Pioneering High-Yield Rice Production in Sierra Leone: Recommendations for an Outgrower Model

May 17, 2013

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Executive Summary

The West African Rice Company (WARC) is a private sector agribusiness devoted to increasing high quality rice production in Sierra Leone, a country where poverty and food insecurity are prevalent. The mission of the company is to optimize the utilization of natural resources in Sierra Leone with the objective of producing an environmentally and economically sustainable model, maximizing the value for shareholders and for the communities within which WARC operates. WARC aims to sustainably cultivate rice and empower local communities by becoming a role model in the agricultural sector in West Africa.

WARC has asked the six-member SIPA team to create an innovative outgrower program that allows local smallholder farmers to transition from subsistence farming to commercial rice production. The proposed outgrower model can be effectively utilized for the rice sector in Sierra Leone but can potentially be transferred to other countries or sectors. The model attempts to adhere to the mission and vision of WARC by encouraging sustainable agricultural practices and empowering local communities by targeting smallholder farmers, who typically own and/or cultivate less than two hectares of land.

The proposed outgrower program has been designed in a way to ensure its success and future sustainability. The model will employ the use of land allocated by the community to promote community ownership. Furthermore, the provision of loans to farmers for the purchase of training and technical inputs by third-party financing institutions will mitigate risks associated with rural lending. Finally, the outgrower model will address the problems associated with inadequate production by introducing the System of Rice Intensification (SRI), an innovative set of management practices that give rise to higher rice yields while using fewer inputs.

Finally, the team has included a critical analysis of WARC and rice production in Sierra Leone. Extensive research into rice production systems, field visits to Sierra Leone, and interviews with rice experts have raised several questions about the profitability of rice production in Sierra Leone. These questions have informed the decisions made in designing the model. The most prominent challenge facing WARC’s financial viability is the competitive disadvantage against inexpensive imported rice. Moreover, documented success of SRI techniques has included the use of irrigation systems and fertilizer, which are currently omitted in the WARC outgrower model. Furthermore, there is a possibility of mission drift if WARC does not take progressive steps to ensure that farmers achieve higher yields and benefit from the outgrower program.

In conclusion, the model created by the team should be viable, if the critical assumptions made by WARC and the team hold true, the model is executed in a timely and replicable manner, and WARC takes the time to monitor and evaluate the progress of the model over time, making adjustments when necessary.
Client Agency

The West African Rice Company (WARC) is an agribusiness that was established in 2011 by a group of foreign investors to increase the production of high quality rice in Sierra Leone. Throughout its business operations in Sierra Leone, WARC is guided by the following principles:

Mission
WARC aims to optimize the utilization of natural resources in the West African region, with the objective of producing food in an environmentally and economically sustainable form, maximizing the value for shareholders and the communities where WARC operates.

Vision
WARC aims to be recognized as a leader in the international rice markets, sustainably cultivating rice and empowering local communities throughout the process. The company aims to become a role model in agriculture by employing innovative practices and positive impacts on local communities and the natural environment. Specifically, the current operations aim to completely eliminate the use of fossil-fuel based inputs in agricultural production in order to be environmentally friendly.

WARC intends to provide the first, locally-produced, high-quality rice brand in Sierra Leone. Currently, the rice that is produced locally in Sierra Leone is of poor quality, with stones, dust, and other impurities. WARC aims to appeal primarily to rice consumers at the mid-income and high-income levels, where these impurities have typically deterred them from purchasing locally produced rice. By positioning itself as a high-quality rice producer, WARC will gain the trust of those customers and convince those customers to purchase international quality rice, produced locally in Sierra Leone.

With branding and marketing as key points to their overall strategy, WARC plans to build brand equity by emphasizing the “Made in Sierra Leone” brand, which is not currently present in the market. Additionally, by capitalizing on the first-mover advantage of establishing its brand before other local companies start doing the same, they are in prime competitive position. Most importantly, WARC was designed out of a desire to build a socially driven and commercially viable enterprise. WARC strives to make an impact in the following ways:

- **Improving the domestic economy**
  WARC’s goal is to be a sustainable company by boosting the viability of the local economy. In Sierra Leone, and in most of the West African region, almost all of the rice consumed is imported. Through the production and commercialization of rice in Sierra Leone, WARC intends to reduce the country’s dependence on imported rice. By altering the rice production model within Sierra Leone they focus on improving the knowledge and capacity of local farmers, so that they can generate viable economic returns.

- **Environmental care**
  Environmental sustainability is key for WARC and they expect to improve the way rice is produced, in an effort to achieve the following environmentally sustainable targets:
  - Be a carbon negative company
  - Reduce by 75% the utilization of irrigated water per kg of produced rice
  - Utilize 100% electricity from renewable energy sources
  - Completely eliminate the utilization of fossil fuel-based inputs like fertilizer
  - Backed by active global impact investors with international experience and

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1 The West African Rice Company, Business Plan 2012

2 Ibid.
agricultural expertise, such as WinAgri and Masdar Initiative, WARC aims to become a worldwide role model for sustainable rice production.

- **Social sustainability**
  One of WARC’s main intentions is to spread farming best practices and knowledge with the local communities and landowners to support their household income and contribute to food security within Sierra Leone. A key aspect of this is the development of an outgrower program, where WARC and local microfinance institutions (MFIs) will provide farmers with essential services such as agricultural inputs and technical training, and in exchange the smallholder farmers will enter into contracts to supply agricultural output to WARC, grown on their own land.

Currently, WARC has plantations in Tormabum, located in the southern province of Sierra Leone. Studies conducted by the Government of Sierra Leone, have singled Tormabum out as one of the most promising regions in the country for rice production. WARC has focused on providing rice varieties that are adapted to the local conditions and tastes, in an effort to reach local consumers. Additionally, the WARC management team lives with and works closely with the local community to integrate local know-how with modern sustainable agricultural practices, resulting in more efficient water use, less chemical inputs, and reduced greenhouse gas emissions.

WARC’s first rice harvest occurred in late 2012 and was distributed across the country starting in December 2012. WARC was not able to achieve projected earnings due to crop loss caused by record high levels of flooding during the 2012 rainy season. The company is aiming to recoup losses by operating in two growing seasons from this point forward, utilizing the outgrower program during the rainy season and irrigated production on the WARC farm during the dry season.

**Background**

**Food insecurity in Sierra Leone**

Sierra Leone is one of the poorest countries in the world. In the UNDP Human Development Index (HDI), it is ranked 177 out of 185 countries based on 2012 data. About 26 percent of the population cannot afford minimum daily caloric requirements and face regular difficulties in meeting immediate needs in terms of food, shelter, and clothing. 70 percent of the population lives under the national poverty line.

There exists a high dependency on rice in Sierra Leone, the country’s staple food source, with 104kg consumed per capita per annum. However, there has been a rice deficit for the last two decades, a trend that dramatically worsened during the civil war from 1991 – 2002. Although domestic production recovered quickly after 2001, the country produces only three-quarters of its rice requirement, with remaining demand being met by imports. During the recent food price crisis, the cost of rice rose by over 50 percent between January and July 2008. On
average, households spend approximately 50 percent of their incomes on food.\textsuperscript{10}

**Agriculture Sector in Sierra Leone**

Agriculture is the backbone of Sierra Leone’s economy, accounting for 46 percent of the country’s GDP and employing about 75 percent of the population.\textsuperscript{11} Sierra Leone is endowed with sufficient arable land, favorable climatic conditions, several agro-ecologies suitable for a wide variety of crops, and ample water resources.\textsuperscript{12} Despite these abundant natural production resources, Sierra Leone has not been able to reach its full potential in the agriculture sector due to a number of challenges including a lack of expertise, weak producer organizations, low access to technology, weak infrastructure, institutional and financial obstacles to private sector development, and overall low levels of government capacity.\textsuperscript{13}

According to the US State Department’s 2011 Investment Climate Statement, agriculture accounts for over half of Sierra Leone’s income, close to 80 percent of the country’s agricultural workforce are women, and women farmers directly affect 40 percent of the national revenue.\textsuperscript{14} Like most other countries in sub-Saharan Africa, agricultural activities tend to be separated by gender. The African Development Bank has found that activities such as crop farming, household poultry raising, fish processing and marketing, and gathering of fuel wood, vegetables, herbs, fruits and nuts from forests are predominantly done by females, while cattle raising, hunting and logging for timber, fuel wood, and charcoal are dominated by males. As part of their dominant role in the crop sector, women process, preserve, store, and transport all food crops for marketing. However, their labor is mostly unpaid and they have limited access to post-harvest technologies, credit, extension services, and training and research facilities.\textsuperscript{15} Despite their significant contribution to agriculture, women in rural Sierra Leone are disadvantaged by prevailing customary practices that do not allow women to inherit land, leaving women with limited property rights.\textsuperscript{16}

**Government of Sierra Leone’s Agricultural Policies**

In its most recent Poverty Reduction Strategy Paper (PRSP) for 2009-2012, the Government of Sierra Leone (GoSL) identified agriculture as a “key strategic sector with the potential for improving revenue generation and food security.”\textsuperscript{17} Pursuant to the goals outlined in the PRSP, the GoSL created the National Sustainable Agriculture Development Plan for 2010-2030 (NSADP) as a framework to guide the strategic push to strengthen the agriculture sector. The overall objective of the NSADP is to increase agriculture sector growth from 2 percent to 6 percent per year by 2015 and increase incomes of producers. Additionally, the program aims to eradicate poverty and promote food security in line with the targets of the first Millennium Development Goal and the World Food Summit.\textsuperscript{18}

The main four subcomponents of the NSADP are:

1. The Commodity Commercialization Sub-
Programme, 2. The Agriculture Infrastructure Development Sub-Programme, 3. The Private Sector Promotion Sub-Programme, 4. The Sector Coordination and Management Sub-Programme.

Two of the four subcomponents of the NSADP that will particularly affect WARC include:

1. The *Commodity Commercialization Sub-Programme*, which targets rice, cassava, livestock, export crops (oil palm, cocoa, coffee, cashew), fisheries and forest products, will be implemented through smallholder commercialization and medium and large farm producer promotion schemes. This subcomponent positively affects WARC since it targets smallholder rice production in Sierra Leone and attempts to find ways of commercializing rice production. This is significant because it fits with WARC’s goal of attempting to create a viable outgrower model. This outgrower model is based on the idea of helping smallholder farmer’s progress from subsistence to commercial farming. This subcomponent is very much in-line with the mission and vision of WARC.

