



# FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative



## Feed the Future Senegal Naatal Mbay Project *Women's Economic Empowerment Strategy*



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# Women's Economic Empowerment Strategy

FEED THE FUTURE SENEGAL–NAATAL MBAY

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Submitted by International Resources Group (IRG)

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# CONTENTS

<b>Contents</b> .....	<b>i</b>
<b>Acronyms</b> .....	<b>ii</b>
<b>Executive summary</b> .....	<b>1</b>
<b>Introduction</b> .....	<b>4</b>
<b>Methodology</b> .....	<b>4</b>
<b>Guiding principles</b> .....	<b>5</b>
<b>Background</b> .....	<b>7</b>
Project zone of influence (ZOI) .....	7
Gendered household characteristics within the project ZOI .....	8
Women’s participation and roles in project value chains by zone.....	8
Senegal River Valley (SRV): Irrigated rice .....	9
Groundnut Basin: Maize, millet and rainfed rice.....	10
Southern Forest Zone (SFZ): Rainfed rice, millet and maize.....	10
Women’s empowerment in agriculture .....	11
Access to productive resources.....	11
Land .....	11
Inputs and agricultural equipment.....	11
Credit .....	11
Participation and influence in household decisions.....	12
Participation and leadership in organizations .....	12
Time use .....	13
<b>Women’s economic empowerment theory of change and strategy recommendations</b> .....	<b>13</b>
Theory of change.....	13
Strategy recommendations.....	14
<b>Implementation guidance and next steps</b> .....	<b>17</b>
<b>Appendix A: Value chain production by zone and gender of household head</b> .....	<b>18</b>
<b>Appendix B: Value chain production costs by zone and gender of household head</b> .....	<b>21</b>

## ACRONYMS

A-WEAI	Adapted-WEAI
CLSP	Community-level Service Provider
CN	Consolidation Network
FEPROMAS	<i>Fédération Coopérative des Producteurs de Maïs du Saloum</i>
FHH	Female-headed household
FPP	Female parcel producer
GIF	Gender Integration Framework
IRG	International Resources Group
M&E	Monitoring & Evaluation
MHH	Male-headed household
MPP	Male parcel producer
PCE	<i>Projet Croissance Economique</i>
PO	Producer Organization
REFAN	<i>Réseau des femmes agricultrices du Nord</i>
RF	Rainfed
SFZ	Senegal Forest Zone
SPRING	Strengthening Partnerships, Results, and Innovations in Nutrition Globally
SRV	Senegal River Valley
WEAI	Women's Empowerment in Agriculture Index
WEE	Women's Economic Empowerment
ZOI	Zone of Influence

# EXECUTIVE SUMMARY

## Overview

The Women's Economic Empowerment (WEE) Strategy presents a strategy to address gender issues at the project level, with the specific objectives of ensuring that women are empowered by project activities and that project activities do not inadvertently either directly or indirectly cause harm to women. Project activities, for example, should not increase women's burden of unremunerated labor, erode their social standing at the community or household level, or worsen their access to productive resources or returns from employment of those resources.

The WEE strategy was developed using a data-driven (evidence-based) value chain approach. Analytically, we prioritized value chains and intervention strategies on the basis of the extent and nature of women's participation in each value chain, financial returns to production, and the current and potential role of crop in women's incomes and household food security.

The WEE strategy was developed to be consistent with the following guiding principles:

- Focus on women's *economic* empowerment
- The strategy should fit within the overarching project framework
- Account for diversity across the project's ZOI with respect to household structure, ethnicity, and other factors
- Account for women's "double workday" and general shortage of free time
- Address women's empowerment from both inter-household as well as intra-household perspectives
- Based on a theory of change, data-driven, proactive, flexible and tailored, and emphasize learning and adaptive management

## Background

Naatal Mbay works in three geographic zones, each of which has various sub-zones with varying agro-ecological, economic, and ethnic profiles. Specifically, the project is focused on promoting the development of the value chains for irrigated rice in the Senegal River Valley (SRV), and for rainfed (RF) rice, millet, and maize in the central Groundnut Basin and Senegal Forest Zone (SFZ) zones (specifically, Southern Casamance).

Within the project's ZOI, 95% of households are headed by males, whereas 5% have female heads. Male versus female headed households can be differentiated on the basis of their size, schooling, poverty levels, land assets, and agricultural activities.

Women are involved in productive activities in the target value chains to varying degrees and in different ways depending on location, value chain, and ethnicity, among other factors. The majority of women provide labor on family farms, working first on their husband's plots to support production of staple cereals. Only after those labor obligations are fulfilled do women work on their own small parcels. In general, women contribute significantly to household food security, supporting the production of staple crops on both their husbands' and their own plots, and generating income that is used to improve the wellbeing of their families. In the SFZ, women are heavily involved in rainfed rice production. Irrigated and rainfed rice offer particularly attractive financial returns.

Women's access to productive resources—land, agricultural inputs and equipment, and finance—is characteristically more limited than men's access. Access to these resources typically depends heavily on the location, value chain, ethnicity, and other factors such as membership in producer organizations (POs).

Women's participation in and ability to influence important household-level decisions around production, expenditures and purchases; and control over income is an important factor underlying their wellbeing. In general, major decisions are usually the responsibility of men, however as women's contributions to household food supply and finances increase, they tend to have more influence in household decision making. Participation in decision making also tends to be higher for women who belong to POs.

Senegalese women have a strong tradition of participation in village-level self-help organizations, however they are generally underrepresented as either members or leaders in POs, which tend to be male dominated.

Membership in producer organizations is perceived to reduce the vulnerability of women in agricultural production and facilitate their access to productive assets.

Women are recognized throughout Africa to have a "double workday" involving both economic activities (such as agricultural production or entrepreneurship) and unremunerated "social reproduction" responsibilities such as the care of children, sick, or elderly, food preparation, and community engagement. The challenge is particularly acute in rural areas of Senegal where women have little access to equipment, infrastructure, or resources that can reduce the burden of these activities, and where they are responsible for providing labor to men's plots before they can cultivate their own.

### **Theory of change and strategy recommendations**

Naatal Mbay's technical approach rests on a theory of change in which there exists a "virtuous cycle" or positive feedback loop between activities that lead to increased business opportunities in domestic cereal value chains, catalyzing smallholder demand for productivity-enhancing inputs and management practices, which sustains the emergence of cost-effective and private sector-led production support systems. Smallholder production is enhanced through utilization of these inputs and management practices, allowing them to increase both their sales and the supply of foods to their own families. Together these gains lead to inclusive agricultural growth, enhanced smallholder incomes, and improved food security for the whole country.

Both women and men are eligible to pursue the opportunities inherent in this approach; however women tend to be disadvantaged in their ability to engage or succeed in these activities since they are less economically empowered than men throughout the ZOI. Thus, the WEE strategy, while integrated with the overarching project theory of change, is designed to address key opportunities and constraints that affect women's participation and benefits from project activities, as described in the preceding analysis.

