; there must be something in it for them."
>
> (R. S., 45, Kaolack)

[10] Hathie, I., & Ba, C. O. (2015). L'agriculture familiale à l'épreuve de la sécheresse et de la libéralisation au Sénégal. *Diversité des agricultures familiales : Exister, se transformer, devenir*, 199–212.

greater involvement in commercial activities and gardening. Some are also employed. This is especially noted among members of the organization Kabonketor.

Casamance women report greater freedom in using their own income, but most of it still goes toward meeting household needs. Unlike women in the SRV and SGB, in Casamance, women do not feel that they have to give part of their income to their husbands, and they say that taking care of the household financially is a shared responsibility.

> "The little I earn is used for children food, health, and education."
>
> (F. S., 54, Pakala)

Women report that their income is intended mainly for supplementing the basic food ration provided by men. Many women said their priority is to provide for food, children's education, health, and clothing. For most respondents, it is mostly income from other non-agricultural economic activities or horticulture and tontines that enable families to gain some capital assets.

6.3 Access to Productive Resources

Access to resources, including land, credit, inputs, and farm equipment, influences women's level of participation in production activities.

Land

Interviews and focus groups found that women may access land through their husbands, their in-laws, purchase, pledging, leasing, sharecropping, or loans. Typically, women only have access to the least fertile land, which is more remote and difficult to till. Data also indicated that the lowlands are the most accessible to women, since men are not interested in the area due to soil quality and the type of crops that can be grown there.

> "There must be specific support measures for women. The Project must take into account women's difficulties in accessing land because when women have to repay a loan for a land lease between CFA 25,000 and 30,000 per hectare and pay the workers, in the end, there is nothing left for them. (...) In the end, they work at a loss."
>
> (Female at Focus group with Baybayaat, Mbirkilane)

Male heads of household still manage land access on family farms, despite the 2001 constitution, which established equal access to land for men and women. In Senegal, as in many other African countries, customary law takes precedence over legislation in land matters. There are many reasons for unequal access to land, some

of which include social, historical, cultural, and religious customs.[11] Men remain the sole landowners, and women are excluded from land inheritance.

> "The land that we in the GIE use is all rented, we rent 170 ha, because there is no land. Women do not have access to land. For that matter, I have decided to give up, I fought so hard for women's access to land, in vain, Nimna knows about it, I cannot count the number of meetings we have attended and we always raised the issue, even with the highest state authorities.
>
> Now I know that women will never have equitable access to land, not in this area anyway. Leasing is the only solution for us (...). I can assure you that if women had access to land, they would do better than men (...) With my group, we are leader in maize production in this area."
>
> (R. N., 45, Kaolack)

Faced with this situation, some women adopt individual or collective strategies to access land through purchase or lease, particularly in the SRV and SGB zones. For example, the *Union des Femmes Productrices*, in the village of Ross Béthio, consists of 28 women's groups cultivating 280 ha of farmland. One female farmer, 44 years old, shared that she has 20 ha, and the other members of the economic interest group (GIE) share an additional 20 ha of farmland belonging to the group. Though it is fairly common, leasing land greatly inflates production costs and is the major obstacle to women's empowerment in agriculture. One female farmer interviewed, 45 years old, farms maize on an individually leased plot of 15 ha. Frequently, leasing is a collective endeavor, as demonstrated in the case of the women's group *Manko*, affiliated with *Baybayaat*, which produces millet seed on 4 ha of leased land. The women of the GIE *Keur Ameth Yacine*, a member of FEPROMAS, collectively cultivate 170 ha. of leased land. Their requests for land allocation have been repeatedly denied and they now resort to leasing as the only way to access land.

> "With my family, we use 8 ha of which 3 ha are borrowed. We only have the 5 ha that my children inherited from their father, but it is not enough and that is why we borrow the 3 ha (...) It is a landowner, my late husband's friend who lends us the land."
>
> (N. F., 48, female head of household, Nioro A. Tall)

Depending on land fertility, the rice fields are leased between 25,000 and 30,000 CFA ($44–$52 USD) per ha. Vegetable gardening plots are even more expensive. They are leased at 100,000 CFA ($174 USD) per ha. Farmers say the reason for this rate is that vegetable gardening plots can have longer tenure and generate more income. In general, women who rent land say that it significantly increases production costs, which limits their involvement in production, and may even push them to abandon agricultural activities. Many women reported many fruitless attempts to gain access to land.

In the SGB, even women-headed households have significant difficulties in accessing land. In this zone, 64.6% of households headed by men own agricultural land, compared to 27.7% of women-headed households. Because women do not inherit land, female heads of household resort to leasing or other strategies.

[11] Sall, F. D. (2012, April). L'accès des femmes à la terre au Sénégal : un chemin escarpé. *AGRIDAPE*, *28*(1).

Sometimes communities act together to support households struggling to access land, yet this falls apart when there are opportunities for landowners to rent, sell, or sharecrop land.[12] This is observed in the localities of Ndoumboudj and Santamba (Foundiougne subzone), where non-indigenous families in these villages originally farmed borrowed land and now have less access, given the demand for rented land.

In Casamance, access to land is less of an obstacle for women: They generally have access to land due to their dominant role in rice cultivation. However, they do not own the often "inherited" rice paddies. Frequently, women inherit land from their mothers-in-law and can work freely as long as they remain married. Their access to land is therefore closely linked to their marital status. Rice cultivation is generally performed on low-lying land by women and on uplands by men, which reduces competition on land. However, the salinization of lowland rice fields, especially in the region of Ziguinchor, poses a serious threat to women's access to agricultural land in the area.

> "I inherited 6 ha of rice land (...) I also lease 2 ha at CFA 100,000 FC per ha per year for growing vegetables. (...) The main constraint for Waalo women is lack of land; we are neither in individual nor in public land development schemes. Our only option is to rent. Before, we women, did not have this vision of agriculture, this is why all these initiatives have escaped us. The women were subsequently made aware of the issues of individual production."
>
> (N. F., 47, Mboudoum)

This study finds that access to land is one of the key conditions limiting women's empowerment in agriculture. Promoting collective ownership of larger areas was raised as one strategy for overcoming the sociocultural limitations on women.

Credit

Access to credit is another major constraint faced by farmers, and women in particular face many barriers. When interviewed, women stated that they encounter legal obstacles, social customs, and the "fear of not being able to repay the loans." Similar reasons are frequently cited in other studies.[13] There are differences in access to credit by zone, subzone, and value chain.

> "Credit at the mutual is never an individual undertaking and women must have the agreement of all family members to be able to borrow. . . and often the mutual does not have enough funds."
>
> (L. F., 48, female farmer, Kabiline)

In the SRV, the National Agricultural Credit Fund of Senegal (CNCAS) individually lends to farmers, particularly those of Mboundoum, and applies the same terms to male and female members of farmer organizations (REFER, UNIS, AKBN, etc.) who contract collective loans for their members. In the Kheune area,

> "Women here have their own savings mutual called AVEC. Every Friday they contribute what they can and depending on the amount made available to them by the Mutual, they can take a credit."
>
> (Djifanghor village chief)

[12] Hathie, I., & Ba, C. O. (2015). L'agriculture familiale à l'épreuve de la sécheresse et de la libéralisation au Sénégal. *Diversité des agricultures familiales : Exister, se transformer, devenir*, 199–212.

[13] AfDB. (2015). Empowering African women: An agenda for action. *Africa Gender Equality Index 2015*.

however, credit systems are almost nonexistent to the households interviewed. As women are less involved in production, they are not as affected. They continue to work in micro-gardening, which does not require significant resources. In Matam, farmers who are not members for farmer organizations rarely make use of the formal credit system and self-finance their activities.

In the SGB, collective loans through farmer organizations seem to be the main recourse for both male and female farmers. However, as the number of women in organizations is very limited in this area, men have much greater access to credit. In addition, unreliable harvests due to climatic conditions, plus the lack of insurance schemes, discourage farmers from accessing credit, as they worry they will not be able to repay the loans. For nonmember farmers in the SGB, self-financing and informal loans are more common. Women have difficulty accessing credit from financial institutions, and as a result, they rarely take loans. When women do take out loans, they mainly use revolving loans (*tontines*) for small amounts essentially intended for market gardening or commercial activities. In the Casamance, the situation is similar to that in the SGB. Men and women encounter many difficulties in getting loans from financial institutions, making self-financing the dominant practice. Men are more likely to succeed in securing loans from financial institutions. Moreover, when a woman wishes to take a loan from a mutual credit or savings group, she must first have her family's consent. In some places, women have set up their own savings groups to finance their activities.

> "The women here have established a mutual that allocates credits they must repay every six months, and they each have an account into which they pay money monthly."
>
> (S. B., 74, Tambacoumba)

> "I belong to a women's group in the village. We make contributions that are redistributed in revolving credit. In addition, we are all required, after harvest, to contribute a bag of rice, and this allows us to have substantial income and to fund ourselves. Currently, we save to help each other. Recently, we were given CFA 110,000 each to be repaid with 15 bags of paddy rice at harvest.The credit obtained from the group allows me to finance my activities. So we do not rely on CNCAS or SAED."
>
> (S. S., 40, Mboudoum)

In all zones, group credit through a farmer organization is the primary method for farmers to access credit. Since many farmers surveyed are not members of farmer organizations, the data shows a predominance of self-financing, revolving credit, and informal credit from traders or relatives. Women often establish flexible credit systems that allow them to finance their agricultural and non-agricultural activities. However, such "self-help" systems provide only small amounts of money; women struggle to mobilize substantial funding.

Agricultural Inputs and Farming Equipment

Access to equipment is important because, according to the UN's Food and Agriculture Organization (FAO)[14], with equal access to productive resources, women could increase their

[14] United Nations Development Program. (2013, May 31). *Ticad V : Autonomisation des femmes et égalité des sexes en Afrique au centre des débats*. Retrieved from http://www.undp.org/content/undp/fr/home/presscenter/pressreleases/2013/05/31/empowering-women-and-closing-gender-gaps-in-africa-under-spotlight-at-tokyo-conference.html

fields' yields by 20–30% and at the same time improve agricultural production in developing countries by 2.5–4%.

Access to inputs and farm equipment remains a significant challenge for both men and women. In all areas, access to certified seeds and fertilizer is dependent upon either membership in a farmer organization or relying on individually getting credit from financial institutions.

There are different issues regarding inputs and equipment across zones, value chains, and gender. In the SRV, farmers and members of farmer organizations have more advantages than those in other localities. Most male and female respondents who cultivate rain-fed crops save the seeds from their millet, maize, and groundnuts crops from the previous year. Due to the unreliable nature of crops, this system is risky in terms of quality and total yield. In the Delta and part of the Middle Valley where agriculture is more modernized, men and women make use of mechanized farming equipment. Women, who are independent producers funded by CNCAS and who participate in farmer organizations such as UNIS and REFER, benefit from access to mechanized equipment. Other women access mechanized technology through leasing, which increases their production costs. For example, a tractor is leased between CFA 15,000 and CFA 25,000 per ha; equipment for the grading and rehabilitation of bunds is rented CFA 50,000 per ha; combine harvesters are hardly accessible. The prohibitively high cost in renting equipment encourages farmers to use farm workers instead of using mechanized equipment.

In other zones, farmers use traditional, manual, and sometimes antiquated farm equipment. Once again, women are more affected by this problem because they frequently do not own, or have access to, even the most basic equipment. When they have access, women use basic equipment only after the family fields are taken care of. This lack of equipment contributes to the low yields of women's fields.

> "During the rainy season farming is like a race, the one who starts first is more likely to arrive first and on time."
>
> (C. N., 60, Santamba)

Other Assets

> "Sometimes cropping seasons are not good and, when it is the case, we sell some of our assets to reinvest in production."
>
> (Focus Group)

Men often have additional capital they can use for income-generating activities, such as large livestock and modes of transportation. Women generally have fewer assets to use – they may have small livestock such as poultry, or home equipment they could use for processing crops. This varies across zones. In the Delta and part of the SGB, women, individually or through their associations, frequently invest in cattle, housing, farmland, and equipment.

In addition to supporting income-generating activities directly, other assets are also a form of savings that can be converted when needed. In these zones where farming is primarily for household consumption, owning major assets is not a priority.

Market Access

Access to markets can be an issue for farmers seeking to sell their crops commercially. In the project ZOI, this concerns mainly Delta producers and Project-supported farmer organizations. All

these farmers encounter enormous difficulties in accessing the market and selling their products in good conditions and at the best price. No difference was noted between men and women.

In the Delta, independent farmers at the local level sell rice to buyers, particularly *bana-bana* traders. Farmers generally sell their rice at a low price, which typically generates only enough cash to repay their credit and pay their farm laborers.

> "Harvest time is still the most difficult because all the people involved in production (farm workers, etc.) ask to be paid. We are thus forced to sell off our crops at low prices to meet our commitments. For example, if the bag of rice costs CFA 10,000 or 11,000, buyers/merchants offer us between CFA 7,000 and 7,500. (...) We would like some support particularly in bringing rice to market."
>
> (N. F., 47 years, Mboudoum)

Many farmers in interviews and focus groups cited difficulties in bringing their crop to market. Without a sales contract with processors, who buy their production at official prices, farmers are forced to sell at a loss.