2. The *Private Sector Promotion Sub-Programme* will focus on policies and legislation to encourage sustainable domestic and international investments in the agricultural and fisheries sectors. The third subcomponent also applies to WARC since the component is based on the promotion of domestic and foreign private sector investment in the agricultural sector.

As a way to attract agricultural investment to the country, the GoSL has developed an incentives package of tax breaks and customs duty exemptions, which WARC also benefits from. These incentives include 10-year corporate tax holidays on investments in tree crops, rice, and timber, as well as zero import duty for 2011. Sierra Leone also allows 100 percent foreign ownership in all sectors, full repatriation of profits, and no limits on expatriate employees.19

**Rice Production in Sierra Leone**

Annual per capita consumption of rice in Sierra Leone is among the highest in Sub-Saharan Africa. The FAO estimates that people in Sierra Leone consume 530,000 tons of rice annually and that annual local rice production is about 200,000 tons.20 The country has to consistently rely on international rice imports to satisfy local demand. Reliance on other countries for staple food products, such as rice, is potentially destabilizing to countries like Sierra Leone since it makes them vulnerable to external shocks and dependent on other countries for staple foods.

**Historical Context**

After achieving independence from Great Britain in the 1960s, rice production in Sierra Leone began to expand. Annual rice production reached approximately 500,000 tons in the mid-late 1980s. During the civil war (1991-2002), rice production significantly decreased. The lowest recorded annual rice production was 198,000 tons in 1999, during the height of the civil war.21 Since the end of the civil war, Sierra Leone has attempted to increase its annual production of rice as a way of rebuilding its economy.

Today, rice production in Sierra Leone is primarily in the domain of small-scale farmers who produce barely enough for home consumption with little or no rice available for the market. During the 2004-2005 cropping season 56 percent of rural households cultivated less than 1 ha of farmland while only 44 percent

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19 The Oakland Institute, *Understanding Land Investment Deals in Africa: Sierra Leone* (Oakland: The Oakland Institute, 2011), 2.
21 NSADP, 2009
cultivated 1 ha and more. Rice field area per household ranged from 0.25 ha to 5.5 ha with an average of 1.06 ha.

Smallholder Farmer Constraints
The small-scale farmers in Sierra Leone are generally resource poor, with only the hoe, axe and cutlass as the main tools, while labor is mainly supplied by family members thereby severely limiting their scale of production. Less than 5 percent of farmers in the sector have access to chemical fertilizers, herbicides, insecticides or motorized farm equipment. Widespread use of unimproved varieties, coupled with unchanged cultural practices, adversely affects rice production.

After harvest most of the farmers leave rice bundles in the field to dry. Threshing and winnowing are invariably done by hand and further drying is on mud floors and tarmac roads. Access to concrete drying floors is limited to a small proportion of farmers in the country. The quality of local rice marketed is generally low due mainly due to the lack of use of modern rice mills. Most of the rice mills were destroyed or rendered non-functional during the war. In 2004, a total of 53 small-scale rice mills existed in the country. Sixty percent of these mills were in the Northern Province. Traditional methods and the use of steel roller mills constitute the major means of rice processing in the country.

There are multiple constraints commercializing smallholder production. Higher levels of agricultural technology are not affordable due to low economic returns from commodities. There is a lack of rice milling facilities, feed mills and mechanics to ensure that farmers can benefit from sales of their final products, and use of mechanized technologies. Fertilizer use at 4kg/ha compared to 9kg/ha for sub-Saharan Africa is low due to high prices and lack of commercial markets for fertilizable commodities such as rice.

Furthermore, the absence of irrigation infrastructure significantly constrains agricultural productivity. Mean annual rainfall is around 2500 mm but distribution is not uniform, resulting in water surplus during the rainy season (i.e. May – October) and water deficit during the dry season (i.e. November – April). Some 20 –50 percent of the total annual rainfall is “lost” to runoff resulting in water deficits as much as 500 mm per annum in some agro climatic regions. The persistence of such deficits in some areas limits crop and animal production activities during the period.

Potential for Progress
In spite of these difficulties there is a real potential for more intensified agricultural production, greater value addition, and marketing – through domestic and international outlet. Only 10 percent of cultivable land is cropped each year, amounting to around 600,000 hectares. With around 5 percent of smallholder farmers using fertilizer, herbicides and pesticides and mechanized machinery, any increase from this low base will lead to higher production figures. Furthermore, post-harvest losses are estimated to stand at around 40 percent. Reducing these losses would generate considerable additional income for farmers and also increase food security.

Since the FAO report in 2004, self-sufficiency in rice has increased in Sierra Leone. In 2002, Sierra Leone was 57.45 percent self-sufficient in rice, and by 2007, the country was 71 percent self-sufficient. While progress has certainly been made with regard to rice self-sufficiency, the country still must significantly increase its production to meet local demand. Additionally, rising international prices have made international rice imports significantly more

23 Ibid.
24 NSADP, 2009
expensive for the people of Sierra Leone. Therefore, it has become even more critical that Sierra Leone formulates a strategy to increase rice productivity so that it can better feed its population.

**Government of Sierra Leone’s National Rice Development Strategy**

Rice is so important to food security in Sierra Leone that in 2009 the government created the National Rice Development Strategy (NRDS), which restricts government interventions and supports private sector processes in rice cultivation and marketing. By encouraging local, private sector production of rice, the government of Sierra Leone hopes to create a system of rice self-sufficiency within the country. The specific objectives of the NRDS are to:

1. Ensure an increase in the sustainable productivity and production of rice in Sierra Leone
2. Promote appropriate post-harvest handling, processing and marketing of rice
3. Develop appropriate infrastructure for rice production and marketing
4. Improve the capacity of stakeholders and institutions involved in the rice sector

**Business Models for Agricultural Production**

Agricultural production in Sierra Leone typically involves two main forms of employment: wage labor and contract farming or farmer outgrower schemes. Under wage labor arrangements, local workers are directly employed to farm the land owned by commercial farms. In contract farming or outgrower schemes, local farmers enter into a contract with a company to grow agricultural produce on their own land and deliver a specified quantity and quality at an agreed date. In exchange for the produce, the company provides inputs, such as credit, seeds, fertilizer, pesticides, and technical training. An outgrower arrangement is often considered to be a more favorable way of employing local labor since it makes use of existing smallholder systems rather than undermining them. Furthermore, this model provides mutual benefits of supply for the investor as well as increased income for local farmers.

**Figure 1: Outgrower scheme**


**Project Objectives**

Considering the goals of WARC and its corporate values, the objectives of our project are to:

- Provide assistance to develop a commercially and environmentally sustainable model for an outgrower program, in light of the models being supported by the Sierra Leone Government’s Smallholder Commercialization Programme (SCP) and the

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25 Ibid.
26 Ibid.
28 Sonja Vermeulen and Lorenzo Cotula, “Making the most of agricultural investment: A survey of business models that provide opportunities for smallholders,” *FAO and IIED*, 2010
experience with similar models elsewhere in Africa or beyond.

- Consult with WARC, local agriculture and agribusiness experts, local male and female smallholder farmers, community leaders, local producer associations/organizations, sellers of rice in the local markets in Freetown and around Tormabum and other stakeholders (Ministry of Agriculture, Ministry of Finance, private companies, NGOs) under the National Sustainable Agriculture Development Plan (NSADP) to be able to analyze the political, economic, social and technological conditions under which WARC’s business model works and on which the outgrower program can be built on. During this consultation period, the team will also assess the possibility of incorporating women into the sustainable outgrower model.

- Make recommendations on how to implement and ensure the sustainability of the outgrower model.

Methodology

Research question
The purpose of our project was to determine the best possible way of creating a long-term, sustainable, profitable outgrower program for smallholder rice farmers in Sierra Leone. Encompassed in this primary research question are several sub-questions:

1. Is any outgrower program likely to be adopted by local farmers in Tormabum? If so, will this model fairly represent the interests of the farmers?
2. Are the local farmers willing to participate in an outgrower program? What are the incentives that exist for the adoption of the program?
3. What are the expectations of the local farmers with regard to the outgrower program? Are these expectations in line with the expectations of WARC?
4. Will the outgrower program be viable in Sierra Leone? Why or why not?
5. What are the challenges and opportunities for profitable commercial rice production in a system of outgrower programs that target small scale rice farmers?
6. What type of incentive structure can be created to attract small farmers to the outgrower program?
7. Which productivity factors – credit, inputs, technical expertise, etc. - can be used to move farmers from small scale to commercial rice producers given the social, economic, and political context of Sierra Leone.

Key Concepts
To answer our research questions we needed to identify the key concepts associated with the project, and create a methodology to best assess the current political, social, and economic climate in Sierra Leone with regard to the creation of an outgrower program.

Farmer Cooperatives/Farmer Based Organizations: Groups comprising 5-20 farmers that are organized around common interested and farming goals. These groups will sign a contract as a group and take loans from a microfinance lender as a group.

Floor-ceiling cap: The idea that a contract between WARC and farmers will not have a fixed price, rather there will be an upper and lower limit set on prices. This is to provide a safety net for farmers so that they will not be forced to sell their rice at too low a price and as a safety net for WARC so the company will not be forced to buy the rice from farmers at too high of a price.

Incentive Structures: Structures that can be created to motivate small-farmers in Sierra Leone to adopt the outgrower model. These consist of the following:
Pioneering High-Yield Rice Production in Sierra Leone

- **Economic Incentives:** Based on supply and demand structures, farmers that supply better quality rice to the upper and middle-classes in Sierra Leone will have increased demand for their product once a market is created.
- **Financial Incentives:** Farmers can expect a monetary reward in exchange for growing rice according to the quality standards of WARC and its customers.
- **Moral Incentives:** Farmers choose to grow higher quality/more environmentally sustainable rice because it is perceived as a moral obligation.
- **Social Incentives:** Many farmers choose to adopt WARC’s outgrower model, thereby convincing surrounding farmers to also adopt the model. Trust and solidarity among farmers are essential to making social incentives effective.