The following recommendations underpin the WEE strategy:

1. Retain project focus on cereals value chains (rice, maize, millet) and leverage opportunities to economically empower women within those value chains.
2. Involve women and women's organizations in commercial seed production.
3. Engage women and women's organizations to serve as Community-level Service Providers (CLSPs).
4. Reduce burden of production and post-harvest labor incurred by women in cereals production on their own and on men's plots.
5. Tailor trainings and extension to women beneficiaries.
6. Strengthen women's involvement in rice production and markets throughout the project's ZOI.
7. Develop, validate, and disseminate labor-saving packages for home and/or village-based post-harvest services.
8. Explore opportunities for demand-driven value addition involving women.
9. Promote the development and involvement of women's producer organizations working in

project value chains.

- I0. Identify, assess, prioritize, and pursue opportunities to enhance women's access to credit.
- I1. Incorporate gender training into staff and partner activities.
- I2. Support project partners in sensitization and behavior change communications tailored to beneficiary households.
- I3. Collaborate with other donor-funded and charitable initiatives to pursue synergies in gender programming.
- I4. Actively integrate monitoring and evaluation into women's economic empowerment activities to support learning, collaboration, and adaptive management.

### **Implementation guidance and next steps**

Following finalization of the WEE strategy, a work plan will be developed to guide its implementation. Naatal Mbay's Gender Specialist will lead the development of the work plan with support from DC-based Gender and Social Inclusion Advisor. Implementation of the WEE strategy and the development of metrics to support its implementation will be spearheaded by the Gender Specialist with support from the project's Communications and M&E Specialists, as well as project technical staff.



## INTRODUCTION

IRG, an Engility company, is pleased to present the Women's Economic Empowerment (WEE) Strategy for the **Feed the Future Senegal/Naatal Mbay** (Naatal Mbay) project. The objective of Naatal Mbay is to significantly scale-up and expand successful value chain approaches, both in terms of potential beneficiaries and geographical coverage, in the maize, millet and rice sectors in a way that is inclusive and makes use of known best practices and technological packages. Value chain programs, when designed with a gender focus, can encompass both competitiveness targets and gender equity activities to contribute to poverty reduction goals.

Naatal Mbay's programming is organized across three technical components aimed at improving agricultural productivity, strengthening agricultural markets, and enhancing the agricultural policy environment, as well as cross-cutting themes relating to gender, climate change, capacity building, and promoting the project's learning agenda.

The WEE strategy presents a strategy to address gender issues at the project level, with the specific objectives of ensuring that women are empowered by project activities and/or that project activities do not inadvertently either directly or indirectly cause harm to women, for example by increasing the burden of unremunerated labor, eroding their social standing at the community or household level, or worsening their access to productive resources or returns from employment of those resources. The WEE strategy begins with an overview of the methodology by which the gender strategies were developed, then presents guiding principles and the theory of change that underlie the strategy. Next, essential background information is presented drawing from the baseline assessments undertaken by the project. Then gender strategy recommendations are detailed, followed by illustrative activities and implementation guidance.

## METHODOLOGY

The WEE strategy was developed using a data-driven (evidence-based) value chain approach that drew from three critical resources. First, Naatal Mbay's November 2015 population-based baseline survey<sup>1</sup> (sample size 2,000) was used to characterize producer households in the project's ZOI with respect to their current production and sales of project crops (rice, maize, millet), means of production, and financial returns of production. These results were differentiated by gender, looking at both intra-household and inter-household variations.

Second, qualitative results (from the baseline assessment, earlier programmatic and gender-oriented assessments, and the gender integration framework) were drawn on to characterize women's roles and constraints in production of project-targeted crops and to enrich interpretation of the quantitative results from the large-sample survey.

Third, the Abbreviated Women's Empowerment in Agriculture (A-WEAI)<sup>2</sup> survey results were used to more formally identify critical areas of empowerment that either represent strengths or weaknesses vis-à-vis opportunities to improve women's involvement in the different value chain targets and women's (and their families') incomes and wellbeing through project interventions.

Analytically, we used the following criteria to prioritize value chains and intervention areas:

- Extent of participation of women in each value chain as
  - Unpaid laborers on fields of male family members and in home-based post-harvest activities
  - Managers and producers on own parcels within male-headed households
  - Managers and producers as part of female-headed households

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<sup>1</sup> Source: Naatal Mbay (2015) Baseline Study, Feed the Future Senegal Naatal Mbay.

<sup>2</sup> Naatal Mbay (2016) ETUDE BASELINE NAATAL MBAY: VOLET GENRE ET AUTONOMISATION DES FEMMES.



- Providers of production inputs (e.g. seed) and post-farmgate value-added services (e.g. processing and marketing)
- Characterization of women’s activity within each value chain
  - Roles and responsibilities in production and post-harvest activities and associated labor requirements
  - Production profiles relative to men (area cultivated, yields, use of improved technologies and management practices, etc.)
- Financial returns on production
- Role of the value chain in women’s incomes and household food security

The results of these analyses are presented in the Background section. The outcomes of these inquiries were used to identify which value chains had the most potential to benefit women either due to high rates of women’s participation in the value chain, attractive potential financial returns, or congruence of value chain development requirements with the particular issues and constraints faced by women.

Once the highest potential value chains were identified for each location, further analysis was conducted using quantitative and qualitative baseline results to identify strategies to increase the benefits of women’s participation in each value chain. Having identified feasible strategies, we drew on the A-WEAL and gender integration framework (GIF) results to identify specific constraints (for example in the domains of control over productive resources, decision-making power, etc.) that would need to be addressed to enable these improvements.

## GUIDING PRINCIPLES

The WEE strategy was developed to be consistent with a number of guiding principles which are detailed below:

**Focus on women’s economic empowerment:** The strategy is focused specifically on women’s economic empowerment which we define as “the capacity to participate in, contribute to and benefit from economic growth processes in ways that recognize the value of women’s contributions, respect their dignity and make it possible to negotiate a fairer distribution of the benefits of growth.”<sup>3</sup> In the context of Naatal Mbay, economic empowerment comes when women are active participants in economic decisions that affect them and their families, have access to productive resources to pursue economic activities that they value, and have a substantial degree of control over the output of their efforts. The implication of this focus on economic empowerment is that other forms and facets of empowerment are seen as a means of achieving economic empowerment, rather than ends in themselves. We also recognize that different facets of empowerment will have different degrees of influence on economic empowerment in different contexts, so activities to strengthen these facets of empowerment will be prioritized on the basis of their potential contributions to the overarching economic empowerment goal.

**The strategy should fit within the overarching project framework:** As a value chain development project, Naatal Mbay is focused on cereals value chains—specifically rice, maize, and millet. We take it as a guiding principle that all economic empowerment activities should be oriented to benefitting women vis-à-vis their participation in these value chains. While Naatal Mbay is contractually limited to the above-named cereals value chains, maintaining this focus also has strong technical justification given the pervasive involvement of women in these value chains (as will be detailed in the Background section). Addressing women’s economic empowerment within the overarching project framework has several important implications.