For project-supported farmer organizations, market difficulties are similar to those of individual farmers. Some farmer organizations have a standing contract with buyers, which helps their members immensely. Farmer organizations with no contracts sell at local markets or to buyers who appear at the market periodically or irregularly. This often results in farmer organizations holding an excess of crop (often contributions from members, as a form of membership dues) without a good option for selling. Other farmer organizations, such as FEPROMAS, have marketing contracts with industrial processors like Avisen and Agrosafi for edible maize or Sedab and Tolou Baye for certified maize seed. Contracts through farmer organizations may facilitate the sale of a small part of farmers' surplus for sale, but individual farmers must find outlets to sell the remainder. The farmer organizations in Casamance, such as *Kissal Patim* and *Entente Diouloulou,* produce rice seed for which market access is not a problem. In the words of the members, demand is even higher than supply.

6.4 Group Membership and Leadership

Rural Senegalese women have a long tradition of membership in associations that have evolved over the years. From solidarity, some associations subsequently developed social, cultural, and financial assistance functions.[15] Facing increasing vulnerability due to crisis and poverty in rural areas, and with the contribution of development partners and government of Senegal, some of these associations have evolved into groups for the advancement of women (GPFs).[16] Interview and focus group results have shown that most women belong to multiple organizations. The practice of organizational membership is most established and organized in the SRV and the SGB.

[15] Wane, A. (2009). *L'entrepreneuriat féminin au Sénégal : Obstacles et essais de solution* [Master's thesis]. Cheikh Anta Diop University, Dakar.

[16] In the last three decades, there has been a large increase in GPFs and other women's organizations in rural areas. Their objective is to create space to accommodate the government's social and economic policies toward women and allow them to receive funding from development partners. The basic assumption was that it would be easier for women to develop and manage economic activities and access financing in groups rather than individually.

Membership

Group membership, which also facilitates women's leadership, is important in empowering women in agriculture. Membership in an organization helps reduce women's vulnerability and risks in agricultural production and facilitates their access to productive resources. In general, project-supported organizations provide the same benefits to their members, regardless of gender: credit, access to inputs, farm equipment, access to markets, training, and capacity development on technical farming practices. Thus, in principle, men and women benefit equally from producer organizations. Both male and female farmer organization members say that farmer organization membership enables them to improve their agricultural activities and that they are better off than nonmembers. This is what motivates the many farmers who apply for membership in organizations every year.

In the SGB zone, there is a fairly strong membership of men and women in organizations. However, men constitute a large majority in farmer organizations, while women try to collectively pursue economic activities and access financing through women's groups. Female members from three producer organizations were interviewed: *Yakhanal*, *FEPROMAS*, and *Baybayaat*. A relative difference was noted in women's involvement and levels of responsibility within these three organizations.

According to participants, women members give their opinions and express themselves freely in the union, but they are a minority in decision-making bodies. Depending on the importance of the decisions, decision-making levels and participation of various leaders and members may vary.

Frequently, women's decision-making power is limited, as is their number in leadership positions. Men and women explain this situation differently. According to men, the low representation of women in leadership positions results from their lack of freedom, while women accuse men of not giving them space. When it comes to speaking in public, men believe that women choose not to speak and therefore do not see the point of involving them in meetings. Women say that when they do speak, their opinions are not taken into consideration. Furthermore, some women cited that they feel like props, put on display when the men wish.

Everyone agrees on the need to raise awareness among women and their husbands for their better integration and participation in groups.

> "Women are very involved in agriculture but unfortunately they are still sidelined; it is men who make and enforce the rules. (...) In meetings like this (reporting day on the activities of the Yakhanal network with the Naatal Mbay team), they like to show that women are involved, they integrate us but in reality they do not listen. (...) Men listen only when we go in their direction, otherwise they cut us off, which is why some women do not want to speak.
>
> Although women join organizations, it is men who decide, (...) but look at this meeting, of 30 producers present, there are only 6 women and since the beginning of the meeting with the Naatal Mbay team, men monopolize the floor. We are spectators."
>
> (F. S., 48, female leader in a FO)

The maize network FEPROMAS is composed of 32 groups, including a single GPF. It comprises a total of 2,401 farmers, including 268 women. Women occupy 7 of 28 leadership positions in the federation. FEPROMAS is the only one of the three organizations led by a woman and with parity in its secretariat. Compared to other producer organizations (POs), women are more present in leadership positions and are the most successful in agriculture. They have developed real leadership within both the organization and their respective communities. However, the focus group revealed that in this PO as in others, women must demonstrate "greater skills" to access certain leadership positions.

In Casamance, the results also show women's involvement in various organizations. However, the tradition of associations is less rooted in this area compared to the other two.

Focus groups and interviews find that membership in these organizations has a different impact by gender. While organizations should provide the same benefits regardless of gender, due to sociocultural practices and long-held conceptions, men often benefit more than women. In addition, fewer women are members of organizations compared to male farmers.

Leadership

In general, women organizational leaders benefit more than regular members, and even their families get to enjoy the benefits. Leaders develop negotiation skills and have an expanded social network that enables them to negotiate access to more land and other productive resources. Data show that their level of involvement and responsibilities in these organizations vary by zones and crop.

Women who hold leadership positions have larger land plots and farm on a larger scale in comparison to other women who are only members or nonmembers. For example, the chairwoman of the *Union des Femmes Productrices* in Ross Béthio has 20 ha of land, where other women have between 0.5 and 5 ha of individual plots. During individual interviews in Mboundoum, it was noted that the chairwoman of one women's GIE had 20 ha, where other members of the GIE share 20 ha. This correlation between leadership positions in organizations and empowerment in agriculture was also noted in the farmer organization FEPROMAS.

However, a question remains as to whether it is because women in leadership have so many resources that they have access to decision-making bodies or, conversely, if it is their position in organizations that enable them to access these resources. Both situations are possible, and this study is unable to conclude which is the case.

In Foundiougne, the data suggested that leadership can be an additional burden on women, particularly if responsibilities are not shared or if groups do not have the support of a project.

In Casamance, female dominance in rice production may explain why the data did not find a correlation between female leadership and women's empowerment. In general, women are underrepresented in farmer organizations and in senior positions.

> "For some decisions, we convene the General Assembly; for others it is the Board of Directors, and still for others, it is the Secretariat that makes the decisions (...) the Board decides when it comes to partnerships with projects like [Feed the Future Senegal] Yaajeende and [Feed the Future Senegal] Naatal Mbay. If there are problems with partners, the Secretariat can decide; if the issue is not resolved, it may call on the Board."
>
> (Focus group in Ourossogui)

In the UNIS farmer organization that works in the seed sector in the SRV, responsibilities seem well distributed among the various component structures of the union, with representatives of each GIE on the board of directors, steering committee, or technical committee.

> "We women, we are defending our views and if a decision does not help us, we reject it until an agreement is reached with all members (...) Do not forget that we are the majority in the organization, our views count a lot. (...) We women call an annual meeting specifically to agree on issues, first discuss among us before submitting them to a general assembly."
>
> (Focus group)

Kabonkétor, in the sub-zone of Ziguinchor, has a women's organization like no other. Although their agricultural activities are mainly limited to subsistence farming, the organization demonstrates women's ability to develop leadership, manage their affairs, negotiate their acceptance by men, and express themselves at public meetings. During the focus groups, women have shown how they spoke out in hearings where it is thought that only men have the right to speak. Decisions are made collegially at general meetings, and women play an important role. To speak with one voice, women hold an annual general assembly where they gather the views and opinions of all female members, prioritize their needs, and agree on issues that will be defended in the larger farmer organization meetings.

Entente Diouloulou is also a mixed-gender farmer organization, with nearly 1,000 members, 274 women, who are very active in the production of rain-fed rice seeds. Unlike the other two farmer organizations, it is a largely male-dominated organization. Respondents noted that women's decision-making power is relatively limited.

Participation in organizations seems to follow the pattern of role division and men and women's status in society. It is still difficult for some women to speak in public or to be heard by men. Although women's leadership in these organizations has emerged and is growing, men's role in decision making is still largely dominant. For women to access leadership positions, they say they must demonstrate "twice the capabilities of men."

6.5 Time Allocation

A heavy workload can be an obstacle to the effective involvement of women in agriculture activities, their participation in farmer organizations, and to their overall empowerment. Reconciling productive activities and domestic workload is one of the main constraints that women face in urban and rural environments. However, the problem is more acute in rural areas, where women have little access to equipment that could alleviate their household chores or ease the burden of agricultural activities. According to the African Development Bank (AfDB), the workday of an African rural woman is at least 50% more than that of a man. During the rainy season, women often spend all morning and sometimes all day in the fields, in addition to the domestic tasks they must perform. The lack of farm equipment lengthens time spent on the fields for meager yields and is also linked to lack of access to other productive resources. During the dry season, many women also participate in gardening or other commercial activities.

Interview and focus group results show that women's workload generally varies with age and marital status, with differences noted by area and value chains.

In the parts of the SRV where farming is mechanized, women farmers hire workers and are able to find time for other endeavors. In contrast, in the Middle Senegal River Valley, most of the SGB, and Casamance, women report having very busy days. In these areas, women are the main source of labor on family farms, where they use basic, manual farming equipment. This is in addition women's responsibility for usual domestic chores such as fetching water and firewood. When activities are mechanized, or women have opportunities to hire external labor, women are more active in other segments of the value chains, such as processing, or in other economic activities. It is also noted that the women who have leadership roles are those who have more time because they are liberated from domestic chores and farm labor.

Most often, women with extra time to participate in groups or other activities are usually over the age of 40. They are generally women who, although married, do not live in the marital home or have daughters-in-law or other people to take care of household chores for them.

In conclusion, time is one of the main constraints to women's membership in farmer organizations and income-generating activities. Some women suggest it would be better to direct their attention to other activities such as processing, with adequate training and support for the conservation and marketing of their products.

7. CONCLUSION

According to AfDB, including women in agricultural activities and increasing their productivity are catalysts for an inclusive growth in the agricultural sector, which supports the necessity of removing the barriers for women's empowerment in agriculture.[17] Unbalanced gender relations are one of the main factors that prevent women from reaching their potential in agricultural production. That is why integrating a gendered approach in any intervention aiming to fight poverty and food and nutritional insecurity is crucial.[18]

The A-WEAI score for women in the Naatal Mbay ZOI is 0.783. A-WEAI values are similar for the different zones of the project, ranging from a low score of 0.742 in the SRV-Delta to a high score of 0.800 in the SRV-Middle Valley. The SRV is the only zone where calculations find the majority of women are empowered (51.2%). The Southern Groundnut Basin has the highest empowerment deficit, the percentage of domains for which disempowered women did not reach the empowerment threshold: 46.7%, compared to 43.9% of domains on average across the entire zone.

Analyzing empowerment findings with individual and household characteristics reveals that age is a major determinant of women's empowerment. Overall in the Project's ZOI, the level of women's empowerment increases linearly with age. When it comes to education, the largest percentage of empowered women are those who completed primary school, while the largest percentage of disempowered women are those who have no education or who are literate only in a national language. For men, but not for women, the level of household wealth impacts their empowerment.

Qualitative findings showed that participation in farmer organizations can have a positive impact on women's empowerment. Women in farmer organizations have a greater opportunity to access resources, receive support, and influence group decisions. Power relations between men and women in mixed-gender organizations remain an obstacle that reflects society's continued sociocultural gender norms. Men are the main decision makers, and many women in mixed-gender organizations keep a low profile.

A more detailed analysis of empowerment within the five dimensions reveals the following:

- Primary decision makers on agricultural production and use of income are the "primary male adult or husband," although a significant percentage of "primary female adults" may be involved in decision making. Some women report that they feel free to make their own decisions on activities they are responsible for, which provides insights into their perception of their own empowerment over their individual activities.
- Male respondents are the primary owners of productive assets, while women own less valuable property such as small livestock, poultry, radios, and cookware.
- Access to credit is low in all zones and for both genders in the ZOI. The women and men who succeed in obtaining a loan often do so through informal sources (informal lenders,

[17] African Development Bank. (2015). BAD, Autonomiser les femmes africaines : Plan d'action. *Gender Parity Index in Africa for 2015*.

[18] Charlier, S., & Demanche, D. (2014). *Perspectives de genre pour l'agroécologie : Regards croisés sur la souveraineté alimentaire*. Brussels : Le Monde Selon les Femmes.

friends or relatives, or informal credit groups). The results show that formal financial resources are more accessible to men than to women.
- Men have higher levels of community group membership than women in nearly all types of community groups, across all the zones of the project.
- Community groups are more institutionalized and active in the Senegal River Delta and Southern Groundnut Basin than in Casamance.
- The analysis of time allocation and workload shows that women perform the majority of domestic household activities across all zones, while other activities are shared between men and women.

Drawing on the results of this study, the research team has identified the following recommendations for future projects to promote women's empowerment in agriculture:

- Promote more flexible intermediary credit systems for women, following the model being used by existing, successful women's organizations. Informal, intermediary credit systems enable the financing of micro-gardening and of some commercial activities. Formalizing and strengthening these systems would help women receive larger amounts of revolving credit.
- Raise the awareness on fair access to agricultural land by specifically targeting women's organizations, traditional authorities, and the *marabout* class while inviting technical partners to strengthen rural women's advocacy capacity in demanding equal access to land. One possible tactic is to promote collective access to land and farm equipment through women's organizations.
- Support diversification of women's income, such as through horticulture, as well as processing or marketing crops. This could include integrating production processing and conservation in training programs.
- Reinforce support measures and follow-up after training in good agricultural practices to develop new skills among women, improve their productivity, and strengthen their leadership within organizations.
- Promote and support women's organizations that provide resources to members and facilitate women's advancement to leadership positions.
- Promote women's leadership in mixed-gender organizations. Some organizations may benefit from a quota for women in the leadership of mixed-gender organizations. Additionally, encourage organizations to consider relationships between leaders and members and between male and female members in decision making to promote more inclusiveness within organizations.
- Help farmer organizations and independent producers access the market. Market access is essential to increasing producers' income when they produce a surplus to household consumption.
- Expand programming to young women. Given the finding of this study that empowerment increases with age, interventions that develop leadership and organizational skills in young women in preparation for roles in farmer organizations and processing businesses can support women achieving empowerment earlier in life.