**Microfinance:** The provision of financial services to micro-entrepreneurs and small businesses that lack access to traditional banking or related services due to the high transaction costs of serving these small clients.

**Opportunity Cost:** The loss of potential gain from other alternatives when one alternative is chosen.

**Outgrower Program:** Outgrower programs, also known as contract farming, are broadly defined as binding arrangements through which a firm ensures its supply of agricultural products by individual or groups of farmers. An example of an outgrower scheme is a COOP. It is used as a way of helping small farmers move from subsistence to commercial farming and improve the livelihoods of the small farmers.

- **Nucleus Approach:** The buyer operates centralized production and processing, and supplements the growers throughout the process by directly contracting with the outgrowers. The buyer owns and controls the land used by the farmers. The farmers provide labor. The buyer supplies technical assistance, inputs, credit, monitoring, and supervision.
- **Community Approach:** The buyer provides technical assistance, direct inputs, purchases the crop, and handles many of the post-harvest activities. The farmers provide the land and labor. There is a high degree of buyer/farmer coordination, strict product specifications, and monitoring by in-house technical staff.

**OSF (Organized Small Farmers):** The variation of an outgrower model, proposed by WARC, comprised of small landholders—approximately 2.5-5 acres—that cultivate rice in Sierra Leone. These small farmers will be organized into an umbrella group by WARC to create an outgrower scheme.

**Productivity Factors:** In the context of the project, the productivity factors are available supplies of labor, land, raw materials, inputs, capital facilities, technical expertise, and credit that will affect the level of productivity in rice production.

**Public Private Partnerships:** A government service or private business venture that is funded and operated through a partnership between a government and a private company.

**System of Rice Intensification (SRI):** SRI is an agro-ecological methodology for increasing the productivity of irrigated rice by changing the management of plants, soil, water and nutrients. SRI originated in Madagascar in the 1980s and is based on the cropping principles of significantly reducing plant population, improving soil conditions and irrigation methods for root and plant development, and improving plant establishment methods. SRI methodology is based on four main principles that interact with each other: 1) Early, quick and healthy plant establishment; 2) Reduced plant density; 3) Improved soil conditions through enrichment with organic matter; and 4) Reduced and controlled water application.
Value Chain: In the context of the project, the value chain is a chain of activities beginning from providing inputs to farmers by the WARC until delivering rice to middle or high-income customers in the domestic market.

Methods and tools
An in-depth situational and contextual analysis of the existing and historical economic, political, gender, and social conditions of Sierra Leone is needed to understand the motivations of the project and how these motivations can best be carried out given the economic, political, and social contexts of Sierra Leone. This analysis has helped the team to better identify the specific stakeholders and the role that they occupy in the broader framework of smallholder farms in Sierra Leone.

Stakeholder Analysis
The Stakeholder Analysis (see Annex I-III) depicts the various stakeholders that are in some manner connected to the outgrower program. It shows the relationship that WARC has to the various stakeholders, including NGOs, universities, several government ministries, UN organizations, private companies, and investors. By identifying the key actors involved in the project the team was able to better understand WARC's role in the greater Sierra Leone agricultural context.

SWOT Analysis
The team created a SWOT analysis (see Annex IV-V) to map out the strengths, weaknesses, opportunities, and threats to WARC. This was created to assess the current situation if WARC in the wider context of Sierra Leone in the framework of their business model to identify the potential strengths and weaknesses of WARC as a company. Identification of the strengths and weaknesses allowed the team to better understand the context within which WARC is operating within Sierra Leone. Additionally, the SWOT analysis helped the team to model WARC's outgrower program in such a way that WARC could take full advantage its strengths and the opportunities that exist while mitigating possible threats.

PEST Analysis
The team created a PEST Analysis of WARC (see Annex VI) to map out the political, economic, social, and technological situation in Sierra Leone, including possible risks with investment and the political situation concerning the government, the current situation of the farmers in Tormabum, and the available technologies for smallholder farmers in the rice sector. Each of these components helped to inform the group about the areas that WARC can make an impact on the sector with regard to its outgrower program as well as the social and political challenges that the team had to confront in the creation of an outgrower program.

WARC Partnerships
The team analyzed WARC’s potential for partnerships in a SWOT Partnership Analysis and a Competition/Collaboration framework (see Annex V & VII) to best understand the areas where WARC could be compatible with other stakeholders in Sierra Leone. The SWOT Partnership Analysis analyzed the methods by which WARC could reduce some of its risk and increase its opportunities by entering a partnership. It also investigated the challenges and risks that may occur if WARC chooses to partner with another organization. The Competition/Collaboration framework built upon the SWOT Partnership Analysis by analyzing each stakeholder and exploring the risks and challenges of WARC partnering with each of them. By creating a table of the potential partners based on competition or collaboration the team was able to determine the best possible partnerships for WARC according to WARC's mission, vision, and values.

Interview Guides
The team decided to use a semi-structured interview guide when interviewing smallholder
rice farmers in the field. The semi-structured interview guide helped the team identify the type of smallholder farmer that would be interested in participating in an outgrower model with WARC and the priorities of the farmers in terms of inputs and outputs. The interview guide is semi-structured because we wanted to hear what farmers had to say about agriculture in Sierra Leone. The team wanted to be able to go on tangents since the team was attempting to obtain a deeper understanding of the context within which smallholder farmers operate in Sierra Leone. The interview guides were altered between the January and March trips to reflect some of the new questions that had arisen as a result of further research (see Annex VIII – IX).

**SRI Adoption**

A key component of the WARC business model is the establishment of an outgrower operation that incorporates smallholder farmers. Achieving higher yields on smallholder plots is fundamental to its viability, and WARC believes that through the adoption of a technique known as the System of Rice Intensification (SRI), farmers will increase output and transition from subsistence to commercial rice production.

The System of Rice Intensification was originally developed in the highlands of Madagascar by Henri de Laulanié, who published his results in 1993. Laulanié brought together three essential principles: planting young seedlings, planting single seedlings, and applying minimal irrigation water to keep the soil just at or below saturation. These three essential elements were complemented by “general principles of improved rice cultivation” encompassing recommendations for drainage and irrigation in general, nursery establishment, careful and wide transplanting, land preparation, weeding, and harvest.

According to the SRI International Network and Resources Center at Cornell University, SRI is currently “based upon a set of principles and practices for increasing the productivity of irrigated rice by changing the management of plants, soil, water, and nutrients” and it “is not a recipe of precise things to do.” In summary, they indicate that the major SRI principles follow:

- **Rice plants**: Transplanted very young seedlings carefully and quickly, and singly, and space them widely in a square grid pattern
- **Soil**: Keep moist but well drained with good structure and organic matter.
- **Water**: Apply a minimum of water to keep soil moist but well drained.
- **Nutrients**: Augment soil nutrients preferably with compost.
- **Weeds**: Do early and regular weeding, using hand or mechanical weed control and incorporating weeds into the soil.

In order to incorporate smallholder farmers into the model, which mandates the adoption of SRI techniques, WARC needs to 1) demonstrate the benefits of SRI over traditional farming practices and 2) provide farmers with the appropriate incentive structure for partnering with WARC.

The following SRI Adoption Decision Tree provides an overview of the key assumptions and requisite steps for getting smallholders to adopt SRI techniques and participate in the outgrower program:
Figure 2: SRI adoption decision tree

**SRI Adoption Process**

- **Overall Assumptions**
  - Pilot was conducted in 2013 and success with SRI was documented
  - Community-owned land that is not currently being used will be made available for the outgrower program
  - Working on SRI land does not reduce farmer household's capacity to grow enough on family plot to meet household caloric needs

- **Initial Steps**
  - Community meetings led by WARC representative to raise awareness
  - Decentralized Farmer Field Schools established as demonstration plots on unused community land

- **Requirements for Participation**
  - Must be FBO member and have min 4 other members willing to participate and take a group loan
  - Must be willing to sign contract

- **WarC holds workshop to review success of FFS and market outgrower program**

- **Assumptions:**
  - Communities are willing to provide land
  - SRI was successful (Indicators: % increase in yield post FFS; increased tillering of rice crop and denser rooting
  - Community members are willing to participate in FFS (Indicators: % of farmers attending FFS; MOV*; sign in sheet; % of farmers that attempt techniques)
  - Enough community members have seen the demonstration plots

- **Next Steps:**
  - Farmers sign contracts with WARC
  - WARC provides training and distributes inputs

- **WarC launches outgrower program**

- **Reasons for Rej ecting SRI:**
  - Technique is labor intensive and time consuming
  - Farmers are not willing to take a loan and cannot afford inputs
  - The right incentives do not exist to abandon traditional practices
  - Farmers do not believe that SRI will increase yields

- **Next Steps:**
  - WarC Additional farmer testimony
  - Show farmers successful SRI demonstration plots
  - Additional, specialized training to include financial planning Re-evaluation of WarC incentive structure (if many farmers say no)
In 2013, WARC initiated a pilot program, where SRI techniques are used on land leased to WARC. Obtaining higher rice yields on this land is a critical first step in demonstrating the feasibility of the technology in the region. Following the initial program, it is necessary for WARC to engage with villagers and raise awareness of the results. This can be achieved through a series of community led meetings.

The next step for SRI adoption is demonstrating the technique in each of the participating villages. Assuming that community land is available and farmers are eager to learn the benefits of the new techniques, WARC will establish SRI demonstration plots in each village. The demonstration plots will allow farmers to directly compare SRI yields with those from their traditional farming practices.

Our field research indicates that farmers are willing to adopt new farming practices only if they see firsthand their benefit. A farmer field school (FFS) will be established for each demonstration plot, and farmers will gain insight into the practice of SRI. Farmer field schools are widely used across developing countries as an approach that encourages collaboration among farmers to make decisions, solve problems, and learn new agricultural techniques. After SRI has been successfully demonstrated in the villages, WARC will begin to implement the outgrower model.

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Figure 3: Outgrower model
WARC Outgrower Model Recommendations

The following sections detail the key issues/challenges, opportunities, and risks for each critical component of the model: SRI adoption, land selection, farmer selection, financing, contracts, and monitoring. The SRI adoption section provides general recommendations for facilitating the adoption of SRI, while the sections on land selection, farmer selection, financing, contracts, and monitoring are specific to the outgrower model. Each section provides metrics for evaluating the implementation of the model and describes how the recommendations meet the mission and vision of WARC.