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<sup>3</sup> Definition adapted from <http://www.oecd.org/dac/gender-development/womenseconomicempowerment.htm>

First, all gender activities should be related to the project bottom line of promoting inclusive and broadly beneficial engagement in the project's value chains. Second, non-gender specific interventions should be proactively evaluated for their potential impacts on women, and revised as needed to ensure that they do not either directly or indirectly harm women, and so that they benefit women to the greatest extent possible. Third, gender-oriented activities should be mainstreamed within the project, with specialized interventions targeted to specific issues that are not adequately addressed through a mainstreaming approach. Fourth, all gender-related interventions should be able to be explained and justified with reference to the project's objectives, both to project staff and stakeholders. Finally, working the women's economic empowerment strategy into the overarching project framework implies avoiding parallel (or worse, "perpendicular,") activities aimed specifically at women, which have the risk of either diverting project resources from their overriding objectives or creating a "side project" aimed at women, but which does not receive adequate attention or resources to be effective. Related to these points, it is important to note that the overarching project objective is to improve *food security* in the ZOI, with improved incomes representing one means of improving food security, however improved food security also implies improved intra-household outcomes, both economic and nutritional.

**Account for diversity with respect to household structure, ethnicity, and other factors, across the project's ZOI:** The gender strategy must take into account the diverse roles played by women and men across the project's ZOI given varying ethnicities, household structures (with respect to age, family status, and gender of household members), length of time residing in a community, resource endowments, and other factors. This means that operationalization of the strategy must be tailored to the target clientele, which implies that participatory methods should be drawn on extensively in designing and vetting proposed interventions, and in tailoring them to specific implementation areas.

**Account for women's "double workday" (also known as "dual labor burden"):** It is critical to recognize that in addition to their roles as laborers and entrepreneurs (agricultural and others), women are also extensively involved in "social reproduction" at the household and community level, and that these unremunerated roles often involve heavy commitment of women's time and economic resources. For example, women are typically heavily involved in child care, food preparation, obtaining firewood and water, and in supporting community activities such as festivals and funerals. Thus, gender-oriented activities should take into account tradeoffs among all these activities, and solicit input from household members (particularly, but not only, from women) about how potential changes in women's allocation of time and resources among these activities will be perceived and responded to.

**Address women's empowerment from both inter-household as well as intra-household perspectives:** While women-headed households have unique circumstances in terms of their access to resources, legal rights, and cultural standing, it is also critical to consider the economic empowerment of women within male-headed (or dual-gender headed) households, taking into account the standing of women given their age, resource endowments, culture and ethnicity, and marital status. It should not be assumed that the nominal head of household or senior female exclusively and equally represents the interests of all household members, implying the importance of seeking broad input at the family level on the potential impacts of proposed interventions for different family members.

**The strategy itself should be theory-based, data-driven, proactive, flexible and tailored, and emphasize learning and adaptive management:** A data-driven strategy is one that draws on the extensive knowledge base about women's economic empowerment, as well as the local realities of women within the project's ZOI. A data-driven strategy has the best potential to remain grounded in and responsive to international best practices and evolving local realities, and to avoid common pitfalls in design and implementation. A data-driven strategy requires a well-planned and active process of ongoing monitoring and evaluation using both qualitative and quantitative

methods. It must also be grounded in a theory of change that reflects the unique circumstances of women in the project context and that is continually evaluated allowing for learning and adaptive management to account for emerging results whether they be successes, challenges, or disappointments. The strategy must also be proactive rather than reactive, in that it should invest heavily on ex ante (anticipatory) analysis to consider and plan for potential impacts (both static and dynamic) from a gendered perspective. As results emerge, it is important to be flexible in adapting the strategy and its implementation approach to account for these results.

## BACKGROUND

In this section, we introduce the project’s geographic zone of influence and target value chains, provide an overview of women’s involvement in those value chains, and describe the status of women’s empowerment in agriculture. Information presented in this section is drawn primarily from the baseline results including the large-sample quantitative survey, A-WEAI, and qualitative inquiries.

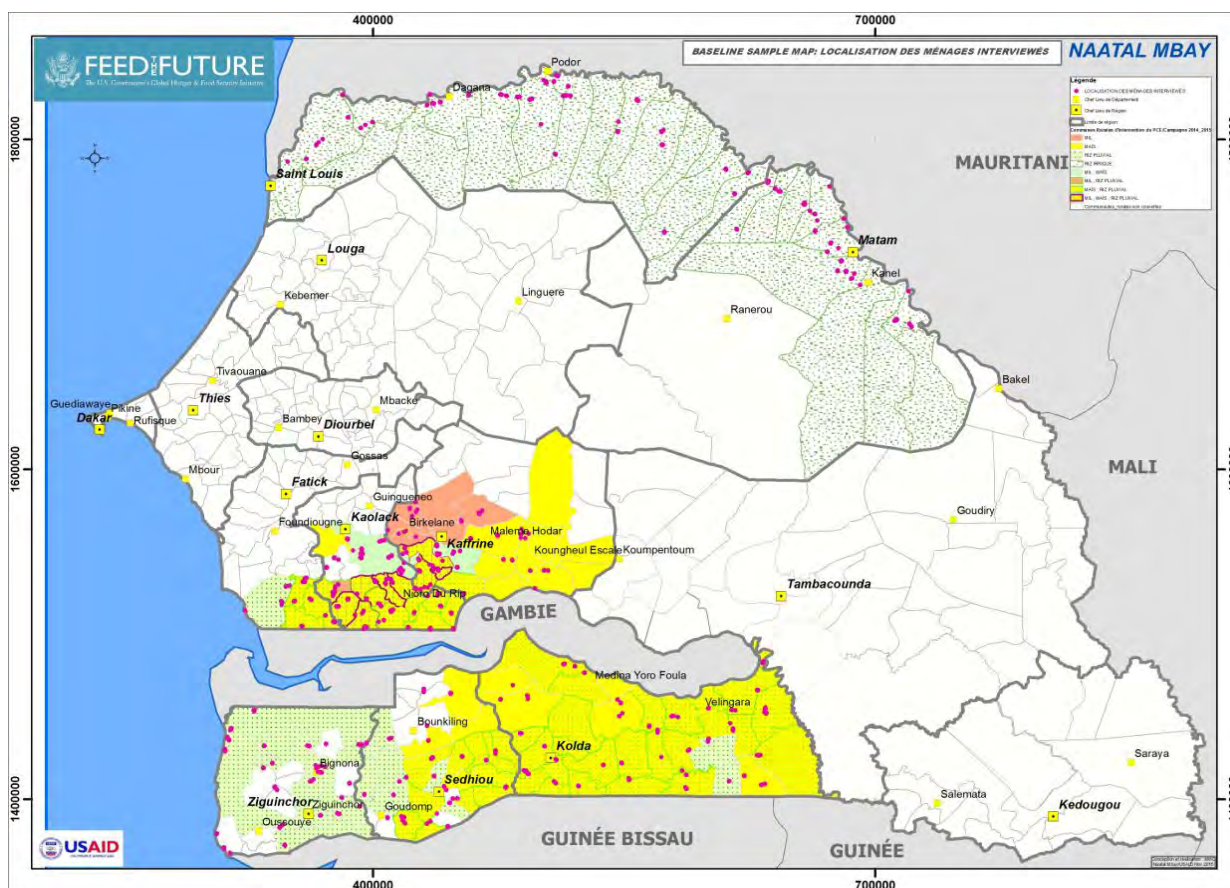
### PROJECT ZONE OF INFLUENCE (ZOI)

Naatal Mbay works in three geographic zones, each of which has various sub-zones (summarized in Table 1 and depicted in the map in Exhibit 1) with varying agro-ecological, economic, and ethnic profiles. The project is focused on promoting the development of the value chains for irrigated rice in the Senegal River Valley (SRV), and for rainfed (RF) rice, millet, and maize in the Groundnut Basin and Southern Forest Zone (SFZ).