With these recommendations that take into consideration gender-specific constraints in agriculture, projects can focus interventions and ensure that implemented activities are inclusive and promote the well-being of both men and women.

APPENDIX 1: IPAR STUDY PROTOCOL

METHODOLOGY

The methodology of this study was similar to the one that was developed for the baseline study for the project. It was adapted to questions on gender and empowerment within the ZOI of the project. The methodology consists in the following steps: (1) identification of target populations (household types and value chain actors) in the ZOI; (2) quantitative and qualitative techniques; (3) development of data collection tools; (4) data collection; (5) data processing; and (6) data analysis and report writing.

Target Populations

The target populations for this study were in two main categories:

- Households belonging to two types: those with "male and female adults" and those with a "female adult only"'
- Other value chain actors such as farmer organizations (FOs), water users' associations, women's groups, trade and business associations, and grassroots community organizations (GCOs)

A household is defined as a group of persons, related or not, living together and communally managing all or part of their resources to meet their basic needs, including housing and food. Members of a household usually have meals together and recognize the authority of one person, the head of household (HH). In Senegalese national languages, the words *njël* in Wolof, *ngaak* in Sereer, *hiraande* in Pulaar, and *siitik* in Joola reflect faithfully the meaning of the household concept.

However, a *compound* comprises several households that are frequently related and share the same yard. It is often led by one of the heads of household who is acknowledged as the compound head.

For the households, the study used a mixed-method approach, using surveys supplemented with qualitative interviews and focus groups. Due to the gender focus of this study, households headed by women were oversampled to cover all the aspects that pertain to them. See more details in the sampling description. For the other value chain actors, a qualitative approach was selected to achieve the targeted objectives. Statistical units were identified for each of these populations: sampling unit, analysis or baseline unit, and reporting unit.

This study covers the project ZOI, comprising the Senegal River Valley (SRV) and the Southern Forest Zone (SFZ).

Quantitative Household Study

The purpose of the quantitative study was to collect statistical data on the state of gender aspects in the households of project beneficiaries. More specifically, it was designed to inform the monitoring indicators related to gender inclusion. The survey method that was implemented for this type of exercise aimed to collect data that effectively reflects reality; that purpose was the guideline for the survey plan.

Household Questionnaire Survey Plan

This section describes the sampling frame, the sampling plan and type, and the size of the populations to be surveyed.

Sampling Frame

The sampling frame is the list of census districts (CDs) of the baseline study of the Naatal Mbay project. For the project baseline, the general population and housing census carried out by ANSD (Agence Nationale de la Statistique et de la Démographie) provided the basis to divide the national territory into geographic zones called CDs. The average number of households in a CD is 100, or 1,000 individuals. It is materialized on a background map. The list of CDs is exhaustive, which makes for an appropriate sampling frame.

Household Sampling

The same sampling plan was adopted for this study as for the baseline study of the project: two-stage random sampling for each of the six defined strata or sub-zones. From the list of CDs containing the value chain households that were already drawn for the baseline study, the project drew for the 2016 data collection a subsample of CDs corresponding to the primary units. The 2017 data collection occurred in the same households.

To ensure that enough female-headed households were part of the sample, the Project opted to survey all of the female-headed households, which constitute 5% of all the value chain households. This caused a phenomenon of oversampling that has been corrected with weights.

Subsample Size and Drawing

This study set a subsample at 25% of the 2,000 households that were initially selected for the baseline study. Thus, this study's sample size is approximately 500 households. This number was distributed proportionally to the weight of each of the six sub-zones based on the list of drawn CDs. Each CD has a size of 10 households.

Random sampling was used based on the list of CDs in each of the six sub-zones. However, the study had to ensure that the number of CDs drawn in each sub-zone provided statistically relevant sizes to facilitate disaggregated data analysis. For this reason, the subsample of the Delta sub-zone was adjusted from 3 to 5 CDs, for a total size of 50 households. The other sub-zones produced statistically representative subsamples (see Table 22). This table shows that collection was carried out in 51 CDs containing a total size of 510 value chain households.

Table 22. Distribution of Households to Survey

Sub zones	Stratum N°	Project Baseline Study			Planned in Women's Empowerment Study	
		CD	Number of Households	Number of Value Chain Households	CD	Number of Households
Delta (Dagana)	Strat. 1	12	120	86	5	46

Sub zones	Stratum N°	Project Baseline Study			Planned in Women's Empowerment Study	
		CD	Number of Households	Number of Value Chain Households	CD	Number of Households
Middle Valley (Podor–Matam–Kanel)	Strat. 2	43	428	375	10	94
Southern Groundnut Basin (Fatick–Kaolack–Kaffrine)	Strat. 3	150	613	604	15	149
Lower Casamance (Ziguinchor)	Strat. 4	29	291	265	10	100
Higher and Middle Casamance (Kolda–Sédhiou)	Strat. 5	61	619	601	11	106
TOTAL		295	2,071	1,931	51	495

Drawing from the list of CDs allowed the study to identify each selected household ("male and female adults" or "female adult only" and name of the head of household) and to ensure that it met the required numbers. As a result, in CDs in which the number of households that met the criteria was less than 10, another CD was selected randomly to replace it.

Questionnaire

A version of the A-WEAI questionnaire translated into French was used for data collection. As part of the effort to contextualize the questionnaire to the Senegalese rural environment, the questionnaire went through several checks and a few adjustments[19] from the research team at IPAR and the project teams at Naatal Mbay and USAID. The adjustments were minor:

- In module G1, questions were added regarding the age, education level, ability to read and/or write, relationship with the head of household, and marital status.
- In module G5, question G5.05 was added, "In which capacity do you participate in decision-making in this [group]?" even though it is not included in the computation of the A-WEAI index.
- In module G4 on time allocation, the question "Farming/livestock/fishing" was disaggregated into several questions: "Farming (millet, maize, rice)," "Farming other than millet, maize,

[19] Note that the adjustments to the questionnaire were made on variables that do not affect the computation of the A-WEAI.

rice," "Livestock," and "Fishing." This allowed the study to roughly identify each specific agricultural activity as well as the crops targeted by the project.
- In module G2, question G2.02 ("When decisions are made regarding [ACTIVITY], who is it who normally takes the decision?") was adapted for the Senegalese context, which increased the number of modalities from 5 to 8 (cf. questionnaire in appendix).

Reporting Units and Gender of Collection Agents

The questionnaire was administered to two types of households:

- "Male and female adult" households: In this case, the questionnaire is given to two individuals – the male decision maker (often the head of household) and to a woman who has input in household decision making. In cases where there are several adult females in the household, including in polygamous households, the interviewer asks to speak to the woman named by the other household members as the primary female decision maker. Note that "Male adult only" household types are excluded from the survey.
- "Female adult only" household types: In this case, one questionnaire is administered to the woman who is the head of household and primary decision maker.

The interviewing team contains an equal number of men and women.

- The questionnaire for a male adult was administered by a male enumerator.
- The questionnaire for a female adult was administered by a female enumerator.

Enumerator/Supervisor Training and Data Collection

After validating the data collection tools, the Project proceeded to the training of field staff, composed of supervisors and interviewers (enumerators). The enumerators were recruited based on their education level, the language spoken in their assigned zone, and their experience with this type of work. Training ensured that enumerators had a perfect command of the tools as well as an awareness of their responsibilities. A significant part of the training was dedicated to practicing with collection tablets. A customized application for the questionnaire was developed and installed on the tablets by the IT specialist. The training team alternated theory and practice sessions while taking care to foster interactive training via questions and answers. To further cement their knowledge of the questionnaire, a field test followed by a debriefing was organized during training.

The training also provided an occasion to arrange logistics and divide the agents into teams before assigning their tasks, including the field workload for each supervisor and interviewer.

Data collection was carried out concurrently across all survey zones over the same time period.

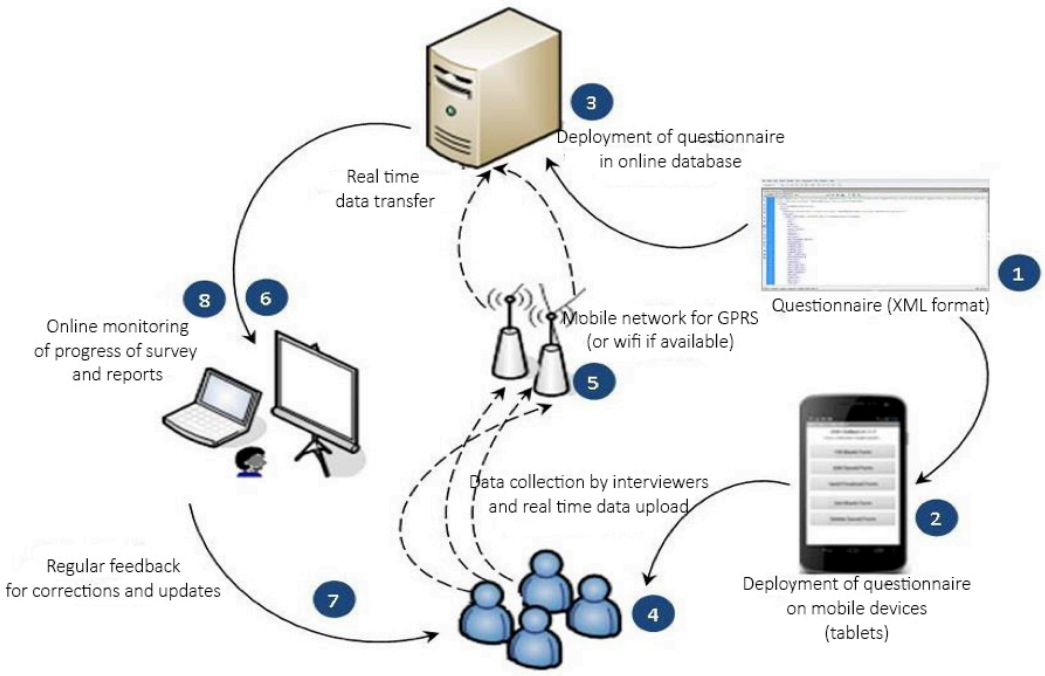
Household Data Feedback, Processing, and Analysis

The data collected on tablets was transferred via the Internet to a web platform created for that purpose. The study used Open Data Kit (ODK), a pack of tools for data collection using mobile devices such as smartphones and/ tablets (with an Android operating system) and for uploading this data onto an online server. When the data is collected in the field with ODK Collect, it is then imported and managed with ODK Aggregate, the server module of the platform.

Data feedback was coordinated by the supervisors of each interviewing team in collaboration with the IPAR collection team, including the IT specialist in charge of the web platform. Thanks to real-time data feedback, the statistics team was able to process data and immediately make recommendations to the field teams whenever they noticed errors, to correct them instantly.

After validating the collected data, processing consisted of performing structural checks, cleaning, and correction. The database was built in a format accessible by Stata, SPSS, and Excel. To increase efficiency and save time, an analysis plan was developed in collaboration with the Naatal Mbay team to facilitate report writing and generate tables and charts to for the report.

Figure 9. Data Feedback Diagram



Qualitative Study of Households and Other Value Chain Actors

To establish a comprehensive baseline study of gender aspects and increase the understanding of the environment surrounding the households, qualitative interviews and focus groups were conducted concurrently with the quantitative component in the project ZOI. The qualitative interviews and focus groups covered "male and female adults" and "female adults only" household types and also other key value chain actors, including farmer organizations (FOs), women's groups, water users' associations, trade and business associations, and grassroots community organizations (GCOs). Qualitative data was collected through focus groups and targeted interviews, according to the terms described below.

Survey Techniques and Tools

The main qualitative techniques were focus groups and interviews.

- Focus groups

The selected actors are farmer organizations, NGOs, and private businesses that may or may not be beneficiaries of project support and that belong to at least one of the four value chains targeted by the project. Each focus group gathered 8–12 individuals and was facilitated by a pair of enumerators (one man and one woman) who took turns facilitating and taking notes or observing. This method helped foster active discussion and exchange as well as comprehensive note-taking. Each facilitator was given a voice recorder and notepads for data collection.

- Interviews

Semi-structured individual interviews were conducted with "male and female adults" and "female adult only" household types, as well as other value chain actors such as farmer organization leaders, especially women; agricultural processors; distributors of farm inputs and equipment; and financial institutions, such as credit organizations and banks. Household interviews were conducted with a subsample of those who had previously responded to the quantitative questionnaire.

- Sampling

Sampling followed the rules of diversification and saturation threshold. Interviews sought to cover a large variety of situations, independent from their statistical frequency. Internal diversification covered each category of actors for the four cereal value chains in the project.

Interval diversification is part of a process of empirical saturation that was also targeted. Empirical saturation is the phenomenon through which the researcher judges that the last data collected do not provide enough new or different elements to justify continuing data collection. The more results are divergent, the greater the number of interviews to reach saturation.