SRI Adoption Recommendations:

1. WARC representatives hold community meetings throughout the chiefdom to raise awareness of SRI and the advantages over traditional practices that it offers, the key message being higher yields with fewer inputs (seed, water, and fertilizer). The WARC representative probes into the possibility of farmers organizing into farmer field schools (FFS) to receive specialized SRI training and begin implementing the technique on a designated plot of community land. WARC’s objective is to have a critical mass of farmer field schools practicing SRI with noted improvements in yields per hectare. WARC will monitor farmer field schools on a regular basis to ensure that farmers have grown proficient in implementing the technique.

2. Administer specialized SRI training to farmers: studies show that formal education becomes less important when agricultural training attended by farmers is special in SRI training. Evidence from Western Java showed that given the same formal educational level, a farmer who participates in SRI training is 34% more likely to adopt SRI than who does not.32

3. Malagasy SRI farmers repeatedly emphasize the importance of instruction in or observation of the new methods as practiced by others.33

Farmers for the SRI pilot should be selected based on specific criteria:

- Farming is the only source of income (In Sri Lanka, it was found that farmers with off-farm activities generate a high opportunity cost to the time spent in SRI cultivation).31
- Numeracy requirement for lead FBO farmer
- Strong work ethic (given the higher labor demands of transplanting and weeding in SRI)

WARC will be responsible for providing all inputs for the trial, including training, seed, organic fertilizer, mechanical weeders, and mechanized harvesting. WARC will finance the inputs using loans extended by Union Trust Bank or Kiva (the financing options available to WARC are detailed in a subsequent section).

WARC hopes that a series of successful SRI demonstrations will establish the credibility of the technique and help overcome the mental disposition against accepting that so many benefits can be obtained so simply (changing the management of plants, soil, water and nutrients, rather than investing in improving crop genetic potentials or buying and using new seeds or manufactured inputs).


32 Teresa Beadman, “Assessing the adoption of the System of Rice Intensification (SRI) in West Java, Indonesia” (MSc Thesis., Imperial College London, 2009).

33 Moser, Christine M., and Christopher B. Barrett, “Labor, Liquidity, Learning, Conformity and Smallholder Technology Adoption: The Case of SRI in Madagascar.”
Issues/Challenges:

- There are hardly any proven successes of SRI in rain-fed areas. In fact, SRI is fundamentally a strategy of irrigated rice production by virtue of the precise level of water control that must be exercised. According to Norman Uphoff, the leading proponent of SRI, “If there are no properly functioning irrigation structures and/or no effective bureaucracy managing water in large irrigation systems and/or no effective organization among water users in smaller ones, water management becomes a limiting factor for the utilization of SRI.”
- Compared to the long-standing practice of broadcasting, farmers find transplanting single seedlings on a 25cm x 25 cm grid laborious, time consuming, and monotonous.
- Farmers are reluctant to take out loans to pay for technical package and inputs due to a preconceived notion that taking a loan out leads to indebtedness.
- Farmers do not have a firm grasp of SRI due to failure of the training-of-trainers (ToT) approach. Due to the novelty of SRI, training must entail a reorientation of thinking and ensuing practice. Farmers, for instance, are accustomed to the practice of flooding the field at the planting stage and will not readily accept the notion that a cycle of wetting and drying—instead of flooding—is better for plant growth.
- Farmers deem the incentives for participating in the outgrower program weak because WARC does not offer guarantees to protect farmers from potential crop failure. This anxiety will likely be compounded by WARC’s refusal to intervene on behalf of farmers should they fail to repay loans due to a bad harvest.

Opportunities:

- An increase in yields will permit transition from subsistence to commercial farming, which will generate additional income for smallholder households. By the same token, higher yields are essential for WARC’s financial viability and competitiveness.
- The use of organic matter and non-flooding of fields is a potential cost-saver for farmers operating under resource-limited conditions.

Risks:

- SRI requires a precise water management regime; the field must be maintained under saturated conditions immediately after transplanting followed by a wetting and drying cycle. Excessive flooding will undermine efforts to administer such precise water control.
- SRI plots are supposed to be kept saturated until flowering, but rainfall patterns in Sierra Leone may not always allow this practice. Experience with rain-fed SRI in nearby Mali is instructive: frequent rains in the trial location occurred in 2009 and 2010 and drainage was not always possible. Consequently, plots were sometimes maintained with standing water for 3-7 days (depending on rainfall intensity and frequency). Based on recent rainfall patterns in the Bum district, the likelihood

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35 Alternate wetting and drying (AWD) is an irrigation technique where water is applied to the field a number of days after disappearance of ponded water. This is in contrast to the traditional irrigation practice of continuous flooding (i.e., never letting the ponded water disappear). This means that the rice fields are not kept continuously submerged but are allowed to dry intermittently during the rice growing stage.
of excessive or non-uniform rainfall undermining water control practices is not trivial.

**Metrics:**
- Yields increase substantially (reaching WARC’s benchmark of 40 bushels per acre)
- Alternate wetting and drying increases nutrient availability (especially nitrogen)
- Increased tillering and density of roots
- Increased plant height
- Water saving is irrelevant because water resources are abundant, though future water scarcity pressures will no doubt heighten the need for water-efficient cultivation.

<table>
<thead>
<tr>
<th>SRI adoption</th>
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<tbody>
<tr>
<td><strong>Mission</strong></td>
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<td><strong>Vision</strong></td>
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**Land Selection**
Proper land selection is critical to the success of the outgrower program to ensure that the best yields are obtained. WARC has an established presence in the Tormabum region and knowledge of the terrain, having cultivated 350 hectares of rice in the 2012 growing season. The land selected by WARC to be used for the outgrower program should be in areas that have been proven to be highly productive for rice cultivation. Most importantly, in order for SRI to succeed in achieving higher yields, there must be a high degree of water control to allow cultivated land to receive sufficient moisture without being flooded.

When choosing the land to be cultivated by farmers participating in the outgrower program, WARC has the following two options:

1. **Nucleus-estate approach**
   Through this approach, WARC would lease a centralized plot of land and outgrowers would travel from surrounding villages to farm this land. In exchange for farmer labor, WARC would supply technical assistance, machinery, and inputs such as seed.

   The potential benefits of utilizing this method of outgrowing are 1) WARC can maintain a high level of control over the supply chain 2) technical assistance and monitoring of farmers will be simplified. One of the potential drawbacks is accessibility of the land selected for the outgrower program, which may be at a significant distance from certain villages and difficult for farmers to reach given the lack of transportation in the area.

2. **Community approach**
   Through this method of land selection, WARC would enter into an agreement with one or several of the villages that have land deemed suitable for rice production using the SRI method. Tormabum is endowed with an abundance of arable land. Discussions with village leaders during team field visits in Tormabum revealed that villages have several hundred unutilized acres that they would be willing to allocate to the WARC outgrower program. The village chief, in conjunction with the lead farmer, would determine how land would be divided among farmers participating in the outgrower program.
Recommendations:
Based on research conducted of existing outgrower programs and feedback received from farmers living in Tormabum, it is recommended that WARC utilize the community approach when selecting land for the outgrower program. The centralized approach shares many similarities with large-scale landholdings or plantation systems, which have been increasingly criticized in Sierra Leone for their perceived exploitation of farmers. The community approach mitigates such criticism and promotes local ownership, as outgrower farmers will be cultivating their own land. Farmers interviewed also expressed a strong preference for utilizing community land for the outgrower program as opposed to traveling to land owned by WARC.

Issues/Challenges:
- WARC must be able to secure the support of village chiefs and community members to utilize land when implementing the outgrower program through the community approach
- Villages that express willingness to contribute community land to the outgrower program must have land that WARC deems suitable for successfully implementing SRI techniques

Opportunities:
- Through the community approach, land that had previously been unutilized due to a lack of capital can generate income for the overall benefit of community members.

Risks:
- Villages may demand payment from WARC for use of their land

Metrics:
- Memorandum of Understanding signed with village chiefs outlining the terms of usage for the community plot of land being allocated for the outgrower program
- Number of acres of community land allocated

<table>
<thead>
<tr>
<th>Land selection: community approach</th>
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<tbody>
<tr>
<td><strong>Mission</strong></td>
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<td><strong>Vision</strong></td>
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Farmer Selection
The majority of outgrower schemes that aim to achieve scale engage with farmers in groups, rather than on an individual basis. If executed successfully, working with groups of farmers offers a way to continue incorporating more farmers while keeping resources needed to manage growers at a minimum and also developing the capacity of lead farmers and/or farmer associations. Working with farmers in a group also can contribute to building and maintaining trust by generating broader benefits, effectively empowering group members and dynamics, and also encouraging greater transparency.

Recommendations:
Through the Smallholder Commercialization Program, the Government of Sierra Leone is placing an emphasis on organizing farmers into Farmer Based Organizations (FBOs) as a means to strengthen the productive capacity of smallholder farmers. Several of these FBOs then come together to manage Agricultural Business
Centers (ABCs), which provide a range of technical, operational and marketing services to smallholders. These existing farmer organizations will serve as the ideal vehicle through which WARC can select participants for the outgrower program. Farmers who will participate in the outgrower program should be members of FBOs to facilitate training and financing, which will be distributed to groups as opposed to individuals.

There is currently one ABC called Tolondo operating in Tormabum. The Tolondo ABC is made up of 50 FBOs (comprising 30-50 members each) and 5 additional FBOs will join in the near future. In conjunction with the ABC Chairman, WARC should identify the villages that have a critical mass of farmers who are members of FBOs. Since farmers will receive financing as a group, it is recommended that each village participating in the outgrower program contain a minimum of five FBO members. As women currently contribute to a significant proportion of agricultural production in Sierra Leone, participation in the WARC outgrower model should reflect national trends by targeting a minimum of 50 percent female participation. When selecting participating farmers, WARC should give priority to those living in villages that meet the criteria established for land selection.

**Issues/Challenges:**
- WARC has expressed a desire to have 50 percent female participation in the outgrower program, however meeting this criterion will be contingent upon female membership in FBOs.

**Opportunities:**
- By utilizing existing farmer-based structures established by the Government of Sierra Leone, the WARC outgrower program can contribute to helping achieving the goal of strengthening farmer organizations.