**Table 1: Project zones, sub-zones, and value chains**

Zones	Sub-zones	Value Chains
<b>Senegal River Valley (SRV)</b>	Delta (Dagana)	Irrigated rice
	Middle Valley (Podor-Matam)	Irrigated rice
<b>Groundnut Basin</b>	Center (Fatick-Kaolack-Kaffrine)	Rainfed rice, millet, maize
<b>Senegal Forest Zone (SFZ)</b>	Lower Casamance (Ziguinchor)	Rainfed rice, millet, maize
	High and Middle Casamance (Kolda-Sédhiou)	Rainfed rice, millet, maize

## Exhibit I: Naatal Mbay zone of influence and focal value chains



## GENDERED HOUSEHOLD CHARACTERISTICS WITHIN THE PROJECT ZOI

The baseline assessment showed that 95% of households in the project’s ZOI have male heads of household, whereas 5% have female heads (nationally, the DHS estimates 20% are female-headed households in Senegal). Many female-headed households (FHHs) are comprised of widows who live with their eldest married sons.

Female-headed households tend to be smaller than male-headed households (MHHs), and women household heads are nearly twice as likely as male heads of household to have no schooling (41% vs 21%). While the vast majority of both male and female headed households in the project ZOI are either poor or extremely poor, women-headed households are less likely than male to fall into the *extremely poor* category. FHHs are also more likely than MHHs to have family-granted land than individually held land (51% family, 42% individual for FHH vs 42% and 50% respectively for MHH).

While the mean age of the head of household is the same for both MHHs and FHHs (53 years), women working crops in MHH tend to be younger than the male heads, whereas in FHH the inverse is true—males working crops tend to be younger than the female head. This is a reflection of male household heads being assisted by a wife or wives (who are younger than him), whereas female headed households are often assisted in their production by their eldest sons. Despite having assistance, female heads of household were principally involved in agriculture—particularly in irrigated and rainfed rice and maize (depending on zone), with a participation rate of 100%. In the Groundnut Basin, they had a lower participation in millet (81%) compared to men (91%).

## WOMEN’S PARTICIPATION AND ROLES IN PROJECT VALUE CHAINS BY ZONE

Women are involved in productive activities in the target value chains to varying degrees and in different ways depending on location, value chain, and ethnicity, among other factors. The majority

of women provide labor on family farms, working first on their husband's plots to support production of staple cereals. Only after those labor obligations are fulfilled do women work on their own small parcels. Women's parcels are often cultivated with secondary crops for household consumption, such as groundnuts, vegetables, hibiscus, and at times cereals such as rice, maize, or millet. In general, women contribute significantly to household food security, supporting the production of staple crops on both their husbands' and their own plots, and generating income that is used to improve the wellbeing of their families. Below, specific aspects of women's involvement in project value chains are discussed for each of the project zones.

Table 2 below summarizes critical elements of women's involvement in cereal value chains across the project's ZOI, and identifies potential areas to enhance women's economic empowerment through project interventions. Analytical categories for women's participation include both gender of household head (FHH=female household head) as well as the gender of parcel producers within a given (male or female-headed) household (FPP=female parcel producer). Particularly notable in Table 2 is the heavy involvement of women in rainfed rice production in the Casamance, and the attractive financial returns to both irrigated and rainfed rice throughout the project ZOI. Appendix A summarizes major aspects of production and sales of the different project crops across the project zones and by gender of household head, while Appendix B breaks down production costs by value chain across the zones and by gender of household head.

**Table 2: Women's participation and financial returns by zone and value chain**

	SRV— Delta	SRV— Middle Valley	SFZ	Groundnut Basin	SFZ	Groundnut Basin
	Irrigated Rice		RF Rice	Maize	Maize	Millet
Current participation of women:	Low	Low	High	Medium	Low	Medium
% FHH	3%	3%	8%	1%	3%	4%
% FPP	2%	5%	54%	11%	3%	12%
Share of output sold	42%	20%	7%	0%	13%	8%
Financial returns to production:	High		High	Low	Low	Low
Gross margins/ha in FCFA	348,000		210,000	82,000	89,000	87,000

Source: Naatal Mbay (2015) Baseline Study, Feed the Future Senegal Naatal Mbay.

### SENEGAL RIVER VALLEY (SRV): IRRIGATED RICE

The SRV has two major sub-regions—the Delta and Middle Valley. In the Delta, mechanized, commercially oriented agriculture predominates; whereas in the Middle Valley, traditional production methods predominate and output is primarily oriented to home consumption. The Delta is also recognized as an area where women have a relatively pronounced participation in the production and sale of irrigated rice, as reflected by the relatively large average areas cultivated by FHHs (3.3 ha compared to 1.7 ha for MHHs). Women's participation in irrigated rice production is heavily influenced by ethnicity, however, for example in Mboudoum, women undertake rice production on individual plots, usually producing during both seasons of each year. In Kheune, in



contrast, women's direct economic benefit from rice production is largely limited to the collection of harvest residues from shelling ("taatu naaf") which they can sell, retaining control over the proceeds. In the SRV Delta, the division of labor in the fields is limited due to the heavy reliance on mechanization. Most productive activities in the fields are thus the responsibility of male family members or paid farm workers.

In the Middle Valley, family farming predominates, and women usually work as family labor under the exclusive authority of senior men in the family (i.e. male heads of household). In some cases, women are granted access to small plots to cultivate, though they can only focus on these plots after fulfilling their obligations to provide labor to the males' plots in their household. Given the manual nature of production, there is a clear division of labor between men and women. Women are primarily responsible for planting, weeding, and monitoring the fields for pests. Men, in contrast, are primarily responsible for application of fertilizer and pesticides, harvesting, and post-harvest work.

### **GROUNDNUT BASIN: MAIZE, MILLET AND RAINFED RICE**

The Groundnut Basin is dominated by subsistence production of millet, maize, groundnuts, cowpeas, and bissap (hibiscus). Small vegetable plots ("micro-gardening") are also common. Production of rainfed (RF) rice in the upland areas has also begun under the support of USAID projects such as PCE (Naatal Mbay's predecessor project) and Naatal Mbay, however, production is still limited.