Saturation does not depend on the number of interviews conducted but rather on the variability of the information provided by the respondents. For this reason, when it appears that less and less new data is added, it is reasonable to conclude that all types of representations have been covered.

- Conducting qualitative interviews and focus groups

Focus groups and interviews were conducted according to interview manuals adapted to the target and by experienced facilitators who were able to accurately report the content of the discussions.

Qualitative Data Processing and Analysis

Manual content analysis was conducted to gather the collected information and process it in a format most likely to yield interesting findings. After transcribing the interviews and cleaning up the notes taken during fieldwork, this data was structured into a single document and then processed. The processing step consisted of establishing an evaluation matrix with categories for analysis, including the 5 domains of empowerment and sub-categories comprising the indicators and different empowerment domains. The data was then categorized and analyzed in the matrix according to zone, sub-zone, value chain, and gender. These categories and sub-categories were then used at themes for data interpretation and to structure the writing plan of the qualitative section of the report.

Study Resources

Primary Team Composition

The study was conducted by IPAR with a team described in Table 23. The director of IPAR was the general coordinator of the study.

Table 23. Description of the IPAR Study Team

IPAR Team	Specific Tasks
Gender Expert	• Immersing in and taking ownership of the collection provided by the project (questionnaire and interview manuals) • Producing materials for the training of collection agents (facilitator's manual) • Training facilitators on interview manuals to ensure the smooth running of focus groups in the intervention zones • Coordinating qualitative data collection • Verifying quality of the qualitative data collected by facilitators • Processing and analyzing qualitative data • Contributing to development of an analysis plan for the writing of the study report • Contributing to writing study report
Statistical Specialist	• Building a collection protocol, sampling included • Building data collection tools • Training interviewers • Overseeing field surveys • Ensuring data quality control • Processing and analyzing data • Contributing to report writing
IT Specialist	• Providing a data feedback structure • Setting up a system to transfer data onto an online platform • Building data input in screens for tablets • Setting up a storing server • Overseeing daily data transfer

Data Collection

Quantitative data collection from households was conducted twice: from February 29 to March 4, 2016 and October 9–15, 2017 by a team of 40 enumerators (20 women and 20 men), who worked in pairs. The enumerators covered 120 households each day, with a workload of 6 questionnaires per day per team of enumerators. The deployment of the field enumerators considered the number of households to be interviewed per zone and the travel distances involved.

Qualitative data collection was completed by 6 facilitators who were recruited based on their education level (master's degree at minimum), background (mostly sociologists), experience, and proficiency in the main language in each zone. Under the coordination of the IPAR gender specialist, the facilitators contributed to the development of collection tools; conducted household interviews, key informant interviews, and focus groups; and contributed to transcription, processing, and analysis of the qualitative data collected. The gender specialist and 6 facilitators (three women and three men) formed teams of two and conducted qualitative data collection over a period of 6 days in 2016 and 10 days in 2017 across the three selected zones.

STUDY PROCESS AND SCHEDULE

The study consisted of eight steps described in Table 24.

Table 24. Description of Study Process and Schedule

Step	Goal	Activities	Tools/Support
Step 1: Exchanges with the Naatal Mbay team	Develop a common understanding of the client's expectations	• Communicate with the Naatal Mbay team about the expected results of the study • Communicate with the Naatal Mbay team about the recommended methodological approach • Agree on practical modalities and implementation schedule of the study	• Terms of reference of the study • Methodology note • Schedule and budget
Step 2: Development of Data Collection Tools	Adapt tools and support materials for data collection	• Select data collection tools and adapt them to the ZOI's context (A-WEAI questionnaire and interview and focus group guides) • Share the developed collection tools with Naatal Mbay to ensure that all concerns have been considered • Pre-test data collection tools (questionnaire especially)	PMEP indicators
Step 3: Preparation and Organization of Collection Work	Set up an adequate field work system	• Develop a tablet application for data input • Develop the structure of the databases linked to the project monitoring database • Recruit interviewers, supervisors, and facilitators • Train interviewers and supervisors during three-day workshop. ○ Training was conducted with a dynamic approach by combining theoretical explanations and practice on the tablets at the end of each questionnaire module. ○ Role plays were also carried out to simulate interviews in the different local languages and in accordance with the different zones. ○ A questionnaire test in the field followed by a debriefing was organized as an essential component of the training. • Train enumerators on qualitative data collection	Terms of reference
Step 4: Data Collection	Gather the required information to inform the indicators before the start of project intervention	• Oversee household data collection • Contribute to and oversee facilitation of focus groups and interviews ○ The gender expert monitored daily the facilitators deployed in other zones. ○ Transcripts were produced after each day and each pair was tasked to write their own field log so that in the end, the gender expert was able to use and synthetize them to prepare the report. • Handle data feedback to the web platform • Conduct daily quality control of the data and request a re-do of specific interviews if necessary	Questionnaire and interview manuals

Step	Goal	Activities	Tools/Support
Step 5: Data processing and analysis	Generate relevant data to feed into indicators	• Checking the effectiveness of the subsamples for each zone • Checking data structure and consistency • Data cleaning and saving • Tabulation of validated data and creation of graphics based on the adopted evaluation grid Note that controlling the structure, verifying the recorded data, and data cleaning are iterative processes that must be repeated as many times as required to solve all detected issues.	An analysis plan developed with Naatal Mbay was used as the basis of the report. The software programs SPSS, Stata, and Excel were used as tools for the analysis of quantitative data. Qualitative data analysis was added as a complement to the quantitative findings.
Step 6: Writing the Study Draft Report	Formulation of the building blocks of the study's draft report	Write the report based on the findings of the quantitative and qualitative data collection. The aim is to provide analysis and interpretation. Analysis consists in gathering the collected data and processing it in a format likely to provide answers to questions. Interpretation consists of presenting a summary that links the answers provided by the analysis to the theoretical and empirical knowledge of the research team.	Findings of data analysis and report writing plan
Step 7: Draft Report Validation Meetings	Validation of the results by Naatal Mbay	• Sharing draft findings • Collect contributions, comments, criticism and suggestions to finalize the report.	Terms of reference and draft report of the study
Step 8: Finalizing the Report	Production of the final version of the report	• Integrate the different observations • Make the last corrections • Finalize study report	The study draft report and the notes on the various observations formulated

Computing the A-WEAI

The A-WEAI is the abbreviated version of the WEAI, an innovative tool composed of two sub-indexes. The first one, 5DE (the five domains of empowerment), assesses whether women are empowered across five domains of empowerment (input in decision making around agricultural production, access to resources, control over income use, leadership and influence in community organizations, and time allocation). The second one, the Gender Parity Index (GPI), measures the gender parity between the men and women of a same household. The WEAI is an aggregate index reported at the country or regional level that is based on individual data on men and women within the same households.

Based on both sub-indexes, the WEAI is a composite index that shows the degree to which women are empowered in their households and communities and the degree of inequality between women and men within households. Progress toward empowering women in agriculture can be achieved by increasing their autonomy in the five domains and achieving gender parity within the household.

$$A\text{-}WEAI = 0.9*(5DE) + 0.1*(GPI)$$

What follows is a presentation of the computing method for A-WEAI, starting with the construction of the indicators that enter into the calculation of its components: the empowerment index in the five domains of empowerment (5DE) and the gender parity index (GPI).

Computing the Indicators for Women's Empowerment in the 5DE Index

The 5DE index assesses whether women are empowered across the five domains examined in the A-WEAI. For women who are not empowered, the study calculates the percentage of domains in which they meet the required adequacy threshold.

$$5DE = H_e + H_n*(A_a)$$

In the formula,

- H_e is the percentage of empowered women;
- H_n is the percentage of disempowered women (1 – He); and
- A_a is the percentage of domains in which disempowered women reached the adequacy threshold.

The empowerment of an individual is determined based on the five domains listed in Table 23. For each domain, an indicator is defined to assess whether the individual is empowered or not in that particular domain. An aggregate indicator of empowerment in the 5DE is then computed with the indicators obtained by each domain and their corresponding weight.

Table 25 shows the 6 indicators used in this study and their weight in the total 5DE score calculation.

Table 23. Domains, Indicators, and Weights for the 5DE

Domains	Indicators	Weight
Production	Input in productive decisions	1/5
Resources	Ownership of assets	1/10
	Access to and decisions on credit	1/10
Income	Control over use of income	1/5
Leadership	Group member	1/5
Time allocation	Workload	1/5

- Input in decision making around agricultural production

For this domain, the WEAI methodology has two suggested indicators: the input in productive decision making and the autonomy in decision making. Considering the Senegalese context, the study selected only the indicator on the input in productive decision making.

This indicator is computed from the answers of the respondents about their input in decision making around agricultural activities: (1) If they contribute to the activity, to what extent do they have input in decisions regarding (a) food crop farming, (b) cash crop farming, (c) livestock raising, and (d) fishing, and (2) to what extent do they feel they can make their own personal decisions regarding these activities if they wanted to.

The answer scale for the first question is as follows: 1 = no input or input into a few decisions, 2 = input into some decisions, 3 = input into most or all decisions, and 98 = no decision made. For each activity in which the respondent participates, a sub-indicator was created to measure whether the individual reaches the adequacy threshold if he or she makes the decisions for that activity or at least has input into some decisions related to that activity (answer 2).

The answer scale for the second question is as follows: 1 = not at all, 2 = small extent, 3 = medium extent, and 4 = to a high extent. For each of the activities, a sub-indicator was created that measures whether the respondent reaches the adequacy threshold if he or she makes the decisions or feels that he or she could participate in the decision making to at least a medium extent.

This will produce two indicators for every activity of each of the two questions. They will then be aggregated into an indicator for the domain "input in productive decisions."

Thus, a respondent is defined as empowered in the domain of agricultural production if he or she is adequate in at least two sub-indicators. In other words, an individual reaches the adequacy threshold on agricultural production if there are at least two types of decisions that he or she either makes, or has some input into, or feels that he or she could make to at least a medium extent.

- Access to resources

For this domain, the original A-WEAI methodology included three indicators: the ownership of assets; the purchase, sale, or transfer of assets; and the access to and decisions on credit. Considering the Senegalese context, the study elected to focus on the first indicator on the ownership of assets and the third one on the access to and decisions on credit.

This first indicator examines whether an individual has sole or joint ownership of land and assets. These assets include farmland, small and large livestock, fishponds and fish-farming equipment, farm equipment, houses, cell phones, non-farm land, and means of transportation. A respondent reaches the adequacy threshold in this domain if he or she owns at least one asset, either solely or jointly, conditional on the asset being available to the household. Minor assets such as poultry, traditional equipment, or small consumer durables are not considered.

First, an indicator is created for each type of asset to reflect whether the household owns that asset. Another indicator is created with a value of 1 if the respondent owns the asset and 0 if not, thus reflecting individual ownership. These indicators are aggregated into the indicator on the respondent's ownership of assets. According to this indicator, an individual reaches the adequacy threshold on "ownership of assets" if he or she has the sole or joint ownership of at least one asset, excluding minor assets. Respondents from households without these assets are considered inadequate.

The second indicator examines decision making about credit: whether to obtain credit and how to use the credit obtained from various sources (non-governmental organizations, formal and informal

lenders, tontines, friends, relatives, and formal or informal groups). To reach adequacy in this indicator, an individual must belong to a household that has access to credit and must have input in at least one decision regarding either the credit itself or its use.

First, the study created an indicator that reflects whether the respondent lives in a household that has taken a loan or borrowed cash or in kind at least once in the past year from one of the potential lending sources on the list.

Next, an indicator is created for each lending source to reflect whether the respondent had input in the decisions on whether to borrow or how to use the credit obtained from that source. Then, these indicators are aggregated by source to create the indicator on "access to and decisions on credit."

An individual reaches the adequacy threshold in this domain if he or she makes the decision or has input into the decision on whether to borrow or how to use the credit from at least one lending source. Individuals who belong to households that do not have access to any source of credit are considered inadequate.

- Income

For this domain, only one indicator is considered. This indicator is computed from the answers of the respondents about their input in decision making around the use of income: (1) If the individual contributes to the activity, how much input did he or she have in decisions about the use of income generated from (a) food crop farming, (b) cash crop farming, (c) livestock raising, or (d) fishing; and (2) to what extent does the individual feel he or she can make his or her own personal decisions regarding these activities.

The answer scale for the first question on input in decisions about the use of income is as follows: 1 = no input or input into a few decisions, 2 = input into some decisions, 3 = input into most or all decisions, and 98 = no decisions made. For each activity in which the respondent participates, a sub-indicator was created that considers that the individual reaches adequacy if he or she makes the decisions for that activity or at least has input into some decisions related to that the use of the income generated from that activity (answer 2).

The answer scale for the second question is as follows: 1 = not at all, 2 = small extent, 3 = medium extent, and 4 = to a high extent. For each of activity, a sub-indicator was created that considers that the respondent reaches adequacy if he or she makes the decisions or feels that he or she could participate in the decision making to at least a medium extent.

All the sub-indicators are then aggregated into a single indicator on the control of and input in decisions regarding the use of income. An individual is defined as empowered in the domain "control over use of income" if he or she reaches the adequacy threshold in at least one of the two indicators.