**Risks:**
- When utilizing the community approach, WARC faces the constraint of identifying villages with a sufficient number of farmers who are already members of existing FBOs to participate in the outgrower program.

**Metrics:**
- Number of FBO farmers participating in outgrower program
- Share of female participation in outgrower program

<table>
<thead>
<tr>
<th>Farmer selection: groups of FBO members in each village</th>
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<tr>
<td><strong>Mission</strong></td>
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<td><strong>Vision</strong></td>
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**Financing**
Access to financing for participating farmers is a critical component for the success of the outgrower program. Through a partnership established with a financial institution, WARC will ensure that outgrowers have access to capital that will be used to finance the purchase of a technical package to be provided by WARC. This technical package will include inputs such as seed and fertilizer, training on SRI, use of machinery for land preparation and harvesting, and monitoring and extension services. The cost of the package is 805,000 Leones per hectare. Assuming each farmer would participate in the outgrower model on an average of 3 hectares,
s/he should receive a loan of approximately 2.4 million Leones (USD 550).  

**Recommendations:**
The following two options have been identified as the most viable financial partnerships for the WARC outgrower program, and it is recommended that WARC employ a two-part financing system as a way of sharing risks among microfinance organizations.

<table>
<thead>
<tr>
<th>Part 1: WARC partners with KIVA and acts as an intermediary between KIVA and farmer organizations.</th>
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</table>

Kiva is a nonprofit organization operating a web-based loan program that allows individuals to lend money to people in developing countries through established field partners. We recommend that WARC pursue a direct loan option with Kiva, as this financing option will reduce the amount of risk that WARC has to undertake. WARC should have this loan from Kiva finance only a part of the outgrower model, and should receive the rest of its financing from another microfinance institution, such as Union Trust Bank. To follow this option WARC needs to hire at least one full-time permanent staff member to monitor and administer the loans, as well as give updates on the Kiva websites. The loan from Kiva should be given to farmer groups, not individual farmers; this is because the contracts are organized according to groups and to make things easier the loans should be organized according to the contract groups.

**Issues/Challenges:**
- WARC does not want to be responsible for the loans of smallholder farmers in Tormabum since acting as a lending institution would put a significant amount of risk on WARC. Partnering with a strong international financial institution, such as Kiva, would transfer the risk away from WARC and onto Kiva. Kiva can provide the loans to farmers with minimal risk.
- For a partnership with Kiva to be successful WARC must first organize the smallholder rice farmers into groups, post photos of those farmers on the Kiva website, and provide Kiva and investors with regular updates on the farmers. This entire process is time intensive for WARC and WARC may not have the time or resources to give to the process. WARC needs to focus on other key areas of its company, such as its viability.
- Additionally, WARC needs to collect the loan repayment from farmers and pay this money to Kiva. This is risky for WARC because WARC is acting as the guarantor for the loan and has to be responsible for ensuring that farmers repay their loans. This could put WARC in a precarious position with the farming community in Tormabum.
- Lastly, WARC would need to hire someone from the local community to collect the loans and monitor the progress of the smallholder farmers. The person from the local community has to be competent enough to collect the loans and has to be widely respected by the farmers in the community.

**Opportunities:**
- Kiva is actively attempting to move into more direct partnerships like the one proposed with WARC in the future. There are incentives for Kiva to make this partnership with WARC successful, meaning that farmer default rate may not be a deterrent for Kiva to enter the market. Moreover, Kiva is looking for an agricultural partner in Sierra Leone. WARC is one of a few companies that is operating a social enterprise in the agricultural sector in Sierra Leone, making it an ideal candidate for a partnership with Kiva.
- Another opportunity is that WARC would have direct access to the financing from Kiva and would be able to distribute this

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financing accordingly. By having direct access to the financing, WARC would have more control; there is no middleman in the WARC/ Kiva partnership so WARC could potentially save time and money by administering the loans from within their company.

- Loans would be repaid in bullet form at the end of the harvest; this is ideal for WARC and farmers because farmers do not have any income throughout the growing season and cannot afford to pay the monthly interest rates on the loans. WARC is in a similar position.

Risks:
- The primary risk is that farmers could fail to repay their loans and WARC would be unable to borrow from Kiva in the future. There are few incentives in Kiva’s lending plan that encourage repayment since all loans are treated like donations on the website; there are no significant penalties when farmers default on their loans. These loans are not enforceable by the local government, thus further decreasing the incentives of farmers to repay the loans.
- Farmers may not want to borrow from Kiva or take loans.
- The farmer groups may not be funded on Kiva website in 30 days. If the group cannot have determined amount of funding during 30 days, Kiva does not provide loan to those farmers.

Metrics:
- Repayment rate of loans
- Number of farmers interested in taking loans from Kiva
- Monitoring to ensure that the farmers are using the loan for SRI on community land and not on their personal plots
- Default rate on loans (without a valid excuse such as flood or drought)
- The number of farmers that continue with the outgrower program and take loans from Kiva again after the first year.

Part 2: Farmers access loans from Union Trust Bank (UTB) via Agricultural Business Center (ABC) in Tormabum.

Union Trust Bank is one of the few commercial banks in Sierra Leone that provides agricultural financing. We recommend that WARC partner with UTB to provide farmers with loans to purchase the WARC technical package. In this financing option, UTB will provide the loan to the ABC in Tormabum to be used specifically for the purchase of the WARC package. The ABC will directly transfer the loan to WARC as payment for WARC packages, which include inputs, training on SRI, use of machinery for land preparation and harvesting, and monitoring and extension services. The loan will be repaid to UTB by WARC after it sells the rice in the market. This arrangement will serve to mitigate the risk of non-repayment of the loan by the farmers. In this option, WARC connects farmers to market and increase the probability of repayment by farmers in return for UTB taking risk of non-repayment.

Issues/Challenges:
- WARC does not want to be responsible for the loans of smallholder farmers in Tormabum since acting as a lending institution would put a significant amount of risk on WARC. Partnering with a strong financial institution, such as UTB, would transfer the risk away from WARC and onto UTB.
- Soros Economic Development Fund (SEDF) and African Development Bank (ADB), which are the creditors of UTB for microloans and loans to small and medium sized enterprises (SMEs), may stop funding
As a result, UTB may not continue giving loans to farmers.

- WARC has to make sure that farmers are willing to take loan from UTB although it does not reach to them directly.

- Farmers may prefer to take loan directly from ABC and decide how to use themselves.

Opportunities:

- Unlike other financial institutions in Sierra Leone, UTB’s primary focus is to lend to small and medium enterprises (SMEs) and increase lending in rural areas, targeting the low-income segment; providing financial services in rural areas and micro finance is part of their mission.

- UTB is the largest providers of financial services in Sierra Leone and they have rural branches including one branch in Bo.

- UTB is not asking for guarantee from farmers or WARC (ADB is guaranteeing the loan that UTB gives to ABC in Tormabum).

- Soros Economic Development Foundation has invested 4.44 million dollars (equity and debt) in UTB to expand its operations in lending SMEs and in rural areas and to specifically target agribusinesses, thereby creating jobs and alleviating poverty in one of Africa’s most impoverished countries.

- AfriCap owns preference shares of UTB since 2006.

- UTB’s loans for SMEs start from 3 million Leones (approximately $700) and goes up to 5 million Leones (approximately $1,150). WARC needs 2.4 million Leones for each farmer on average.

- UTB has also given loans to farmer groups in the amount of 30-40 million Leones (approximately $6,850-$9,140).

- UTB is experienced in giving loans to agriculture sector. It has already provided loans to SL Brewery, World Food Programme and USAID project-Promoting Agriculture, Governance and Environment (PAGE).

Risks:

- The primary risk is that WARC could fail to repay the loans and farmers would be unable to borrow from UTB in the future. This may happen due to failure of SRI or natural disaster like floods or price of rice in the market falls drastically. As a result, UTB may stop giving loans to the farmers.

- Farmers may not want to borrow from UTB or take loans.

Metrics:

- Repayment rate of loans
- Number of farmers interested in taking loans from UTB
- Default rate on loans (without a valid excuse such as flood or drought)
- The number of farmers that continue with the outgrower program and take loans from UTB again after the first year.

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43 Ibid.
Financing: KIVA and UTB

<table>
<thead>
<tr>
<th>Mission</th>
<th>WARC mitigates the risk of financing when farmers get loans from KIVA and UTB. This allows WARC producing food in an economically sustainable form and maximizing value for shareholders.</th>
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<tbody>
<tr>
<td>Vision</td>
<td>Through WARC’s outgrower model, financing institutions connect with farmers in rural areas (Tormabum) and this facilitates positive impact on local communities.</td>
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Contracts

Contracts are essential to the outgrower program to establish the business relationship with WARC and the local smallholder farmers. If structured appropriately and communicated effectively, contracts can facilitate transparency and help to build trust between the company and the farmers, which is vital for long-term success.\(^4^4\)

The contracts between WARC and the farmers in the Tormabum community should be signed with lead farmers at the ABC level, and then the lead farmer will have subcontracts with their farmers groups (that are based on the formal FBOs organizational structure). The main purpose of these contracts is to clearly explain the working relationship where, in exchange for inputs and training, farmers agree to work and grow rice on the community land and provide an agreed upon amount of yield to WARC directly.

When entering into agreements with farmers participating in the outgrower program, WARC has the following contract options:

1. **Fixed price** - the company offers the outgrower a fixed price at the beginning of the season
2. **Flexible price** - where purchase price is tied to fluctuating market prices
3. **Split price** - the company pays an agreed upon base price at the time of purchase and makes a final payment once it on-sells or processes the product
4. **Seasonal option** - pricing will be specific to each season and edited each year to the variability of material/input procurement prices, incentive packages and other factors to be considered

**Recommendations:**

The best strategy for WARC is to adopt a flexible price contract option and incorporate a price ceiling and floor (maximum and minimum prices), where the prices can fluctuate between. Research has shown that buyers tend to prefer flexible prices, especially when there is high market volatility, as is the case with rice in Sierra Leone.\(^4^5\) As seen with food retailer ITC Limited of India, where they adopted a dynamic flexible price strategy for direct procurement from smallholder farmers, this approach offered farmers a high level of price transparency and helped to avoid situations where farmers felt trapped in the relationship, which encouraged defections. Essentially, the contract will be negotiable, but binding at the same time.