With the exception of relatively few women who produce maize, and female members of the predominant producer organizations (POs) FEPROMAS, women are typically involved in the production of project targeted cereal production as "helpers" on plots controlled by senior male family members. On these plots, men are responsible for "heavy" work such as clearing and preparing the land for planting, while women are primarily responsible for tasks such as weeding, spreading fertilizer, harvesting, and post-harvest processing and preparation of food for consumption. Husbands will also typically grant an individual plot of land to women, on which women characteristically cultivate groundnuts (which have low and highly variable yields but which complement millet in crop rotations, are an important source of food during the lean season, and have low requirements for cash expenditures to produce compared to millet or maize), hibiscus, cowpea, and vegetables. In general, the product of these activities are consumed at home, complementing the grains that the men produce for household consumption. An exception to this is production of vegetables which women often sell, using the income to help support their families.

### **SOUTHERN FOREST ZONE (SFZ): RAINFED RICE, MILLET AND MAIZE**

Rainfed rice is a staple in the SFZ, and dominates agricultural production on its small family farms where it is grown for household consumption. Women are also actively involved in horticulture (though in some areas such as Djifanghor it is also a domain for men). Women are also involved in millet and maize production in the Casamance, providing labor to support men's production on their plots, and to a lesser extent, producing on their own plots.

Women dominate rice production in the lowland zones (where they also cultivate maize, millet, and short-cycle groundnut), while men dominate in the upland zones where rice has only relatively recently been introduced under support of USAID projects such as PCE and Naatal Mbay. Where women dominate rice production, they operate on plots that are separate from men's, and are typically responsible for and work independently to carry out all production operations, often working in conjunction with other women in the family such as co-wives. Men in lowland zones often cultivate millet, beans, and maize. An exception to this generalization of autonomous production of rice by women is in Ziguinchor where both men and women cultivate rice, though with responsibility for distinct cultural operations—specifically, men are responsible for land preparation, while women are responsible for transplanting the rice, as well as maintenance of the crop while it grows, including transporting compost to the fields where it will be used as fertilizer.



## WOMEN'S EMPOWERMENT IN AGRICULTURE

### ACCESS TO PRODUCTIVE RESOURCES

Both the large-sample survey and the gender baseline (qualitative and quantitative) results demonstrated that women's access to productive resources—land, agricultural inputs and equipment, and finance—is characteristically more limited than men's access (although men also face constraints in accessing many of these resources). An individual household's access to these resources typically depends on the location, value chain, ethnicity, and other factors such as membership in producer organizations.

### LAND

The results of the gender baseline analysis showed the centrality of land access to women's economic empowerment. Specifically, women with greater access to land are better able to produce on their own plots, and this production lends them greater influence in household decision making. Unfortunately, women consistently have more limited access to land than men, and when they do have access it is typically to land that is less fertile, more isolated, and more limited in area.

Although the 2001 Constitution promotes equal access to land for men and women, in most areas, customary law prevails, and tends to favor men. Women's access to land is frequently mediated through their relations with their husbands or husband's families; their access to land is thus dependent on their marital status. Depending on the ethnic group, widows may have the option of retaining access to their land after their husband's death by marrying the husband's eldest brother. In general, women-headed households have more difficulty in accessing land for cultivation.

Women who seek to expand or improve their access to land devise alternative strategies including rental, sharecropping, and participation in women's groups which lobby to obtain access to land for collective cultivation. Both the large-sample baseline survey (verify) and qualitative inquiries confirm that land rental costs are a significant factor in cereal production costs for women, as shown in Appendix B.

### INPUTS AND AGRICULTURAL EQUIPMENT

Women have particularly constrained access to agricultural inputs and equipment<sup>4</sup>, as evidenced in the large-sample survey, and the gender baseline assessment. Differential access is seen on the basis of both the gender of the household head—male or female—as well as the gender of producers on given parcels within a given family. For example, only 2.5% of female producers used any fertilizers on their parcels compared to 61% of male producers.

Women are also far more dependent on manual labor for activities 56% of women relied on manual soil preparation compared to only 35% of men, and 59% of women relied on hand weeding compared to 37% of men. Women have limited access to even rudimentary production tools, for example only 34% of women used hoes for weed control compared to 54% of men. Likewise, women relied heavily on manual rather than mechanical labor for threshing (*battage*). Heavy reliance on manual labor is broadly recognized to increase the time burden of production and/or production costs (depending on whether the labor comes from family or paid sources), as well as delay the completion of important time-sensitive agricultural tasks.

### CREDIT

Access to credit is another major constraint faced by women and men, though women to a greater extent than men. Self-financing predominates, though producer organizations are a means by which farmers increase their access to credit, particularly for women who have weaker access to credit

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<sup>4</sup> According to FAO, to equal access to productive resources, women could increase yields from their fields from 20 to 30% and improve, at the same time, agricultural production in developing countries 2.5 to 4%.

through formal banking institutions. Many women also seek revolving credit through groups, or with informal traders or relatives. This credit, however, while quick to get and flexible to use, is typically available only in small amounts.

## **PARTICIPATION AND INFLUENCE IN HOUSEHOLD DECISIONS**

In addition to having access to productive resources, women's participation in and ability to influence important household-level decisions around production, expenditures and purchases, and control over their incomes, is an important factor underlying their wellbeing. In general, major decisions are usually the responsibility of men, however, baseline research showed that the more that women participate in productive activities, and contribute to household food supply and finances, the more influence they have in household decisions, although these also vary depending on the socio-economic status of a household, ethnicity, and other factors. Women's participation in decision making, and their perception of being able to influence important decisions, tends to be higher for women who are part of a producer organization, particularly one supported by a program such as Naatal Mbay. Women household heads play a decisive role in household decision making, however, they typically make these decisions in consultation with the eldest son who is responsible for many of the field operations.

While men are the primary decision makers regarding household expenditures, women's influence over these decisions increases with their participation in production. Furthermore, their relative autonomy in production or economic activities is also associated with greater control over the incomes of these activities. Qualitative baseline results revealed that in many cases, women proactively involve their husbands in decisions about how to use incomes, or give a portion of their incomes to their spouse, as a means of garnering their support to continue in these activities—this is particularly the case for independent activities such as participation or leadership in women's groups, involvement with which could be perceived to be threatening to a male household head's interests.

## **PARTICIPATION AND LEADERSHIP IN ORGANIZATIONS**

Senegalese women have a strong tradition of participation in organizations, particularly in the SRV and Groundnut Basin, but the tradition of working in organizations is less rooted in the SFZ. These organizations are often village-level women's groups oriented to mutual aid and solidarity, and they frequently pursue economic activities and access finance collectively. Despite this tradition, women are generally underrepresented as either members or leaders in POs, which tend to be male dominated. Women tend to have most influence either in women-only organizations, or in mixed-gender organizations where they are present in large numbers and work together strategically to exert influence.