- Leadership

This domain aims to capture the individual's potential for leadership and influence in his or her community. The WEAI methodology has two indicators (one for membership and one for leadership), but in this study, only the indicator on group membership was used. The indicator measures whether the respondent is an active member of at least one group including (1) farmer organizations, (2) water users' groups, (3) forest users' groups, (4) credit or microfinance groups, (5) insurance or mutual help groups, (6) trade and business associations, (7) civic (bettering the

community) or charitable groups, or (8) religious groups. A respondent is considered empowered in this domain if he or she belongs to at least one group out of the given list.

- Time allocation

The WEAI contains two indicators on time, but this study used one indicator on individual workload. The adequacy threshold for this indicator is whether the daily total of hours worked is less than 10.5 hours. An individual is empowered in this domain if their total workload is less than 10.5 hours in a 24-hour period. The workload taken into account includes wage and salary employment; own-business work (trade, transport services, crafting, etc.); farming; livestock raising; fisheries and fishing; shopping/getting services (including health care); weaving, sewing, and textile care; cooking; domestic work (including fetching wood and water); and caring for others (children/elderly). In this domain, the study did not classify tasks as primary or secondary as defined in the pilot studies of IFPRI because this distinction is absent from the most recent computing methods.[20]

To calculate the 5DE index, these 6 indicators are aggregated to compute an index that reflects women's empowerment level across the five dimensions of empowerment. This index assesses whether or not the individual is empowered in each of the five domains of the WEAI. Although the goal is to measure women's empowerment, the indicator is constructed in such a way that it can be used to analyze disempowerment. The advantage of this method is to identify each indicator's contribution to disempowerment so that programs can pinpoint the domains where intervention is required to improve the situation of women. The study starts by computing the disempowerment index across all five domains (M0) followed by computing the 5DE index (1 – M0).

There are two methods to compute the index. The first one is the method described above, using the proportion of empowered individuals and the adequacy level of individuals who are not yet empowered.

The second method, described below, is based on calculating the percentage of disempowered individuals and their level of disempowerment.

The first step is to code the six adequacy indicators described previously, assigning the value 1 if the respondent is inadequate in that indicator, and 0 if they are adequate.

An inadequacy score (C_i) is then computed for each individual according to his or her adequacy in the different domains based on the indicators. This score is the weighted averaged of all the coded indicators. It goes from 0 to 1 and increases as the number domains in which the individual is inadequate increases. The formula is as follows:

$$C_i = w_1 I_1 + w_2 I_2 + \ldots + w_6 I_6$$

[20] Alkire, S., Meinzen-Dick, R., Peterman, A., Quisumbing, A. R., Seymour, G., & Vaz, A. (2012). *The women's empowerment in agriculture index* [Discussion Paper 01240]. Washington, DC: International Food Policy Research Institute.

Here, I_i = 1 if the individual is inadequate in domain *i* and 0 if not, and w_i is the weight assigned to the indicator *i*.

Once this score is computed, the study defines an inadequacy threshold that reflects the percentage of disempowerment that must be reached in order for the individual to be described as inadequately empowered. The threshold set for this study is k = 20. It means that if a respondent is inadequate in more than 20% indicators, he or she is considered disempowered in the 5DE.

Once disempowerment has been defined, the proportion of disempowered individuals is computed (Hp), which is the ratio between disempowered respondents (q) and population size (n).

$$H_p = \frac{q}{n}$$

Next, the average disempowerment score (Ap) is computed based on the group of individuals identified as disempowered. This average score reflects the level of disempowerment of this group.

$$A_p = \sum_i \boldsymbol{C_i^k}$$

Here, $\boldsymbol{C_i^k}$ is the disempowerment score of disempowered individuals based on the k = 20 threshold.

The women's empowerment index in the five domains of empowerment is computed as follows:

$$5DE = (1 - M_o) = 1 - A_p * H_p = H_e + H_n * (A_a)$$

Gender Parity Index (GPI)

This second component of the WEAI is a measure of the equity, within the 5DE, between the decision making man and woman of a household. It is computed exclusively for "male and female adults" households. The study first calculates the percentage of households that lack gender parity in empowerment in the 5DE (H_w). This includes any household in which the woman is disempowered and her inadequacy score is equal to or greater than the inadequacy score of the man of the household. Next, the disempowerment gap (R_p) is computed between men and woman within households that lack parity.

The gender parity index (GPI) is computed as follows:

$$GPI = 1 - H_w(R_p)$$

In this formula, H_w is the percentage of women without parity in their households, and R_p is the average difference in empowerment between men and women within the same household.

Computing the A-WEAI Using Stata

All data processing was carried out using the software STATA. That includes cleaning, constructing the indicators, and computing the A-WEAI.

1) Data Consistency and Cleaning

Before computing the indicators, the study carried out standard checks to verify the quality of the data. Using tablets for data collection means that several checks were integrated into the input screen. These checks are the control of nonresponses, the identification of outliers, and the control of skip patterns. Cross-checks have also been performed to verify the consistency of the responses within and between modules. For example, in the section "Access to Productive Capital," the variables "existence of asset in a household" (g3.01) and "possession of that property by the individual" (g3.02) were cross-checked to ensure that an individual did not report owning a property that did not exist in the household. Similarly, in the section "Membership in a Group and Leadership," the variables "group membership" (g5.03) and "existence of this group" (g5.04) were cross-checked to ensure that no one claimed membership in a group he or she declared nonexistent in the community.

In the first module, "Individual Identification," by cross-referencing marital status and relationship with the head of household, the team noticed respondents who declared their marital status as single even though their answer to the question about their relationship with the head of household was "first wife." For the time allocation module, the input screen was designed so that the total duration totaled 24 hours because the purpose was to provide information about the activities of the respondents for every quarter hour of the day. Corrections such as these were made to maintain the overall consistency of the answers provided.

2) Constructing Intermediate Indicators by Domain

To construct the indicators, the approach was to adapt the DO files developed by Ana Vaz and Sabina Alkire and available on the website www.ophi.org.uk. First, the team used the file WEAI-dataprep_Pilot_2.0.do (dataprep), which uses the raw database to compute intermediate indicators for each domain. Modifications to this DO file consisted of changing the names of variables and response codes to make sure that they were harmonized with the ones in the study's database while checking the correspondence between the definition of the indicator and the calculation program. Finally, the study used the DO file A-WEAI_NAATAL_MBAY_Calculation.do.

3) Computing the A-WEAI

To compute the components of the index, the study used and adapted the DO file developed by Ana Vaz and Sabina Alkire for this purpose. The team then added to the DO file "Calculating-the-A-WEAI_Pilot_2.0.do (calculation)" and adapted the variables and response codes to the first DO file. The main change made on this DO file concerned data weights. Instead of using the original weight variable that weighted observations, the study used the weight variable that reflects the weights used in this study.

APPENDIX 2: DATA COLLECTION TOOLS

A-WEAI QUESTIONNAIRE

WOMEN'S EMPOWERMENT IN AGRICULTURE INDEX – A-WEAI Version

Note: The information in module G1 can be captured in different ways; however, there must be a way to (a) identify the proper individual within the household to be asked to take the survey; (b) link this individual from the module to the household roster; (c) code the outcome of the interview, especially if the individual is not available, to distinguish this from missing data; and (d) record who else in the household was present during the interview.

Enumerator: This questionnaire should be administered separately to the primary and secondary respondents identified.

Please double-check to ensure that:

- The respondent of the first survey is a member of the household by referring to the names that will be provided by the study team;
- You have gained informed consent for the individual in the household questionnaire;
- You have sought to interview the individual in private or where other members of the household cannot overhear or contribute answers;
- You do not attempt to make responses between the primary male decision maker and the primary female decision maker the same. It is possible for them to be different.

MODULE G1: INDIVIDUAL IDENTIFICATION

	Code		Code
G1.01. Household identification		G1.02. Name of respondent	_____
G1.03. Gender of respondent	Man……1 Woman…….2	G1.04 HOW OLD ARE YOU?	|__|__|

G1.05 MARITAL STATUS SINGLE……..…1 DIVORCED…….2 SEPARATED ……. ….3 WIDOWER/WIDOW……..…….4 MONOGAMOUS …….……..…5 POLYGAMOUS……6	|__|	G1.06 Can you read and write? CAN NEITHER read nor write….1 Write only….2 Read only……4 Can read and write…… 5	|__|

G1.07 RELATIONSHIP TO THE HEAD OF HOUSEHOLD HH-HUSBAND…….1 HH-OLDEST SON…….2 HH-FATHER (WIDOWER)…….3 1ST WIFE……4 2ND WIFE…….5 3RD WIFE……6 4TH WIFE…….7 SON/DAUGHTER OF HH……8 OTHER (SPECIFY)_____ 9	|__|	G1.08 WHAT IS YOUR EDUCATION LEVEL? LITERATE IN NATIONAL LANGUAGE……1 ISLAMIC/ARABIC SCHOOL ….....2 INCOMPLETE PRIMARY SCHOOL ….3 COMPLETE PRIMARY SCHOOL……...4 INCOMPLETE SECONDARY SCHOOL…….5 COMPLETE SECONDARY SCHOOL …...6 HIGHER EDUCATION .....….7	|__|
G1.09 TYPE OF HOUSEHOLD Household with male and female adults ……1 Household with female adult ONLY…….2	|__|	G1.10. Outcome of interview: →	Completed …….1 Household member too ill to respond/cognitively impaired……..2 Respondent not at home/temporarily unavailable …… …….3 Respondent not at home/extended absence .....…4 Refused ….…....5 Could not locate …….6

G1.11. Ability to be interviewed alone: →	Alone……..1 With adult females present……2 With adult males present……3 With adults mixed sex present.....4 With children present….5 With adults mixed sex and children present ……....6		

MODULE G2: ROLE IN HOUSEHOLD DECISION-MAKING AROUND PRODUCTION AND INCOME USE

HOUSEHOLD IDENTIFICATION (IN DATA FILE, EACH SUB-MODULE (G2-G6) MUST BE LINKED WITH HH AND RESPONDENT ID | | | | | | |

"Now I'd like to ask you some questions about your participation in certain types of work activities and on making decisions on various aspects of household life."		Did you yourself participate in [ACTIVITY] in the past 12 months (that is, during the last [one/two] cropping seasons), from [PRESENT MONTH] last year to [PRESENT MONTH] this year?	When decisions are made regarding [ACTIVITY], who is it that normally takes the decision? CIRCLE ALL APPLICABLE IF THE RESPONSE IS SELF ONLY SKIP TO QUESTION G2.05 Use code G2.02	How much input did you have in making decisions about [ACTIVITY]? USE DECISION CODES FOR G2.03/G2.05; IF NO DECSION MADE, ENTER 98 AND MOVE TO THE NEXT ACTIVITY	To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to? CIRCLE ONE	How much input did you have in decisions on the use of income generated from [ACTIVITY] USE CODES FOR G2.03/G2.05
Activity Code	Activity Description	G2.01	G2.02	G2.03	G2.04	G2.05
A	Food crop farming: These are crops that are grown primarily for household food consumption	Yes 1 No 2 →ACTIVITY B				
B	Cash crop farming: These are crops that are grown primarily for sale in the market	Yes 1 No 2 →ACTIVITY C				

C	Livestock raising	Yes 1 No 2 →ACTIVITY D				
D	Non-farm economic activities: This would include things like running a small business, self-employment, buy-and-sell	Yes 1 No 2 →ACTIVITY E				

G2.03/G2.05 DECISION CODES:
NO INPUT OR INPUT IN FEW DECISIONS …….01
INPUT INTO SOME DECISIONS ……02
INPUT INTO MOST OR ALL DECISIONS ……...03
No decision made ……..…….98
G2.02
Primary male adult or husband……....1
Primary female adult…….2
Husband and wife jointly…….3
Other HH member……4
Jointly with other HH member……5
Jointly with other non-HH member…….6
No decision made ……..……..…….98
G2.04
Not at all……1
Small extent……2
Medium extent…….3
To a high extent…….4

		Did you yourself participate in [ACTIVITY] in the past 12 months (that is, during the last [one/two] cropping seasons), from [PRESENT MONTH] last year to [PRESENT MONTH] this year?	When decisions are made regarding [ACTIVITY], who is it that normally takes the decision? CIRCLE ALL APPLICABLE IF THE RESPONSE IS SELF ONLY SKIP TO QUESTION G2.05 Use code G2.02	How much input did you have in making decisions about [ACTIVITY]? USE DECISION CODES FOR G2.03/G2.05; IF NO DECSION MADE, ENTER 98 AND MOVE TO THE NEXT ACTIVITY	To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to? Use code G2.04 Consult enumerator's manual before asking this question CIRCLE ONE	How much input did you have in decisions on the use of income generated from [ACTIVITY] USE CODES FOR G2.03/G2.05
Activity Code	Activity Description	G2.01	G2.02	G2.03	G2.04	G2.05
E	Wage and salary employment: This could be work that is paid for in cash or in kind, including both agriculture and other	Yes 1 No 2 →ACTIVITY F			Not at all……1 Small extent...2 Medium extent...3 To a high extent.4	
W	Fishing or fishpond culture	Yes 1 No 2 →ACTIVITY G			Not at all……1 Small extent...2 Medium extent...3 To a high extent...4	
G	Major household expenditures (such as a bicycle, land, etc.)				Not at all……1 Small extent...2 Medium extent...3 To a high extent...4	
M	Minor household expenditures (such as food for daily consumption or other household needs)				Not at all……1 Small extent...2 Medium extent...3 To a high extent...4	

G2.03/G2.05 DECISION CODES:
No input or input in few decisions ……01
Input into some decisions ……..02
Input into most or all decisions ……..03
No decision made ……..…….98

MODULE G3(A): ACCESS TO PRODUCTIVE CAPITAL			
"Now I'd like to ask you about your household's access to and ownership of a number of items that could be used to generate income."		Does anyone in your household currently have any [ITEM]?	Do you currently own this item? CIRCLE ALL APPLICABLE
PRODUCTIVE CAPTITAL[21]		G3.01	G3.02
A	Agricultural land (plots, pieces of land)	YES 1 NO 2 ITEM B→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
B	Large livestock (cattle, horses, donkeys, camels):	YES 1 NO 2 ITEM C→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
C	Small livestock (goats, pigs, sheep)	YES 1 NO 2 ITEM D→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
D	Poultry (chickens, ducks, turkeys, pigeons)	YES 1 NO 2 ITEM E→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2

[21] The list of examples given in the productive capital categories is not exhaustive and should be adapted to the local context by adding or replacing possible answers in brackets.