- Contracts should be for the same duration as the length of the loans given. It is important that the contracts be closely tied with the signing of the loans as the group collateral process of the loan is also applied to the contracts.
- The best way to ensure mutual commitment to the agreement is to hold open and transparent price-level negotiations based on realistic production

\(^{44}\) Technoserve/IFAD, *Outgrower Schemes - Enhancing Profitability*, Technical Brief, September 2011

\(^{45}\) ibid
costs with selected lead farmers in which both sides accept the benefits and risks of changing market prices.

- Contracts need to be signed before training is offered.
- Quality standards and desired output must be clearly stated in the contract. Farmers will receive the agreed upon price contingent on these standards being met.
- There needs to be a release clause or option in the contract for farmers to be released from the contract, if necessary.
- To be clearly stated in the contract for the pilot phase: WARC will guarantee achieving yields of 300 kg of rice per hectare cultivated using SRI. Should farmers not reach this threshold, WARC will cover the difference.

**Issues/Challenges:**

- WARC could potentially lose profits if the price is set too low.
- Contracts with farmers are hard to enforce; Sierra Leoneans are notorious for not adhering to contracts.
- Ensuring that farmers understand the business relationship they are entering into upon signing a contract.
- Production/yields for farmers are below the agreed upon standards outlined in the contract.
- Adequately keeping up with a market that has high volatility and the price changes often.
- Receiving the chief’s approval regarding the proposed contracts.

**Opportunities:**

It is necessary to establish loyalty and a trust-based working relationship with the farmers.

- WARC can provide transparency regarding market prices by holding bi-weekly meetings regarding rice prices where they and the farmers can openly discuss the rice market. A good strategy would be to have these meetings actually be price negotiations, where both sides can accept the benefits and risks of changing market prices.
- Alternatively, forming a committee of company and outgrower representatives who periodically check market prices in selected areas to determine the appropriate price can also establish a good working relationship. These activities restore autonomy and recognize the ability for farmers to make their own choices. It also gives WARC the opportunity to say why their prices are the best. Additionally, these activities are essential because most of the local farmers in Tormabum are illiterate.
- Another efficient way to establish loyalty would be for WARC to provide bonuses to farmers that produce above the standard production outlined in the contract. This will aid in building the foundation for a marketplace.
- Creating a more professional culture where contracts are enforced and adhered to.

**Risks**

- Farmers decide not to honor their outgrower contracts with WARC. Honoring the contract is a collective/group decision; there is the potential for one farmer to not agree with the group. Farmers could take the technical package/inputs and work only on their own land and not work on community land for WARC operations.
- WARC does not make a sufficient profit due to incorrect price setting.
- Farmers do not produce enough to meet contract standards (not producing past subsistence level).

**Metrics:**

- Number of signed contracts
- Number of contracts not honored
- Attendance at bi-weekly price negotiation meetings
- Total amount of revenue generated
- Total amount of revenue WARC receives
• Total amount of revenue farmers receive
• Number of farmers that receive performance bonuses
• Assessing farmer/WARC relationship – oral survey throughout season to gauge farmer feelings toward WARC

<table>
<thead>
<tr>
<th>Contracts: flexible price with ceiling and floor</th>
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<tr>
<td>Mission</td>
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<td>Vision</td>
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**Monitoring of Outgrower Program:**
Monitoring the performance of smallholder farmers and their implementation of SRI techniques is fundamental to the success of the outgrower scheme. If farmers do adhere to the strict SRI regimen, the potential to achieve higher yields is significantly increased.

**Recommendations:**
WARC field supervisors will provide extension and training services. Each FBO lead farmer will monitor up to 100 acres and manage village outgrowers based on the above criteria. The number of field supervisors required will be dictated by, among others, the geographical spread of the farmers/farmer groups, and the effective coverage a single extension officer can provide.

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**Figure 4: Outgrower monitoring structure**

The SRI training program should inform the design of the monitoring plan, however, general monitoring criteria should include the following:
- Contracted area
- Distribution of inputs
- Nursery management
- Land preparation
- Time of planting/transplanting
- Crop emergence/survival rate of seedlings
- Spacing and plant density
- Timely weeding and adherence to SRI practices
- Implementation of pest and disease control practices
- Crop establishment (status of the crop at various intervals throughout the season)
- Timely harvesting and harvesting techniques
- Production data

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Extension services should be linked to the distinct periods in the crop cycle:
1. Mobilization and registration/contracting of farmers/input distribution
2. Nursery preparation and establishment
3. Field preparation and transplanting
4. Field management including control of pests and diseases
5. Pre-harvest preparations, harvesting, and post-harvest handling
6. Marketing arrangements

**Issues/Challenges:**
The key challenge in monitoring smallholder farmers is ensuring that the farmers implement SRI according to the specified training guidelines.

**Opportunities:**
An effective monitoring program, where WARC field supervisors provide necessary extension and training services and lead farmers adequately manage village outgrowers, will increase the likelihood that farmers will transition from subsistence to commercial rice production.

**Risks:**
- Lead farmers will not intervene when smallholders deviate from the designated SRI practices
- Training and extension services will not address knowledge gaps that arise throughout the crop cycle.

**Metrics:**
- Area of land contracted
- Mount of inputs distributed to each smallholder/FBO
- Number of nursery management days
- Number of days required for land preparation
- Number of days for planting/transplanting
- Number of seedling planted and their survival rate
- Rice yield (tons/ha)
- Retention rate of outgrower farmers
- Number of days from transplanting to harvest
- Plant density
- Number of days until crop emergence
- Percentage of SRI practices implemented according to training guidelines

### Monitoring of outgrower program

<table>
<thead>
<tr>
<th>Mission</th>
<th>An effective monitoring program enhances the sustainability of the outgrower model and will ensure the optimal utilization of resources while at the same time maximizing the value for shareholders</th>
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<tbody>
<tr>
<td>Vision</td>
<td>Delegating monitoring authority to FBO lead farmers empowers the local communities.</td>
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</table>

**Harvesting & Post-harvesting Processes**
According to the terms of the outgrower program, all harvesting and post-harvesting processes will be conducted by WARC. WARC will use its machinery to harvest rice grown by participating outgrowers, which will mitigate the risk of yield loss during the harvest, and non-repayment of loans. Finally, milling, packaging, and the transport of rice to market will be carried out by WARC.
Critical Analysis of WARC

The initiative that WARC has taken to develop rice production in Sierra Leone should be commended given the numerous challenges the company faces when entering a new market in a developing country, such as Sierra Leone. Our research when developing this outgrower model has raised many questions surrounding the viability of commercially producing rice in Sierra Leone, as well as the sustainability of WARC. In order for WARC to achieve its dual objectives of economic value for shareholders and social value for local communities, they must keep their mission as the front and center of their focus. WARC faces the risk of a tradeoff between maximizing social impact, on one hand, and maximizing financial value, on the other. That is, WARC must overcome productivity constraints in order to achieve the dual goals of their mission. To help WARC avoid deviating from their mission, we have outlined some general considerations.

SRI

When researching SRI, successful examples the team found overwhelmingly utilized fertilizer to boost the range and availability of nutrients in the soil and relied on irrigation and drainage infrastructure to maintain effective water management. To achieve its mission of optimizing the use of natural resources in Sierra Leone, WARC should consider including inorganic fertilizer in the package of inputs farmers must purchase to participate in the outgrower model. Fertilizer use would significantly increase output per hectare and improve the chances of success of SRI. As Cornell University’s Norman Uphoff, the leading proponent of SRI, puts it “If there are no properly functioning irrigation structures and/or no effective bureaucracy managing water in large irrigation systems and/or no effective organization among water users in smaller ones, water management becomes a limiting factor for the utilization of SRI.”

Glenn Denning, director of Columbia University’s Center on Globalization and Sustainable Development and a veteran rice expert, emphasizes that irrigation must be accompanied by good drainage. He warns that heavy rainfall — in the absence of drainage — leads either to the submergence of the crop for weeks, wiping it out, or to the stagnation of water, which has toxic effects on the roots. To successfully manage an outgrower program based on the use of SRI, WARC should introduce a water management infrastructure system that allows for the cycles of alternate wetting and drying that are a key element of SRI.

Diversification

WARC should consider some of the risks associated with rice production in Sierra Leone and should take steps to diversify its crop production. By diversifying its crop production WARC can ensure stable incomes for the


company, even in instances of extreme weather events. WARC should investigate options such as incorporating cassava and other crops into its outgrower scheme as a way of providing insurance for the farmers participating in the outgrower model and for the company itself.

**Conclusion**

The result of our project is an outgrower model that reflects the mission of WARC and attempts to significantly increase the social welfare of farmers living in the Tormabum area.

**Benefits to farmers**

The model is beneficial to farmers for two reasons. Firstly, the model helps farmers because it mitigates risk for farmers, both with regard to food security and loans. WARC acts as a representative for smallholder farmers, which helps spread the risk of loans among microfinance institutions, WARC, and farmers. Secondly, the model creates a stable form of income for farmers; farmers will be a part of the program and the program will ensure food security for farmers by increasing the output of rice per hectare.

**Improvement of Livelihoods for Farmers**

The model and new techniques of rice production, such as SRI, training, and machinery for harvesting, will substantially improve the livelihoods of farmers by providing the farmers with the necessary inputs to transfer from subsistence to commercial farming. Commercial farming implies that farmers will be food secure since farmers will have excess rice and sell that rice to WARC.

Additionally, the model will considerably increase rice output per hectare for farmers in Tormabum. By employing SRI farmers are expected to increase output to over 2.2 metric tons per hectare, which will positively contribute to the farmers’ livelihoods.

**Potential for Replication**

The major strength of the model is that it can be easily modified and replicated, according to the specific needs of WARC or other private companies interested in creating long-term sustainable outgrower programs comprised of smallholder farmers.

The model was created with sectorial flexibility so that it can be used for other agricultural sectors, not merely rice production. With the right combination of technical inputs, machinery, and training the model can be used to increase production levels of smallholder farmers in all agricultural sectors.

Moreover, the model can be scaled up to include more farmers. As it stands, the model was created with the idea that 1000 smallholder farmers would be used, but it would be relatively simple to significantly increase the number of farmers included in the model. The only requirement is that farmers belong to farmer based organizations and these organizations decide to join the outgrower program.