While the A-WEAI results showed that generally, it is difficult for some women to speak in public or to be heard by men, qualitative results imply that women's leadership in these organizations is growing despite men retaining a largely dominant role in them. It is also notable from the A-WEAI results that women who are active in the leadership of producer organizations, whether mixed-gender or women only, tend to be older (over 40), relatively better off (for example with larger areas of land available than most women), and they are often not living in their marital home (though they may be married) or have daughters-in-law or other people available to take care of domestic chores for them. Nonetheless, while leadership in an organization may be a relatively privileged activity, membership in an organization is perceived to reduce the vulnerability of women in agricultural production and facilitate their access to productive assets. In general, in addition to the status that may privilege certain women to participate in and even take leadership in POs, time availability was also revealed during the qualitative baseline inquiries to be a major factor limiting women's participation in organizations.

## TIME USE

Women are recognized throughout Africa to have a “double workday” involving both economic activities (such as agricultural production or entrepreneurship) as well as unremunerated “social reproduction” responsibilities such as the care of children, sick, or elderly, food preparation, community engagement, and obtaining firewood and water, among others<sup>5</sup>. The challenge is particularly acute in rural areas of Senegal where women have little access to equipment, infrastructure, or resources that can reduce the burden of these activities.

The A-WEAI baseline results showed that within the project ZOI, women’s workloads are heavily influenced by their age, marital status, household type, socio-economic status, involvement in producer organizations, and their contribution to the household economy. In areas with a significant degree of mechanization, such as the SRV Delta, women spend relatively less time on agricultural activities. In contrast, in the SBA and Casamance where manual production is the norm, women reported having very heavy labor loads both on their family’s agricultural plots as well as for household responsibilities.

These heavy workloads have a large impact on women’s economic empowerment—as previously described, they limit women’s participation and leadership in producer organizations which tend to increase access to productivity-enhancing technologies and markets. Time spent cultivating the fields of male household members also either delays women’s cultivation of their own plots or forces them to incur the cost of hiring labor in order to undertake operations such as planting and harvest in a timely manner. Finally, the heavy workloads are themselves a factor that reduces women’s wellbeing, particularly when they involve heavy and exhausting manual labor.

## WOMEN’S ECONOMIC EMPOWERMENT THEORY OF CHANGE AND STRATEGY RECOMMENDATIONS

### THEORY OF CHANGE

Naatal Mbay’s technical approach rests on a theory of change in which there exists a “virtuous cycle” or positive feedback loop between activities that lead to increased business opportunities in domestic cereal value chains, catalyzing smallholder demand for productivity-enhancing inputs and management practices, which sustains the emergence of cost-effective and private sector-led production support systems. Smallholder production is enhanced through utilization of these inputs and management practices, allowing them to increase both their sales and the supply of foods to their own families. Together these gains lead to inclusive agricultural growth, enhanced smallholder incomes, and improved food security for the whole country.

The demand that underlies this market-driven approach is driven by unmet opportunities to supply domestic cereals markets, and is channeled through Consolidation Networks (CN). CNs are private-sector driven, grassroots-based networks that simultaneously link smallholder producers to inputs, services, finance, training and a market for their product, while creating sustainable linkages between players along the value chain, facilitating the aggregation of farmers’ surplus and delivery to large-volume buyers. The immediate beneficiaries of CNs are farmers who are contracted to produce and sell product (that is surplus to their household consumption needs), and value chain players who provide services and purchase and transform the product. Project-driven benefits to CN participants will include market linkages, training, input and services provision, and access to credit; uptake of which will have direct impact on their production and household food security, sales, and profitability.

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<sup>5</sup> According to the ADB, the African rural women perform a double working day, at least 50% higher than that of men.

Meanwhile, CLSPs extend key benefits of the CN model to non-contract farmers, facilitating their access to productivity-increasing inputs, services and markets that CN farmers enjoy, but without obligation of the production or marketing contracts associated with the CN model. Immediate beneficiaries of the CLSP models are farmers who operate as “satellites” around the CNs and CLSPs who provide them services through their business franchises. CLSP beneficiary farmers will have increased access to inputs and services which will have direct implications for their production, with consequent benefits for their sales and household food security.

While women and men are eligible to pursue the opportunities inherent in this technical approach, the preceding text in the Background section highlights critical areas where women in particular may be disadvantaged in their ability to engage or succeed in these activities, considering that they are less economically empowered than men throughout the ZOI. Thus, the WEE strategy, while integrated with the overarching project theory of change, is designed to address key opportunities and constraints that affect women’s participation and benefits from project activities, as described in the preceding analysis. These may include, for example, specific value chains where women are particularly well-positioned to benefit, unique constraints to their participation, and labor and cost structures that may disproportionately disadvantage women. The theory of change underlying the WEE strategy, thus, builds upon the project theory of change but also incorporates strategies to address issues and opportunities that are specific to women. These strategies are outlined below.

## STRATEGY RECOMMENDATIONS

The text below outlines recommendations for the strategy, along with explanations and justifications underlying the proposed strategies.

- 1. Retain project focus on cereals value chains** (rice, maize, millet) and leverage opportunities to economically empower women within those value chains. Women are integral actors in cereal value chains as laborers (unpaid family laborers and paid laborers), through their own production, and in value added activities. There are opportunities to economically empower women through project activities, for example, by increasing their access to productive resources, reducing the burden and costs of production, increasing their influence over household-level decisions about production and disposition of output, and increasing their representation in the community.
- 2. Involve women and women’s organizations in commercial seed production and distribution.** Production of seed for sale has a high value per unit of land, meaning that women can meaningfully increase their incomes while operating on their characteristically small plots. Furthermore, the predecessor project, PCE, provides Naatal Mbay with a foundation of successfully integrating women into commercial seed production. For example, in the Casamance, women’s producer organizations Kissal Patim Kolda and the Entente Diouloulou successfully involved women’s groups in seed production, and similar examples also exist in the SRV and Groundnut Basin regions. Operationalization of this strategy will require a multi-pronged approach that addresses numerous issues that have the potential to influence women’s participation in commercial seed production such as seed certification institutions, the national seed plan, and the development of formal and informal marketing systems and agro-dealer networks.
- 3. Engage women and women’s organizations to serve as CLSPs.** Women are well-positioned to provide various types of agricultural inputs and services, including seeds and other agro-inputs, agricultural processing services, as well as data and information services as field agents and database managers to CNs. These activities offer a strong complement to women’s home-based labors (such as elder and child care and food preparation), and engaging women as service providers can also help to extend the reach and improve the quality of these services to women farmers and entrepreneurs. To implement this strategy, the project should identify women and women’s organizations that are well positioned to serve as CLSPs, and facilitate their entry into this role. It will be important when developing

a work plan to support this strategy to investigate and accommodate the particular business development needs of women entrepreneurs, as well as the needs of potential women clients. For example, it is likely that a higher density of women service providers will need to be developed to compensate for mobility limitations that women face relative to men.