MODULE G3(A): ACCESS TO PRODUCTIVE CAPITAL			
"Now I'd like to ask you about your household's access to and ownership of a number of items that could be used to generate income."		Does anyone in your household currently have any [ITEM]?	Do you currently own this item? CIRCLE ALL APPLICABLE
PRODUCTIVE CAPTITAL[21]		G3.01	G3.02
			NO 3
E	Fishponds or fishing equipment	YES 1 NO 2 ITEM F→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
W	Farm equipment (non-mechanized)	YES 1 NO 2 ITEM G→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
G	Farm equipment (mechanized)	YES 1 NO 2 ITEM H→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
M	Non-farm business equipment (solar panels for recharging, sewing machine, brewing equipment, fryers, etc.)	YES 1 NO 2 ITEM I→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
I	House (or other structures)	YES 1 NO 2 ITEM J→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
J	Large consumer durables (refrigerator, TV, sofa)	YES 1 NO 2 ITEM K→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
K	Small consumer durables (radio, cookware)	YES 1 NO 2 ITEM L→	YES, SOLELY 1

MODULE G3(A): ACCESS TO PRODUCTIVE CAPITAL			
"Now I'd like to ask you about your household's access to and ownership of a number of items that could be used to generate income."		Does anyone in your household currently have any [ITEM]?	Do you currently own this item? CIRCLE ALL APPLICABLE
PRODUCTIVE CAPTITAL[21]		G3.01	G3.02
			YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
L	Cell phone	YES 1 NO 2 ITEM M→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
M	Other land not used for agricultural purposes (residential or commercial)	YES 1 NO 2 ITEM N→	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3
N	Means of transportation (bicycle, motorcycle, car)	YES 1 NO 2 →MODULE G3(B)	YES, SOLELY 1 YES, JOINTLY WITH PARTNER/SPOUSE 2 NO 3

MODULE G3(B): ACCESS TO CREDIT					
"Next I'd like to ask about your household's experience with borrowing money or other items in the past 12 months."		Would you or anyone in your household be able to take a loan or borrow cash/in-kind from [SOURCE] if you wanted to?	Has anyone in your household taken any loans or borrowed cash/in-kind from [SOURCE] in the past 12 months? CIRCLE ONE	Who made the decision to borrow from [SOURCE] most of the time? CIRCLE ALL APPLICABLE	Who makes the decision about what to do with the money/ item borrowed from [SOURCE] most of the time? CIRCLE ALL APPLICABLE
Lending Sources[22]		G3.05	G3.06	G3.07	G3.08
A	Non-governmental organization (NGO)	Yes 1 NO 2 NEXT SOURCE→ MAYBE……..3	Yes, cash 1 Yes, in-kind 2 Yes, cash and in-kind 3 No 4 → NEXT SOURCE DON'T KNOW 97	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98
B	Formal lender (Bank/financial institution)	Yes 1 NO 2 NEXT SOURCE→ MAYBE……..3	Yes, cash 1 Yes, in-kind 2 Yes, cash and in-kind 3 No 4 → NEXT SOURCE DON'T KNOW 97	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98

[22] In order to consider country specificity, locally relevant examples may be provided in the lending sources categories.

C	Informal lender	Yes 1 NO 2 NEXT SOURCE→ MAYBE……..3	Yes, cash 1 Yes, in-kind 2 Yes, cash and in-kind 3 No 4 →NEXT SOURCE DON'T KNOW 97	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98
D	Friends or relatives	Yes 1 NO 2 NEXT SOURCE→ MAYBE……..3	Yes, cash 1 Yes, in-kind 2 Yes, cash and in-kind 3 No 4 →NEXT SOURCE DON'T KNOW 97	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98
E	Formal groups (microfinance or credit)	Yes 1 NO 2 NEXT SOURCE→ MAYBE……..3	Yes, cash 1 Yes, in-kind 2 Yes, cash and in-kind 3 No 4 →NEXT SOURCE DON'T KNOW 97	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98
W	Informal credit/savings groups (tontines, rotating credit, etc.)	Yes 1 NO 2 NEXT SOURCE→ MAYBE……..3	Yes, cash 1 Yes, in-kind 2 Yes, cash and in-kind 3 No 4 →NEXT SOURCE DON'T KNOW 97	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98	Self 1 Partner/Spouse 2 Other HH member 3 Other non-HH member 4 Not Applicable 98

MODULE G4: TIME ALLOCATION

G4.01: Please record a log of the activities for the individual in the last complete 24 hours (starting yesterday morning at 4 a.m., finishing at 3:59 a.m. of the current day). Time is marked in 15-minute intervals and one activity can be marked for each time period by drawing a line through that activity.

"Now I'd like to ask you about how you spent your time during the past 24 hours. We'll begin from yesterday morning and continue through to this morning. This will be a detailed accounting. I'm interested in everything you do (i.e., resting, eating, personal care, work inside and outside the home, caring for children, cooking, shopping, socializing, etc.), even if it doesn't take you much time."	Question	Response
G4.02	"In the last 24 hours did you work (at home or outside of the home) more than usual, about the same as usual, or less than usual?"	MORE THAN USUAL ……..……1 ABOUT THE SAME AS USUAL ……2 LESS THAN USUAL ……3

		Night								Morning								Day																									
	Activity	4				5				6				7				8				9				10				11				12				13				14				15			
A	Sleeping and resting																																											
B	Eating and drinking																																											
C	Personal care																																											
D	School (also homework)																																											
E	Work as employed																																											
F	Own business work																																											
G	Farming (Millet, Maize, Rice)																																											
H	Farming (other than Millet, Maize, Rice)																																											
I	Livestock raising																																											
J	Fishing																																											
K	Shopping/getting service (incl health services)																																											
L	Weaving, sewing, textile care																																											
M	Cooking																																											
N	Domestic work (incl fetching wood and water)																																											
O	Care for children/adults/elderly																																											
P	Travelling and commuting																																											
Q	Watching TV/listening to radio/reading																																											
R	Exercising																																											
S	Social activities and hobbies																																											
T	Religious activities																																											
U	Other, specify																																											

MODULE G5: GROUP MEMBERSHIP AND LEADERSHIP

"Now I'm going to ask you about groups in the community. These can be either formal or informal and customary groups. "		Is there a [GROUP] in your community?	Are you an active member of this [GROUP]?	How much input do you have in making decisions in this [GROUP]?
	Group Categories	G5.03	G5.04	G5.05
A	Agricultural / livestock/ fisheries producers' group (including marketing groups)	YES …1 No 2 *GROUP B* DON'T KNOW ……97	YES 1 No 2	Input in decision making: No input or input in few decisions ……01 Input into some decisions ……02 Input into most or all decisions ……03 No decision made ……98
B	Water users' group	YES …1 No 2 *GROUP C* DON'T KNOW ……97	YES 1 No 2	
C	Forest users' group	YES …1 No 2 *GROUP D* DON'T KNOW ……97	YES 1 No 2	
D	Informal credit or microfinance groups (tontines, rotating credit, etc.)	YES …1 No 2 *GROUP E* DON'T KNOW ……97	YES 1 No 2	
E	Mutual help or insurance group (including burial societies)	YES …1 No 2 *GROUP F* DON'T KNOW ……97	YES 1 No 2	

W	Trade and business association group	YES …1 No 2 *GROUP G* DON'T KNOW ……97	YES 1 No 2	
G	Civic group (improving community) or charitable group (helping others)	YES …1 No 2 *GROUP H* DON'T KNOW ……97	YES 1 No 2	
M	Religious group	YES …1 No 2 *GROUP J* DON'T KNOW ……97	YES 1 No 2	
I	Other [women's/men's] group (only if it does not fit into one of the other categories)	YES …1 No 2 *GROUP K* DON'T KNOW ……97	YES 1 No 2	
J	Other, specify_____	YES …1 No 2 DON'T KNOW……97	YES 1 No 2	

END OF QUESTIONNAIRE.

INTERVIEW AND FOCUS GROUP GUIDES

Household Interview Guide

Introduction

Study Objectives:

The Feed the Future Senegal/Naatal Mbay project, which is the scale-up of the PCE program, aims to improve food security, nutrition, and economic opportunities for the most vulnerable households operating in any of the four cereal value chains and living in the ZOI covering the Senegal River Valley and the Southern Forest Zone

This baseline study on gender and social inclusion is an extension of the study on more global project indicators. It uses and adapts the WEAI (Women's Empowerment in Agriculture Index) to give an assessment of empowerment and inclusion levels for the women of the four cereal value chains targeted (irrigated rice, rain-fed rice, millet, and maize).

To this end, the tools designed for the quantitative and qualitative components all revolve around the major themes reflected by the five dimensions of empowerment (5DE), which are production, resources, income, leadership, and time allocation.

Interview Objectives

The goal of this interview is to collect data from the households about their activities and decision making around production, access to resources, use of income, leadership, and time allocation by men and women.

This guide concerns male heads of households and their spouses, as well as female heads of households.

We are equally interested in the opinions of men and women on the issues faced by women in these domains and the solutions to solve them.

Location

Date

Duration

Introduction of the facilitator

Identification

Sex

Age

Position of the woman in the household (if polygamous)

Education level

Number of children

Female head of household?

Male head of household?

Wife of head of household?

1. Production

Activities (value chains, horticulture, other economic activities)

Do you have an activity?

What value chain does it belong to?

Family and/or individual activities

Distribution of tasks by gender?

Ownership of farmed land? Owned by self? By family?

Difficulties in carrying out activity?

Difference between gender for these difficulties

Benefits and constraints of the activity for the female head of household?

Agricultural activities outside value chains? Difference between men and women?

Non-farm economic activities?

Input in decisions around production

Decision-making: alone or with others?

Existence of domains in which the woman is completely free to make decisions?

2. Resources (land, inputs, farm equipment, credit):

Credit

Credit? Formal? Informal? Personal? Through farmer organization?

Input in the decision to borrow cash/in kind?

Participation in use of credit?

Use of credit by women?

Inputs/farm equipment

Use of inputs? Which types?

Conditions of access to inputs? Difference between men and women?

For which value chain, if they are active in several value chains?

At which stage of production for farm equipment?

Type of farm equipment?

Difference between men and women?

Access to equipment? Difference between men and women?

Constraints to the access to resources:

Land?

Credit?

Inputs?

Farm equipment?

Gender differences?

Consequences of these constraints on activities?

Which solutions?

Productive capital:

Which productive capital?

Difference between men and women in acquisition and ownership?

3. Use of income

Control over use of income:

Household income?

Difference between genders according to type of expenditures?

Gender-specific constraints in the use of household income?

4. Leadership

Membership in an organization

Type? Mixed or unisex

Composition according to gender?

Difference according to organization type?

Responsibility level of men and women in organizations?

Benefits to belonging to an organization?

Gender-related constraints to group membership?

Influence

Do you feel free to speak up?

Gender differences?

5. Time allocation

Workload

Typical day of a men and of a woman?

Constraints linked to the domestic workload of women?

Constraints linked to the workload of women?

Impact on ability to join an organization? Access to decision-making bodies?

Balance between domestic tasks and activities?

Leisure?

Time allocated for leisure activities?

Occupations outside of work (domestic tasks and agricultural activities)

Focus Group Guide for Women's Groups

Introduction

Study Objectives:

The Feed the Future Senegal/Naatal Mbay project, which is the scale-up of the PCE program, aims to improve food security, nutrition, and economic opportunities for the most vulnerable households operating in any of the four cereal value chains and living in the ZOI covering the Senegal River Valley and the Southern Forest Zone.

This baseline study on gender and social inclusion is an extension of the study on more global project indicators. It uses and adapts the WEAI (Women's Empowerment in Agriculture Index) to give an assessment of empowerment and inclusion levels for the women of the four cereal value chains targeted (irrigated rice, rain-fed rice, millet, and maize).

To this end, the tools designed for the quantitative and qualitative components all revolve around the major themes reflected by the five dimensions of empowerment (5DE), which are production, resources, income, leadership, and time allocation.

Focus Group Objectives

The goal of this focus group is to examine the role and contribution of women's groups in terms of, on the one hand, social and economic capital and access to resources, and on the other hand, leadership and the ability to renegotiate gender relations within the household, in order to successfully carry out their activities and contribute to household needs and community development.

Location

Date

Round table introduction of participants and facilitators

Introduction of participants

Number of participants (board members + 3 to 4 non-board members)

Duration

Identification:

Type of group

Organizational chart

Board composition

Board composition rules?