Lastly, and most importantly, the model is not specific to Sierra Leone. The model was created with the idea that it could be replicated in other areas of West Africa and the world. Because the model is not location specific it can be easily transferred to other countries producing rice.

In conclusion, the team believes that this model is the best possible model for increasing rice production and helping enhance the food security of smallholder farmers in Sierra Leone, without degrading the environment or creating negative spillovers, either environmental, social, political, or economic.
Acknowledgements
This project would not have been possible without the help of Emiliano Mroue and Patricio Imerito of WARC. The team would like to thank them for their help with travel logistics and their timely feedback on the progress of the model.

The team would also like to thank Sara Minard for advising the project. Without her contributions and constant encouragement the conclusions and final outgrower model would not have been possible.

Additionally, the team would like to thank Jenny McGill, Ilona Vinklerova, and the Economic and Political Development Concentration of SIPA for funding travel to Sierra Leone and helping with additional costs.
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The Oakland Institute, 2011. Understanding Land Investment Deals in Africa: Sierra Leone.


Vermeulen, S. and Cotula, L., 2010. Making the most of agricultural investment: A survey of business models that provide opportunities for smallholders. FAO and IIED


Annexes
Annex I: Stakeholder Analysis of the OSF Program

<table>
<thead>
<tr>
<th>Importance/Low influence</th>
<th>High Importance/High influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallholder farmers</td>
<td>WARC</td>
</tr>
<tr>
<td>Agricultural experts</td>
<td>WinAgri</td>
</tr>
<tr>
<td>Market traders</td>
<td>Farmer cooperatives</td>
</tr>
<tr>
<td>Rice importers</td>
<td></td>
</tr>
<tr>
<td>Members of the broader farming community</td>
<td>Consumers (high-income and mid-</td>
</tr>
<tr>
<td>NGOs in the local community</td>
<td>income)</td>
</tr>
<tr>
<td>Competing rice producers</td>
<td>Wholesale and retail buyers</td>
</tr>
<tr>
<td></td>
<td>Local government</td>
</tr>
<tr>
<td></td>
<td>National government</td>
</tr>
</tbody>
</table>

1 **Importance** indicates the extent to which stakeholder's needs and interest will be influenced by planned intervention/activity.
2 **Influence** is the power that stakeholders have over planning and implementation of intervention/activity.
Annex II: Detailed Stakeholder Analysis of Outgrower Program

<table>
<thead>
<tr>
<th>Stakeholder Cluster</th>
<th>Stakeholder Status/Role (in relation to OSF project)</th>
<th>Stakeholder’s Likely Perception or Attitude toward OSF project</th>
<th>Stakeholder’s Capacity, Resources, and Constraints related to OSF project</th>
<th>Stakeholder’s Importance (in relation to OSF project)</th>
<th>Stakeholder’s Influence (in relation to OSF project)</th>
<th>Strategy to Involve Stakeholder in project (or Otherwise Address Stakeholder’s Concerns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIMARY - with potential direct impact to the project</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WARC</td>
<td>Initiators / primary funders of the company and outgrower program</td>
<td>Positive - believe project will increase income for smallholders</td>
<td>Contributing to funding the inputs for farmers</td>
<td>High</td>
<td>High</td>
<td>Constant communication and feedback</td>
</tr>
<tr>
<td>WinAgri</td>
<td>Shareholder and initial investor in WARC; highly interested in success of OSF program</td>
<td>Positive perception of the project-want to develop community-based sustainable agricultural projects in Africa and emerging economies.</td>
<td>Ability to invest in developing the company. Has specific interest in success of the project. Sierra Leone is the first country they invest in, it is their first experience in sustainable agriculture and rice production.</td>
<td>High</td>
<td>High</td>
<td>We will communicate with WinAgri constituents by phone and in person (if possible) to discuss their support of WARC and the OSF program.</td>
</tr>
<tr>
<td>Farmer cooperatives</td>
<td>Major player/facilitator of the OSF program and they will supply valuable agricultural knowledge to the smallholder farmers within the program</td>
<td>Positive perception and attitude regarding the program as they will be helping the farmers throughout</td>
<td>Contributing knowledge regarding rice production and agricultural best practices within Sierra Leone.</td>
<td>High</td>
<td>High</td>
<td>Meet and interview local actors within this group to better understand the OSF program and obtain valuable insights.</td>
</tr>
<tr>
<td>Smallholder farmers</td>
<td>They are the main actors and beneficiaries of the project.</td>
<td>Their attitude towards the OSF program will be learned after the first field trip in January</td>
<td>The farmers do not have sufficient income to afford superior inputs and improved technology</td>
<td>High</td>
<td>High</td>
<td>Establish connection with them by showing respect and overall interest in the work that they do. We will be conducting</td>
</tr>
</tbody>
</table>

*OSF* - Orange Seed Fund
<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Role Description</th>
<th>Perception</th>
<th>Involvement</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agricultural experts</strong></td>
<td>Render technical expertise to achieve production targets</td>
<td>High</td>
<td>High</td>
<td>Will set up meetings and/or reviews with them to gain their perspective on the viability of increased production levels. They should inform management decisions with their expertise.</td>
</tr>
<tr>
<td><strong>Market traders</strong></td>
<td>- Would potentially be supplying/selling rice in the market</td>
<td>High</td>
<td>Low</td>
<td>Interview them to get their perspective on the OSF program as well as to gain knowledge on how the rice value chain works</td>
</tr>
<tr>
<td></td>
<td>- Potentially concerned of being cut out or replaced in the value chain by the smallholder farmers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- May also be fond of the program as it could offer them another supplier of rice to work with</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rice importers</strong></td>
<td>Along with large domestic producers, they constitute the main competition to WARC</td>
<td>High</td>
<td>Low</td>
<td>Direct communication with them would be limited, though we would seek information about them from WARC and consumers</td>
</tr>
<tr>
<td></td>
<td>They will be threatened by WARC’s success because they currently hold a large share of the market</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>They will certainly not contribute any resources</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECONDARY – with some impacts to the project
<table>
<thead>
<tr>
<th><strong>Consumers (high-income and mid-income)</strong></th>
<th>They will potentially be purchasing the local rice produced by smallholder farmers within the OSF program</th>
<th>They are essentially disconnected from the OSF program</th>
<th>Not directly contributing any resources to OSF program. It should be noted that the consumers buying the rice produced from the OSF program is essential to the entire program working.</th>
<th>Low</th>
<th>High</th>
<th>Establish rapport by showing respect. We will be interviewing various local consumers to understand their feelings towards purchasing locally grown rice.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wholesale and retail buyers</strong></td>
<td>They will be selling the local rice produced by WARC/ smallholder farmers within the OSF program</td>
<td>Favorable perception as this is a new supplier of merchandise</td>
<td>Not contributing resources directly to the OSF program but they will be purchasing the rice to supply in their retail outlets, which is very important to the success of the OSF program.</td>
<td>Low</td>
<td>High</td>
<td>We will be interviewing retailers and buyers to better understand the rice production value chain as well as to gauge their interest in supplying locally produced rice.</td>
</tr>
<tr>
<td><strong>Local government</strong></td>
<td>Have an interest in building up local capacity for farmers and seeing local communities succeed economically.</td>
<td>They welcome increased local rice production and development of local farmers economically. They may remain skeptical however in regards to if the OSF program will actually help local actors or only benefit WARC.</td>
<td>They could provide mediation/communication between the actors in the rice value chain. Could also be a strong influencer of smallholder participation in the project.</td>
<td>Moderate</td>
<td>High</td>
<td>Hope to interview and meet with local government officials to assess their support of the OSF program and locally grown rice.</td>
</tr>
<tr>
<td><strong>National government</strong></td>
<td>Aims to reduce food deficit through increasing domestic rice production. Offers incentives to enhance agricultural productivity and wants to reduce dependence of Sierra Leone on imported rice.</td>
<td>Welcome the development of a national rice brand and poverty reduction impact on smallholders</td>
<td>Can improve business climate for foreign business owners through incentives and regulatory reform. Ministry of Agriculture provides in-kind loans through seeds and basic machinery and training through workshops as its conditions allow.</td>
<td>Moderate</td>
<td>High</td>
<td>Attempt to reach out to national agencies’ personnel through phone calls and interviews.</td>
</tr>
<tr>
<td><strong>Competing rice producers</strong></td>
<td>Indifferent to the model adopted by WARC; only concerned with implications for their own competitiveness</td>
<td>At best skeptical of WARC, if not hostile</td>
<td>There are a few medium sized rice producers, some of whom have plans for expansion, but at a significantly lower pace than WARC. One medium size company is also doing outgrower model.</td>
<td>Low</td>
<td>Low</td>
<td>Direct communication with them would be limited.</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------</td>
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<td>--------------------------------------------------------------------------------</td>
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<td>--------------------------------------------------</td>
</tr>
<tr>
<td><strong>NGOs in the local community</strong></td>
<td>They help to connect the local farmers and WARC. They also provide helpful information on the viability of the OSF project working.</td>
<td>Positive attitude toward OSF as this should improve the livelihoods of local community members.</td>
<td>They have the ability to voice concerns on both sides (WARC and farmers) of the OSF model.</td>
<td>Low</td>
<td>Moderate</td>
<td>Use Ci3’s and local contacts to engage with NGO’s through meetings and interviews.</td>
</tr>
<tr>
<td><strong>Members of the broader farming community</strong></td>
<td>May provide insights and knowledge into local rice production and local rice value chain. Will be a potential competitor to those smallholder farmers within the OSF program.</td>
<td>Potentially mostly negative view as the OSF program will create more competitors</td>
<td>May provide knowledge on local rice production and rice value chain. Do pose a threat to OSF as they will be competing with this group</td>
<td>Low</td>
<td>Low</td>
<td>Will interact with them through meeting and interviews. Establish connection through local contacts.</td>
</tr>
</tbody>
</table>
Annex III: Stakeholder Analysis of WARC
## Annex IV: SWOT Analysis of WARC