4. **Reduce burden of production and post-harvest labor incurred by women in cereals production on their own and on men's plots.** Women have little access to even simple labor-saving agricultural equipment such as hoes, and in many areas, increased availability of mechanization services can benefit women either by reducing production costs or reducing their labor burden. Integrate results of recommended (under point 14) time-use inquiries that reveal when labor demands on women are the heaviest with qualitative inquiries (also discussed under point 14) to identify women's priorities for labor-saving; and develop interventions to increase their access to inputs, technologies, and services that reduce their labor burdens in these areas.
5. **Tailor trainings and extension to women beneficiaries.** Increase participation of women as lead and demonstration farmers and as field extension agents. Develop training specifically targeted to women's participation in cereals value chains by identifying and accommodating specific challenges and logistical constraints that they face.
6. **Strengthen women's involvement in rice production and markets.**

**SFZ:** Irrigated rice offers attractive financial returns and there is demonstrated potential to increase women's incomes and food security through increasing their production and sales of rice. While there appears to be limited opportunity to increase the number of women participating in rice production in SRV Delta due to the fixed land base and limited participation of women in irrigated rice production, baseline results imply that those that do produce irrigated rice can benefit substantially from improving women's market linkages, including use of contracts, in order to help improve prices they receive as well as increase their access to yield-enhancing inputs. For irrigated rice in SRV Middle Valley, the strategy should focus on increasing women's access to irrigation, mechanization, producer organizations, and market linkages. In both sub-zones of the SRV, interventions to improve rice quality, and introduction of higher-value rice varieties such as aromatic rice and white rice also provide opportunities to increase women's economic empowerment through participation in the rice value chain.

**Groundnut Basin and SFZ:** In the Groundnut Basin and SFZ, women are heavily involved in lowland rainfed rice production, but often do not have access to land for the relatively more profitable upland rainfed rice production. Strategies to empower women economically through participation in lowland rainfed rice systems should focus on introduction of appropriate varieties and labor-saving technology packages, and establishment of market-based systems for sustainable provision of those technological packages to smallholder farmers. These technology packages can help women to reduce their production costs, and complete cultivation activities in a timelier manner with attendant benefits for yields and profitability. Expanding production of rainfed rice through dissemination of improved varieties that perform well under low input systems will be particularly beneficial to women given their characteristically low use of inputs.

7. **Develop, validate, and disseminate labor-saving packages for home and/or village-based post-harvest services.** Post-harvest activities such as drying, threshing, sorting/grading, and milling tend to be labor-intensive and the responsibility of women who perform them without remuneration. Home or village-based labor-saving technological packages that reduce this burden and provide income to service providers can reduce the labor-burden on women, empowering them economically.
8. **Explore opportunities for demand-driven value added products involving**



**women.** Women are heavily involved in adding value to maize and millet through primary and secondary processing, and linking rural women to markets for value-added cereals offers opportunities to improve their economic standing. An example is the market for hulled millet in Dakar—currently millet is transported to Dakar with its hull and manually processed there, but there are opportunities to hull the millet in rural areas and transport the hulled product to Dakar for sale.

- 9. Promote the development and involvement of women’s producer organizations working in project value chains.** Producer organizations are a key means by which producers, including women, gain access to productive resources, financing, and markets. Women’s-only organizations appear best positioned to be tailored to the needs and interests of women, and are a critical means by which they can empower themselves both politically and economically. Naatal Mbay should consider supporting both local organizations within the project’s ZOI as well as regional and nationally active organizations (for example REFAN which is based in the SRV but is expanding to be more nationally representative). Women’s participation in producer organizations is relatively low across the project’s ZOI, and particularly in the Casamance region where there is little tradition of this sort of community-level organization among women.
- 10. Identify, assess, prioritize, and pursue opportunities to enhance women’s access to credit.** Credit is a key constraint to expanded business activity in cereals value chains, particularly for women. The project should identify, assess, prioritize, and pursue opportunities to enhance women’s access to credit. Options include capacity building with women’s producer organizations to build their credit worthiness and ability to pursue and manage credit, working with financial institutions to sensitize them on women’s credit needs, promotion of innovative financial instruments that address women’s particular needs and constraints in accessing credit, and working with MFIs to expand their lending to women working in project-targeted cereals value chains.
- 11. Incorporate gender training into staff and partner activities.** Incorporation of gender training into ongoing activities (such as regular meetings or trainings) will promote ongoing attention to gender issues as part of regular technical activities, helping to ensure that gender is “mainstreamed” in the project rather than treated as a sideline or ancillary activity. The large scope of the project and diversity across the project ZOI also implies that staff and partners must be key collaborators if gender is to be successfully tailored to local interventions. Trainings should emphasize the relevance of gender issues to the project’s underlying objectives.
- 12. Support project partners in sensitization and behavior change communications tailored to beneficiary households.** These activities should be tailored to different types of household structures and members, and emphasize the broad-based benefits of women’s economic empowerment to women and families.
- 13. Collaborate with other donor-funded and charitable initiatives to pursue synergies in gender programming.** Projects like the USAID-funded SPRING have compatible activities which also incorporate women’s empowerment objectives. Naatal Mbay should identify projects and organizations with complementary activities, and pursue opportunities to collaborate in the development and implementation of synergistic activities supporting women’s empowerment.
- 14. Actively integrate monitoring and evaluation into women’s economic empowerment activities to support learning, collaboration, and adaptive management.** Monitoring and evaluation activities to support women’s economic empowerment should include the following:
  - Evaluation of project interventions should incorporate both livelihoods and time-use impacts, as well as financial analysis and address both inter-household and intra-household distribution of costs and benefits of project interventions. Both ex ante and



interim analyses should be utilized to allow the project to operate proactively rather reactively.

- Conduct careful ex ante analysis of the impact of specific project interventions to identify and address likely gender-differentiated impacts, and to garner women's and men's viewpoints on the proposed interventions. In particular, for interventions that will either directly or indirectly affect women (such as introduction of new technological packages, or initiatives to increase women's participation in specific activities or value chains) explore in advance the implications and attractiveness of these initiatives to men and women, and proactively identify and address areas of concern.
- Collect gender-disaggregated data where relevant for all project interventions and outcomes, addressing both intra-household and by gendered household head.
- Conduct additional inquiries into specific issues identified or unresolved in baseline analyses. These should include
  - Additional time-use surveys timed to different stages of the cereals production seasons
  - Disaggregate A-WEAI results by key areas of relevance to project activities
  - Differentiate between lowland and upland rainfed rice in the Casamance area
- Identify learning agenda questions and develop learning strategy to investigate effects of WEE strategy both for adaptive management and learning. Potential learning questions include an assessment of how the project's theory of change holds or differs across gender lines, acceptance of and impact of different technological and management packages by gender, the effectiveness of different interventions in compensating for long-standing constraints to women's participation and success in project value chains, and what dynamic impact of project activities are in terms of women's empowerment across broad lines including with respect to women's livelihoods, gender-based violence, and women's perceptions of their overall wellbeing.
- Conduct ongoing qualitative analysis to identify dynamic changes that may occur during the course of the project relating to issues such as household livelihoods, nutritional outcomes, gender-based violence, time use, and economic empowerment, among others.