Distribution of roles within the board?

Education level of the members?

Average age of the members?

Marital status?

Women from polygamous or monogamous households?

If polygamous, most common position?

Link between education level, age, marital status, and access to the board?

Reasons for an organization reserved for women?

Motivation to join

1. Production

Productive activities (value chains, horticulture, other economic activities)

Value chain?

Other activities (farm or non-farm) of the organization?

Individual or group activities?

Individual activities?

Collective activities?

Input in decisions around production

Decision making in the organization: collective or restricted to the board?

Input of spouses in decisions regarding the organization?

Marketing

Access to market for women?

Gender-specific challenges?

2. Resources:

Land

Conditions of access to land?

Individual access? Collective access?

For targeted value chains and/or other agricultural activities?

Individual and/or collective ownership?

Credit:

Lending sources in the organization?

Individual access? Collective access? Both?

Did you gain access to them previously or through the organization?

Use of credit obtained through organization: input of spouses?

Inputs/farm equipment

Conditions of access to inputs and farm equipment?

Types of inputs and equipment through organization?

For which value chain?

Constraints to access? Gender differences?

Productive capital:

Type of items acquired?

Alone? With spouse?

Through individual and/or collective activities within the organization?

Input of spouse in the decision to acquire item?

Impact of the acquisition of items on the activity and income level?

3. Use of income

Control over income?

Impact of membership in a group on control over own income? Household income?

4. Leadership

Membership in an organization

Decision to join made alone or with spouse, or by spouse?

Resistance from spouse? From family?

Benefits and drawbacks to be a member of an organization?

Difference between women's groups and mixed groups?

Impact on activity and income?

Public speaking

Freedom to speak up?

Difference between women's groups and mixed groups?

5. Time allocation

Typical day?

Impact of group activities on workload? Impact of workload on group activities?

Solutions to lighten workload?

Leisure

Occupations outside of work (domestic tasks and agricultural activities)

Viewpoints

Difference between challenges faced by women and by men within groups?

Impact on productive activities?

Focus Group Guide for Mixed Organizations

Feed the Future Senegal/Naatal Mbay

Introduction

Study Objectives:

The Feed the Future Senegal/Naatal Mbay project, which is the scale-up of the PCE program, aims to improve food security, nutrition, and economic opportunities for the most vulnerable households operating in any of the four cereal value chains and living in the ZOI covering the Senegal River Valley and the Southern Forest Zone.

This baseline study on gender and social inclusion is an extension of the study on more global project indicators. It uses and adapts the WEAI (Women's Empowerment in Agriculture Index) to give an assessment of empowerment and inclusion levels for the women of the four cereal value chains targeted (irrigated rice, rain-fed rice, millet, and maize).

To this end, the tools designed for the quantitative and qualitative components all revolve around the major themes reflected by the five dimensions of empowerment (5DE), which are production, resources, income, leadership, and time allocation.

Focus Group Objectives:

The goal of this focus group is to examine the roles, forms, and conditions of the participation of men and women in mixed organizations (farmer organizations, cooperative organizations, associations, etc.) and the benefits of membership (in terms of social and economic capital and ability to access resources), as well as the leadership of women in these organizations.

Date:

Locality:

Name of organization:

Introduction of facilitators:

Number of participants:

Round table introduction of participants:

Duration

Identification of the organization

Average age

Distribution according to gender

Average education level?

Marital status of the women?

Type of household (polygamous or monogamous), on average?

Number of members?

Link between the marital status of women, their position within the household, and their membership to the group

Board composition:

Board composition according to gender?

Role of women in decision-making bodies?

Motivation to join

1. Production

Activities (value chains, horticulture, other economic activities)

Value chain supported by the project?

Other crops?

Other farm and non-farm activities?

Difference between men and women regarding type of activity?

Gender-specific constraints for women?

Decision-making power in the organization?

Decision-making process and conditions?

Difference between men and women in mixed organizations?

Level of involvement of female members?

Involvement of spouses in decisions made within the organization?

In which domain? To which extent?

Marketing

Access to market for the organization?

Difference between men and women?

2. Organization resources (inputs, equipment, credit, land)

Condition of access: Collectively? Individually? Type of resources?

For which crops?

Process and conditions for sharing resources acquired collectively?

Difference between men and women?

Productive capital:

Items acquired?

Difference between men and women?

Impact of organization on acquisition of items?

Impact of items on the activities and income level of the households?

3. Income

Income gained through activity linked to organization?

Difference between men and women in the organization?

Difference between members and non-members?

Control over income use in respective households?

Difference according to gender?

4. Leadership

Membership in an organization

Motivations?

Difficulties to join according to gender?

Difficulties related to the organization? To the household?

Difference between women's groups and mixed groups?

Benefits to belonging to an organization? Difference according to gender?

Impact of membership on the activities and income of respective households?

Public speaking

Freedom to speak up in public?

Difference between men and women?

Constraints on women within mixed groups?

Men's perception of female leadership in organizations?

5. Time allocation

Workload

Typical day: Men? Women?

Impact on activity: For men? For women?

Balancing productive activities, group activities, and family responsibilities?

Perception of workload: By men? By women?

Leisure

Occupations outside of work and organization activities?

Viewpoints

Gender-specific constraints for women: In productive activity? Within organization?

APPENDIX 3: ADDITIONAL DATA TABLES

Table 24. Age Group and Gender of Respondents by Zone

Age Category		GENDER OF RESPONDENT		
		MAN	WOMAN	Total
Total Sample	18–35 years old	14.5%	34.9%	24.9%
	36–49 years old	26.0%	30.1%	28.1%
	50 years old and older	59.5%	35.0%	47.0%
SRV	18–35 years old	8.9%	32.9%	21.2%
	36–49 years old	21.6%	26.7%	24.2%
	50 years old and older	69.4%	40.4%	54.5%
SGB	18–35 years old	14.9%	44.1%	30.0%
	36–49 years old	25.3%	28.3%	26.8%
	50 years old and older	59.8%	27.6%	43.2%
Casamance	18–35 years old	17.2%	29.6%	23.4%
	36–49 years old	28.7%	33.3%	31.0%
	50 years old and older	54.1%	37.1%	45.5%

Table 25. Marital Status and Gender of Respondents by Zone

Marital Status		GENDER OF RESPONDENT		
		MAN	WOMAN	Total
Total Sample	Single	5.5%	1.4%	3.4%
	Divorced	0.0%	1.1%	0.6%
	Separated	0.0%	0.0%	0.0%
	Widow(er)	0.4%	9.6%	5.1%
	Monogamous	50.7%	44.8%	47.7%
	Polygamous	43.3%	43.1%	43.2%
SRV	Single	5.2%	2.0%	3.6%
	Divorced	0.0%	2.6%	1.3%
	Separated	0.0%	0.0%	0.0%
	Widow(er)	0.0%	14.0%	7.2%
	Monogamous	68.9%	58.6%	63.6%
	Polygamous	25.9%	22.8%	24.3%
SGB	Single	2.4%	0.7%	1.5%
	Divorced	0.0%	1.3%	0.7%
	Separated	0.0%	0.0%	0.0%
	Widow(er)	0.8%	5.3%	3.1%
	Monogamous	39.2%	32.4%	35.7%
	Polygamous	57.7%	60.2%	59.0%
Casamance	Single	7.8%	1.5%	4.6%
	Divorced	0.0%	0.1%	0.1%
	Separated	0.0%	0.0%	0.0%
	Widow(er)	0.4%	10.3%	5.4%
	Monogamous	48.7%	45.9%	47.3%
	Polygamous	43.0%	42.2%	42.6%

Table 28: Household Decision Makers (%) by Activity and Gender. According to Age Categories

Activities	Household Decision Maker	G1.03. GENDER OF RESPONDENT							
		MAN				WOMAN			
		Age Category				Age Category			
		18 35 years old	36 49 years old	50 years old and older	Total	18 35 years old	36 49 years old	50 years old and older	Total
FOOD CROPS	Primary male adult or husband	53.2	53.5	57	55.5	47.9	38	35	40.5
	Primary female adult	5.7	2.3	1.2	2.2	13.8	12.1	26.1	17.5
	Husband and wife jointly	9.7	14.4	24.1	19.5	28.1	42.6	29.7	33
	Other household member	5.7	2.8	0.1	1.6	3.9	2.6	2.8	3.1
	Jointly with other household member	23.3	26.9	16.7	20.4	6	4.3	6.4	5.6
	Jointly with non-household member	2.4	0	0.8	0.9	0.3	0.4	0	0.2
	No decision made	0	0	0	0	0	0	0	0
CASH CROPS	Primary male adult or husband	49.3	52.2	54.5	52.9	51.4	48.2	41.5	47.4
	Primary female adult	3.9	4.0	1.7	2.8	9.5	17.4	19.6	14.9
	Husband and wife jointly	6.4	20.3	21.1	18.4	26.9	34	27.1	29
	Other household member	10.1	2.2	0.8	2.8	4.7	0.4	5.9	3.9
	Jointly with other household member	27.4	20.1	20.4	21.5	7.4	0	5.9	4.8
	Jointly with non-household member	2.9	1.1	1.5	1.6	0	0	0	0
	No decision made	0	0	0	0	0	0	0	0
LIVESTOCK RAISING	Primary male adult or husband	45	60.1	57.9	56.5	40.8	42.6	29.7	37.3

Activities	Household Decision Maker	G1.03. GENDER OF RESPONDENT							
		MAN				WOMAN			
		Age Category				Age Category			
		18 35 years old	36 49 years old	50 years old and older	Total	18 35 years old	36 49 years old	50 years old and older	Total
	Primary female adult	15	3.1	5.5	6.4	14.0	11.1	26.7	17.8
	Husband and wife jointly	5.0	15.5	16.7	14.5	34.1	39.2	22.5	31.4
	Other household member	10.9	7.3	1.1	4.3	3.1	1.4	11.3	5.6
	Jointly with other household member	21.1	14.0	18.3	17.6	8.0	5.5	7.1	6.9
	Jointly with non-household member	2.9	0	0.5	0.7	0	0.3	2.8	1.1
	No decision made	0	0	0	0	0	0	0	0
NON-FARM ECONOMIC ACTIVITIES	Primary male adult or husband	81.1	83.0	87.5	85.1	13.4	10.2	9.3	10.8
	Primary female adult	4.9	2.1	0	1.5	52.1	58.0	68.2	60.2
	Husband and wife jointly	0	7.4	3.5	4.0	23.7	27.3	18.6	22.8
	Other household member	10.7	5.2	1.1	4.0	0	0	0	0
	Jointly with other household member	0	2.1	6.7	4.2	7.0	4.6	3.9	5.0
	Jointly with non-household member	3.3	0	1.1	1.2	3.7	0	0	1.1
	No decision made	0	0	0	0	0	0	0	0
NON-FARM WAGE AND SALARY EMPLOYMENT	Primary male adult or husband	62.1	76.9	74.7	71.2	30.3	0	13.6	16.1
	Primary female adult	0	0	0	0	49.2	66.4	52.9	55

Activities	Household Decision Maker	G1.03. GENDER OF RESPONDENT							
		MAN				WOMAN			
		Age Category				Age Category			
		18 35 years old	36 49 years old	50 years old and older	Total	18 35 years old	36 49 years old	50 years old and older	Total
	Husband and wife jointly	3.7	0	13.5	7.3	10.3	33.6	31.3	24.3
	Other household member	25.7	0	5.9	10.8	0	0	2.2	0.8
	Jointly with other household member	8.5	11.5	5.9	8.0	10.3	0	0	3.7
	Jointly with non-household member	0	11.5	0	2.7	0	0	0	0
	No decision made	0	0	0	0	0	0	0	0
FISHING OR FISHPOND CULTURE	No decision made	0	0	0	0	0	0	0	0
	Jointly with other household member	7.7	12.8	21.8	15.3	33.4	39.1	0	26.8
	Jointly with non-household member	0	0	0	0	0	0	0	0
	Husband and wife jointly	0	0	0	0	0	0	0	0
	Primary male adult or husband	92.3	87.2	58.7	77.9	63.2	60.9	28.0	54.4
	Primary female adult	0	0	10.9	3.8	3.3	0	16.0	5.6
	Other household member	0	0	8.6	3	0	0	56.0	13.2
Major expenditures	Primary male adult or husband	55.3	54.2	51.8	52.9	54.9	53.2	52.5	53.5
	Primary female adult	3.2	0.4	1.8	1.6	5.0	5.1	10.6	7.0
	Husband and wife jointly	11.2	15.6	21.6	18.5	29.1	38.1	23.9	30.0

Activities	Household Decision Maker	G1.03. GENDER OF RESPONDENT							
		MAN				WOMAN			
		Age Category				Age Category			
		18 35 years old	36 49 years old	50 years old and older	Total	18 35 years old	36 49 years old	50 years old and older	Total
	Other household member	4.4	1.8	1.0	1.7	3.2	2.3	6.0	3.9
	Jointly with other household member	23.6	26.1	23.8	24.4	7.8	1.2	6.8	5.5
	Jointly with non-household member	2.4	1.8	0	0.8	0	0.2	0.1	0.1
	No decision made	0	0	0	0	0	0	0	0
MINOR EXPENDITURES	Primary male adult or husband	22.2	33.0	30.1	29.7	22.7	18.6	19.9	20.5
	Primary female adult	20.8	22.2	21.8	21.8	39.7	45.7	46.9	44.0
	Husband and wife jointly	34.5	22.7	34.6	31.5	29.0	31.4	20.0	26.6
	Other household member	4.5	1.8	1.2	1.8	1.5	1.9	5.4	3.0
	Jointly with other household member	16.4	19.3	12.3	14.7	7.2	2.5	7.7	6.0
	Jointly with non-household member	1.7	0.9	0	0.5	0	0	0	0
	No decision made	0	0	0	0	0	0	0	0

Table 26. Women's Perception (% of Respondents) of Empowerment in Decision Making

Economic Activities	Feels that they can make their own decisions?	G1.03. GENDER OF RESPONDENT											
		MAN				WOMAN				Total			
		18–35 years old	36–49 years old	50 years old and older	Total	18–35 years old	36–49 years old	50 years old and older	Total	18–35 years old	36–49 years old	50 years old and older	Total
Food crops	Not at all	1.0	0	1.8	1.2	8.6	5.2	8.8	7.4	6.3	2.9	4.3	4.3
	Small extent	15.3	4.8	6.8	7.4	15.2	15.9	7.2	12.9	15.3	11.1	6.9	10.1
	Medium extent	46.2	47.4	52.4	50.2	50.9	42.1	48.4	46.9	49.5	44.4	51.0	48.5
	To a high extent	37.5	47.8	39.0	41.2	25.3	36.8	35.6	32.8	29.0	41.6	37.8	37.0
Cash crops	Not at all	1.0	0	2.6	1.6	12.1	14.7	5.4	10.8	7.7	5.3	3.4	5.1
	Small extent	27.3	3.8	5.2	8.6	15.6	9.5	12.7	13.1	20.3	5.8	7.1	10.3
	Medium extent	47.4	45.7	44.0	45.1	24.0	31.3	39.9	30.8	33.4	40.5	42.9	39.7
	To a high extent	24.3	50.6	48.1	44.7	48.2	44.5	42.0	45.3	38.6	48.4	46.6	45.0
Livestock raising	Not at all	6.7	6.0	3.2	4.5	5.1	6.1	5.6	5.6	5.6	6.1	4.1	5.1
	Small extent	18.0	9.7	10.9	11.7	22.0	20.5	9.7	17.2	20.7	15.9	10.4	14.6
	Medium extent	49.1	45.5	38.8	42.3	40.1	35.3	38.7	38.0	43.0	39.6	38.8	40.1
	To a high extent	26.2	38.7	47.1	41.4	32.8	38.1	46.0	39.1	30.7	38.4	46.7	40.2
Non-farm economic activities	Not at all	0	0	0	0	0	5.0	5.6	3.4	0	3.6	3.3	2.4
	Small extent	23.3	0	8.9	8.9	13.7	4.7	13.2	10.5	15.5	3.4	11.4	10.0
	Medium extent	57.5	100.0	45.6	64.7	29.0	30.9	39.5	32.9	34.4	50.5	42.1	42.5
	To a high extent	19.1	0	45.4	26.4	57.3	59.4	41.7	53.2	50.1	42.5	43.2	45.1
Wage and salary employment	Not at all	0	0	0	0	0	18.0	31.4	19.3	0	9.9	12.9	7.9
	Small extent	22.3	0	16.1	15.7	50.0	0	0	12.9	31.1	0	9.5	14.6
	Medium extent	54.4	50.0	67.9	59.6	50.0	41.0	12.4	30.7	53.0	45.0	45.1	47.7
	To a high extent	23.3	50.0	16.1	24.7	0	41.0	56.2	37.1	15.9	45.0	32.6	29.8
Fishing or fishpond culture	Not at all	0	0	0	0	0	0	0	0	0	0	0	0
	Small extent	0	0	28.2	16.3	35.9	22.3	50.0	37.7	32.2	8.1	36.1	26.9
	Medium extent	0	100.0	35.9	57.8	0	77.7	0	16.5	0	91.9	22.9	37.2
	To a high extent	100.0	0	35.9	25.9	64.1	0	50.0	45.9	67.8	0	41.0	35.8

Economic Activities	Feels that they can make their own decisions?	G1.03. GENDER OF RESPONDENT											
		MAN				WOMAN				Total			
		18–35 years old	36–49 years old	50 years old and older	Total	18–35 years old	36–49 years old	50 years old and older	Total	18–35 years old	36–49 years old	50 years old and older	Total
Major expenditures	Not at all	1.9	0	1.6	1.2	18.2	10.0	13.6	14.1	13.5	5.1	5.4	7.2
	Small extent	1.9	5.8	6.7	5.8	17.8	14.7	14.0	15.6	13.2	10.4	9.0	10.4
	Medium extent	52.5	41.1	44.8	44.8	39.4	31.4	37.5	36.2	43.2	36.1	42.5	40.8
	To a high extent	43.6	53.2	47.0	48.2	24.6	43.9	35.0	34.0	30.1	48.4	43.2	41.6

Table 30. Dry Season: Distribution of Respondents by Activities Pursued

Activities	Sample Total			River Valley			Southern Groundnut Basin			Casamance		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
Work as employed	7.7	3.2	5.4	2.9	2.8	2.9	8.6	6.3	7.4	9.5	1.4	5.4
Work in own business (trade, crafts, etc.)	0.9	0	0.5	0	0	0	3.1	0	1.5	0	0	0
Farming (millet, maize, rice)	21.6	10.6	16.0	79.7	22.3	50.3	6.5	9.9	8.3	1.2	4.8	3.0
Farming (other than millet, maize, rice)	27.4	24.8	26.1	37.1	40.4	38.8	3.9	11.6	7.9	37.9	25.6	31.7
Livestock raising	23.0	5.2	13.9	30.5	13.1	21.6	31.6	5.8	18.3	13.4	0.5	6.9
Fishing	4.5	1.2	2.8	8.2	1.6	4.8	1.6	0.7	1.1	4.4	1.4	2.9
Domestic work (including fetching wood and water)	11.3	78.3	45.5	2.5	75.7	40.0	8.6	83.2	47.2	17.7	76.3	47.4
School (also homework)	3.6	1.1	2.3	5.1	1.0	3.0	0.8	1.5	1.1	4.6	0.9	2.8
Shopping/getting service (including health services)	8.3	23.0	15.8	2.1	40.0	21.5	8.6	33.9	21.7	11.4	6.3	8.8
Weaving, sewing, textile care	1.9	1.8	1.8	1.0	4.6	2.8	1.6	0.7	1.1	2.5	1.1	1.8
Cooking	3.0	73.6	39.1	6.2	74.6	41.2	3.1	70.0	37.8	1.2	75.5	38.8
Care for others (children/elderly)	9.1	47.6	28.8	14.8	65.0	40.5	1.6	52.7	28.0	11.0	34.8	23.0
Sleeping, resting	99.8	99.9	99.9	100.0	99.6	99.8	100.0	100.0	100.0	99.6	100.0	99.8
Eating, drinking	97.5	97.8	97.6	98.5	99.6	99.1	95.3	99.3	97.4	98.4	95.8	97.1
Personal care	84.9	86.4	85.6	89.4	91.8	90.6	75.7	90.9	83.6	88.6	80.3	84.4
Traveling and commuting	17.4	5.2	11.2	34.5	12.1	23.0	4.7	4.6	4.6	16.8	2.0	9.3
Watching TV, listening to radio, reading	33.9	18.3	25.9	54.9	28.4	41.4	22.4	15.8	19.0	30.5	14.6	22.5
Exercising	8.2	2.9	5.5	5.1	2.6	3.8	5.5	1.5	3.4	11.5	4.0	7.7
Social activities and hobbies	71.7	66.7	69.1	76.1	74.2	75.1	78.1	57.7	67.5	65.3	68.8	67.1
Religious activities	92.2	82.0	87.0	100.0	96.9	98.4	99.2	79.3	88.9	83.4	75.9	79.6
Others	13.7	12.9	13.3	29.5	32.9	31.3	11.0	12.3	11.7	7.3	2.5	4.9

Table 31. Proportion of Respondents (%) With Overwork Load

ZONE	GENDER	DRY SEASON		RAINY SEASON		YEAR	
		Less than 10.5 hours	More than 10.5 hours	Less than 10.5 hours	More than 10.5 hours	Less than 10.5 hours	More than 10.5 hours
River Valley	Men	95.6	4.4	95.6	4.4	95.6	4.4
	Women	93.3	6.7	78.2	21.8	87.4	12.6
Groundnut Basin	Men	93.0	7.0	79.6	20.4	94.4	5.6
	Women	88.9	11.1	71.9	28.1	83.0	17.0
Casamance	Men	89.9	10.1	92.6	7.4	97.7	2.3
	Women	80.2	19.8	70.3	29.7	87.8	12.2
Total	Men	92.0	8.0	89.4	10.6	96.2	3.8
	Women	86.2	13.8	72.7	27.3	86.2	13.8

Table 32. Disempowerment by Domain for the Senegal River Valley (SRV)

SRV						
	Production	Resources		Income	Leadership	Time
	Input in productive decisions	Ownership of productive assets	Access to and decisions on credit	Control over use of income	Group member	Workload
Women						
% Disempowered (H)	40.1	4.8	41.6	18.6	15.3	11.7
Disempowerment index (M_0)	0.080	0.005	0.042	0.037	0.031	0.023
% Contribution of indicator	36.8	2.2	19.1	17.1	14.1	10.7
% Contribution of domain	36.8	21.3		17.1	14.1	10.7
Men						
% Disempowered (H)	14.4	1.0	20.5	0	8.8	3.6
Disempowerment index (M_0)	0.029	0.001	0.021	0.000	0.018	0.007
% Contribution of indicator	38.3	1.4	27.3	0	23.4	9.6
% Contribution of domain	38.3	28.7		0	23.4	9.6

Table 33. Disempowerment by Domain for the Senegal River Delta

Delta						
	Production	Resources		Income	Leadership	Time
	Input in productive decisions	Ownership of productive assets	Access to and decisions on credit	Control over use of income	Group member	Workload
Women						
% Disempowered (H)	41.6	11.2	45.9	18.3	15.4	14.6
Disempowerment index (M_0)	0.083	0.011	0.046	0.037	0.031	0.029
% Contribution of indicator	35.2	4.5	19.3	15.4	13.5	12.1
% Contribution of domain	35.2	24.1		15.4	13.0	12.4
Men						
% Disempowered (H)	10.1	0.5	19.6	0.3	10.8	4.9
Disempowerment index (M_0)	0.020	0.000	0.020	0.001	0.022	0.010
% Contribution of indicator	27.0	0.6	27.1	0.6	29.5	15.1
% Contribution of domain	27.9	27.9		0.7	29.9	13.6

Table 27. Disempowerment by Domain for the Senegal River Middle Valley

Middle Valley						
	Production	Resources		Income	Leadership	Time
	Input in productive decisions	Ownership of productive assets	Access to and decisions on credit	Control over use of income	Group member	Workload
Women						
% Disempowered (H)	38.9	4.5	40.9	17.2	18.7	10.8
Disempowerment index (M_0)	0.078	0.005	0.041	0.034	0.037	0.022
% Contribution of indicator	35.9	2.0	18.9	16.0	17.2	10.0
% Contribution of domain	35.9	20.9		15.9	17.2	10.0
Men						
% Disempowered (H)	14.1	0.9	21.8	0.3	11.0	3.0
Disempowerment index (M_0)	0.028	0.001	0.022	0.001	0.022	0.006
% Contribution of indicator	35.6	1.1	27.4	0.6	27.5	7.7
% Contribution of domain	35.6	28.5		0.6	27.5	7.7

Table 28. Disempowerment by Domain for the Southern Groundnut Basin

SGB						
	Production	Resources		Income	Leadership	Time
	Input in productive decisions	Ownership of productive assets	Access to and decisions on credit	Control over use of income	Group member	Workload
Women						
% Disempowered (H)	41.1	9.7	40.3	16.5	26.7	12.4
Disempowerment index (M_0)	0.082	0.010	0.040	0.033	0.053	0.025
% Contribution of indicator	33.8	4.0	16.6	13.5	22.0	10.2
% Contribution of domain	33.8	20.6		13.5	22.0	10.2
Men						
% Disempowered (H)	9.4	0.0	18.0	0.8	11.0	3.1
Disempowerment index (M_0)	0.019	0.000	0.018	0.002	0.022	0.006
% Contribution of indicator	28.2	0.0	27.1	2.4	32.9	9.4
% Contribution of domain	28.2	27.1		2.4	32.9	9.4

Table 29. Disempowerment by Domain for Casamance

Casa						
	Production	Resources		Income	Leadership	Time
	Input in productive decisions	Ownership of productive assets	Access to and decisions on credit	Control over use of income	Group member	Workload
Women						
% Disempowered (H)	34.2	7.7	43.7	12.0	26.6	9.8
Disempowerment index (M_0)	0.068	0.008	0.044	0.024	0.053	0.020
% Contribution of indicator	31.6	3.5	20.2	11.1	24.5	9.1
% Contribution of domain	31.6	23.7		11.1	24.5	9.1
Men						
% Disempowered (H)	10.5	0.3	28.6	1.2	22.4	2.4
Disempowerment index (M_0)	0.021	0.000	0.029	0.002	0.045	0.005
% Contribution of indicator	20.6	0.3	28.0	2.3	44.0	4.8
% Contribution of domain	20.6	28.3		2.3	44.0	4.8