## IMPLEMENTATION GUIDANCE AND NEXT STEPS

A WEE work plan will be developed to guide implementation of the WEE strategy. Naatal Mbay's Gender Specialist will lead development of the work plan with support from the DC-based Gender and Social Inclusion Advisor. This workplan will form an integral part of the project's annual work plan, and will include tailored activities to implement the previously listed strategies with specific stakeholders, project staff and partners who are responsible and/or involved, and resource requirements. Implementation of the WEE strategy and the development of metrics to support its implementation will be spearheaded by the Gender Specialist with support from the project's Communications and M&E Specialists, as well as project technical staff.

## APPENDIX A: VALUE CHAIN PRODUCTION BY ZONE AND GENDER OF HOUSEHOLD HEAD

Table A.1: SRV: Irrigated rice production by zone and gender of household head

	Delta			Middle Valley		
	MHH	FHH	Total	MHH	FHH	Total
<b>Number of plots per household</b>	1.2	1.3	1.2	1.1	1.3	1.1
<b>Average plot size (ha)</b>	1.7	3.3	1.8	0.9	0.4	0.9
<b>Quantity produced (kg)</b>	11,942	15,195	12,056	3,194	1,702	3,149
<b>Quantity sold (kg)</b>	4765	10745	4979	585	275	576
<b>Receipts from sales (FCFA)</b>	559,468	1,083,667	578,189	74,570	40,417	73,520
<b>Yield (kg/ha)</b>	7,119	5,182	7,050	4,265	4,940	4,285
<b>Share of production sold</b>	30%	42%	30%	14%	20%	15%
<b>Average price</b>	130	88	128	133	146	133
<b>Income/ha</b>	925,470	456,016	902,400	567,245	721,240	569,905

Source: Naatal Mbay (2015) Baseline Study, Feed the Future Senegal Naatal Mbay.

Table A.2: Groundnut Basin: Millet and maize production by zone and gender of household head

	Millet			Maize		
	MHH	FHH	Total	MHH	FHH	Total
<b>Number of plots per household</b>	1,6	1,3	1,6	2,1	2	2,1
<b>Average plot size (ha)</b>	2,4	1,6	2,3	1,2	0,8	1,2
<b>Quantity produced (kg)</b>	1,682	883	1,652	1,105	493	1,098
<b>Quantity sold (kg)</b>	302	157	296	260	0	257
<b>Receipts from sales (FCFA)</b>	71,999	41,692	71,121	58,577	0	58,371
<b>Yield (kg/ha)</b>	630	476	624	794	673	793
<b>Share of production sold</b>	12%	8%	12%	12%	0%	12%
<b>Average price</b>	211	163	210	202		202
<b>Income/ha</b>	132930	77588	131040	160388		160186

Source: Naatal Mbay (2015) Baseline Study, Feed the Future Senegal Naatal Mbay.



**Table A.3: SFZ: Rainfed rice and maize production by zone and gender of household head**

	Rainfed Rice			Maize		
	MHH	FHH	Total	MHH	FHH	Total
<b>Number of plots per household</b>	1.9	1.4	1.9	1.8	1.6	1.9
<b>Average plot size (ha)</b>	1.2	0.9	1.2	1.4	0.8	1.4
<b>Quantity produced (kg)</b>	595	430	582	869	364	854
<b>Quantity sold (kg)</b>	238	133	219	106	63	104
<b>Receipts from sales (FCFA)</b>	1,725	2,566	1,793	17,708	14,250	17,605
<b>Yield (kg/ha)</b>	696	666	693	674	572	671
<b>Share of production sold</b>	3%	7%	3%	6%	13%	6%
<b>Average price</b>	231	247	234	176	225	178
<b>Income/ha</b>	160,776	164,502	162,162	118,624	128,700	119,438

Source: Naatal Mbay (2015) Baseline Study, Feed the Future Senegal Naatal Mbay.

## APPENDIX B: VALUE CHAIN PRODUCTION COSTS BY ZONE AND GENDER OF HOUSEHOLD HEAD

Table B.1: SRV: Irrigated rice production costs by zone and gender of household head (FCFA/ha)

	Delta			Middle Valley		
	MHH	FHH	Total	MHH	FHH	Total
<b>Labor and services</b>						
Soil preparation	38798		38033	22324		22616
Seeding	37757		37658	25569		25447
Fertilization	599		692	688		674
Weeding	108155		108225	56414		55908
Harvest	77681		76761	17233		17024
Threshing	9886		9438	10479		10627
Storage	3171		3347	209		207
Agricultural insurance	10769		10623	1457		1650
<b>Input costs</b>						
Seeds	55015		53454	24282		24237
Fertilizer	73631		73780	74149		74175
Chemical pesticides	65164		63509	22792		22876
<b>Total expenditures</b>	<b>480625</b>		<b>475519</b>	<b>255598</b>		<b>255441</b>

Source: Naatal Mbay (2015) Baseline Study, Feed the Future Senegal Naatal Mbay.

Table B.2: Groundnut Basin: Millet and maize production costs by zone and gender of household head (FCFA/ha)

	Millet			Maize		
	MHH	FHH	Total	MHH	FHH	Total
<b>Labor and services</b>						
Soil preparation	445	0	435	2009		2025
Seeding	90	0	88	108		109
Fertilization	238	0	233	172		174
Weeding	730	555	727	897		904
Harvest	1180	578	1168	1061		1070
Threshing	12103	11495	12104	4997		5084
Storage	777	421	770	412		415

	Millet			Maize		
	MHH	FHH	Total	MHH	FHH	Total
Agricultural insurance	10	0	10	42		42
<b>Input costs</b>						
Seeds	487	756	494	1215		1228
Fertilizer	24288	20282	24225	34381		34707
Chemical pesticides	0	0	0	0		0
<b>Total expenditures</b>	<b>40348</b>	<b>34086</b>	<b>40253</b>	<b>45295</b>		<b>45757</b>

Source: Naatal Mbay (2015) Baseline Study, Feed the Future Senegal Naatal Mbay.

**Table B.3: SFZ: Rainfed rice and maize production costs by zone and gender of household head (FCFA/ha)**

	Rainfed Rice			Maize		
	MHH	FHH	Total	MHH	FHH	Total
<b>Labor and services</b>						
Soil preparation	1746	7115	1991	1784	4584	1842
Seeding	270	472	276	335	739	343
Fertilization	88	0	82	115	37	114
Weeding	393	779	407	355	2403	395
Harvest	1595	4578	1722	674	961	682
Threshing	996	4930	1179	1502	444	1488
Storage	2590	9507	2901	298	67	295
Agricultural insurance	0	24	1	47	0	47
<b>Input costs</b>						
Seeds	633	1487	668	448	621	453
Fertilizer	3003	3198	2973	11619	6174	11562
Chemical pesticides	809	165	766	2704	370	2671
<b>Total expenditures</b>	<b>12123</b>	<b>32254</b>	<b>12966</b>	<b>19880</b>	<b>16400</b>	<b>19891</b>

Source: Naatal Mbay (2015) Baseline Study, Feed the Future Senegal Naatal Mbay.