<table>
<thead>
<tr>
<th></th>
<th>Favorable to objectives</th>
<th>Unfavorable to objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRENGTHS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>• Commitment to incorporating local farmers in to production value chain (outgrower scheme) - strong social and environmental values</td>
<td>• Farmers in Tormabum not receptive to new techniques; may take a long time for them to adopt new techniques</td>
</tr>
<tr>
<td></td>
<td>• The varieties of rice are high-yielding and well suited for Sierra Leone; varieties are resistant to droughts and other local stresses</td>
<td>• Lack of enough financial capital (*need additional financial data)</td>
</tr>
<tr>
<td></td>
<td>• Want to incorporate SRI techniques which have been proven to produce higher yields</td>
<td>• May rely on partnership with other NGO/organization to adequately run outgrower scheme</td>
</tr>
<tr>
<td></td>
<td>• Farmers have favorable view of WARC currently (established presence in the Tormabum community)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Good relationship with Paramount Chief and local chiefs in Tormabum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Favorable relationships with government/ministry officials</td>
<td></td>
</tr>
<tr>
<td><strong>OPPORTUNITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td>• Very high per capita rice consumption; rice is a staple in Sierra Leone</td>
<td>• Low yields in Sierra Leone</td>
</tr>
<tr>
<td></td>
<td>• Unmet local demand; a large percentage of rice is imported (30-40%)</td>
<td>• No irrigation practices; only one harvest season</td>
</tr>
<tr>
<td></td>
<td>• No major local rice producer</td>
<td>• No regional/country MFI’s (formal) focused on agriculture</td>
</tr>
<tr>
<td></td>
<td>• Consumer’s preference for higher-quality rice; local rice brand not available</td>
<td>• WARC operations depend on community relationships</td>
</tr>
<tr>
<td></td>
<td>• Generally low labor costs</td>
<td>• No current stable/standard land laws</td>
</tr>
<tr>
<td></td>
<td>• Government promoting Foreign Direct Investment – especially agriculture</td>
<td>• Potential competitors may enter the market: rice importers and local large-scale rice farmers (Abaja &amp; Genesis Farms)</td>
</tr>
<tr>
<td></td>
<td>• Potential for partnerships with other NGO’s/organizations</td>
<td>• Trained farmers may sell to other non-WARC buyers</td>
</tr>
<tr>
<td></td>
<td>• Government incentives: machinery and input imports are duty free, no taxation on exports, corporate tax holidays, among others</td>
<td>• Low technical knowledge; farmers lack experience with high-yielding rice farming techniques</td>
</tr>
<tr>
<td></td>
<td>• New land tenure laws are being made currently (*though no time table on when they will be finished); good potential for WARC to gain access to more land</td>
<td>• Poor transportation infrastructure may increase cost and impact schedule</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Floods and droughts will impact non-irrigated yield</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If partnership is made with NGO/organization, they may not be in line with WARC’s strategy; lack of control for WARC</td>
</tr>
<tr>
<td><strong>WEAKNESSES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>THREATS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal</td>
<td></td>
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</tr>
</tbody>
</table>
## Annex V: SWOT Analysis of Outgrower Program

<table>
<thead>
<tr>
<th>Favorable to objectives</th>
<th>Unfavorable to objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRENGTHS</strong></td>
<td><strong>WEAKNESSES</strong></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internal</strong></td>
<td></td>
</tr>
<tr>
<td>• Commitment to strong social and environmental values; a strong focus on corporate social responsibility</td>
<td>• Lack of community engagement plan</td>
</tr>
<tr>
<td>• Majority of rice produced for local consumption; 80% will be sold in local markets, which will help build community trust</td>
<td>• Limited agricultural experience at WARC</td>
</tr>
<tr>
<td>• The varieties of rice are high-yielding and well suited for Sierra Leone; varieties are resistant to droughts and other local stresses</td>
<td>• Locals are not included in the general management structure</td>
</tr>
<tr>
<td>• Low dependency on imported raw materials</td>
<td>• Community relationships have not been developed</td>
</tr>
<tr>
<td></td>
<td>• Similar outgrower schemes have not been successfully demonstrated in the region</td>
</tr>
<tr>
<td></td>
<td>• Cultivated rice must appeal to the palate of the Sierra Leonean consumer and be suitable for local methods of preparing food; this has yet to be verified by the WARC feasibility study</td>
</tr>
<tr>
<td><strong>OPPORTUNITIES</strong></td>
<td><strong>THREATS</strong></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Very high per capita rice consumption; rice is a staple in Sierra Leone</td>
</tr>
<tr>
<td></td>
<td>• Retail prices significantly surpass international prices</td>
</tr>
<tr>
<td></td>
<td>• Unmet local demand; a large percentage of rice is imported (30-40%)</td>
</tr>
<tr>
<td></td>
<td>• No major local rice producer</td>
</tr>
<tr>
<td></td>
<td>• Consumer’s preference for higher-quality rice; local rice brand not available</td>
</tr>
<tr>
<td></td>
<td>• Cheap land leasing</td>
</tr>
<tr>
<td></td>
<td>• Low labor costs</td>
</tr>
<tr>
<td></td>
<td>• Political stability: favorable context for Foreign Direct Investment</td>
</tr>
<tr>
<td></td>
<td>• Government incentives: machinery and input imports are duty free, no taxation on exports, corporate tax holidays, among others</td>
</tr>
<tr>
<td></td>
<td>• Water sources available for irrigation</td>
</tr>
<tr>
<td></td>
<td>• Abundance of arable land</td>
</tr>
</tbody>
</table>
### Annex VI: PEST Analysis of WARC

<table>
<thead>
<tr>
<th>Political</th>
<th>Economic</th>
<th>Social</th>
<th>Technological</th>
</tr>
</thead>
<tbody>
<tr>
<td>Govt is implementing a Small Holder Program, whereby it hopes to support smallholders through inputs that farmers require (extension, fertilizers, etc)</td>
<td>Currency risk exists – currency devaluation quite likely (which would actually impact WARC’s finances positively)</td>
<td>Farmers continue to exhibit attitude that they are entitled to cash and input hand outs by the government and NGOs – an artifact of the civil war. Farmers instinctually think hand outs when they come into contact with NGOs.</td>
<td>Most farmers perform manual harvest as access to machinery is minimal (government is trying to boost mechanization)</td>
</tr>
<tr>
<td>Govt wants to impose restrictions on rice exports to Guinea in order to boost domestic rice production.</td>
<td></td>
<td>Providers of capital face default problems as farmers are either cash-strapped and unable to repay loans or simply don’t respect agreements.</td>
<td>Reuse of seeds leads to the mixing of rice varieties, causing lower efficiency in rice production</td>
</tr>
<tr>
<td>In the same vein, Minister of Agriculture wants to introduce a policy that mandates 30% of rice consumption for public institutions (schools, police) to be sourced locally</td>
<td></td>
<td>ABCs form farmer groups and organizations, which offer farmers a form of safety net; membership in a group entitles a farmer to taking out a loan</td>
<td>Yields “notoriously low”</td>
</tr>
<tr>
<td>Smallholder Commercialization Program (SCP) – move from subsistence farming to surplus agriculture</td>
<td></td>
<td>Extension services help facilitate contact between NGOs/loaners and farmers</td>
<td>Absence of irrigation infrastructure means rice can only be grown once a year (govt aims to introduce irrigation infrastructure)</td>
</tr>
<tr>
<td>Good governance absent in many of the ABCs and farmer-based organizations (FBOs)</td>
<td></td>
<td>Land tenure is family-based. Outsiders may use privately owned land and are expected to share a portion of their produce in exchange (sharecropping)</td>
<td>WARC plans on introducing irrigation – water to be pumped from the Sewa River during the dry season</td>
</tr>
<tr>
<td>Farmer Field Schools (FFS): 99% of these have been required by the govt to focus on rice even though many farmers are interested in other crops.</td>
<td></td>
<td>There is a shift away from polygamy, which has traditionally caused fragmentation of the land into impractically small plots, harming productivity.</td>
<td>The Sierra Leone Agriculture Institute (SALARI) is attempting to improve the quality of seeds and to promote seed multiplication as measures to boost productivity</td>
</tr>
<tr>
<td>Structural Adjustment Programs (SAPs) from the Bretton Woods institutions led to the collapse of government support for the rice sector. The Minister blames the SAPs for the current slump in productivity</td>
<td></td>
<td>With greater urbanization, land tenure issues are increasingly marginal</td>
<td>WARC is adopting the non-utilization of herbicides, which poses a challenge because pest issues are a huge problem for the rice sector (rats, birds, etc). Currently, WARC has used some “non-hazardous” fertilizers but aims to completely phase out use of fossil fuel and chemical inputs in the future</td>
</tr>
<tr>
<td>Govt sees outgrower schemes as the best solution for shifting from subsistence to surplus. But the outgrower schemes must offer farmers incentive structures to encourage the cooperation of farmers (and discourage the practice of side selling). Incentives should focus on soil fertilizers and high-yield rice varieties.</td>
<td></td>
<td>FAO thinks that WARC should focus exclusively on business, leaving the social agenda to NGOs. Doing the social and business in parallel is likely to confuse the farmers.</td>
<td></td>
</tr>
<tr>
<td>Govt wants to overhaul ag infrastructure, especially storage and processing (this will help reduce post-harvest losses)</td>
<td>NGOs (like Catholic Relief Services) that have had long-term local presence have earned the trust of communities. Field agents are effective when they live within the chiefdom. WARC’s regular contact with the communities they work with in Tormabum will be essential in building and maintaining trust.</td>
<td>Policy towards implementing duties on rice</td>
<td></td>
</tr>
</tbody>
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# Annex VII: Competition/Collaboration Framework: ranked in order of priority

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<thead>
<tr>
<th>Company Name</th>
<th>Description of Company</th>
<th>Competition</th>
<th>Risk</th>
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<th>Other</th>
<th>Recommended Actions/Potential Next Steps</th>
<th>Main Question/Insight from the Organization</th>
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<tbody>
<tr>
<td>World Vision</td>
<td>Committed to partnering with people of Sierra Leone to improve lives and implement sustainable solutions for the future of the country. Also a religiously affiliated company</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Reconnect with WV to better understand where they are with their smallholder program. Try to better understand the costs associated with the program and the inputs that WV supplied to participants; look for ways that WARC can adapt WV’s program into their business model.</td>
<td>What have been the biggest obstacles in making SRI successful in Sierra Leone? How has WV tried to create incentives for farmers to adopt ALL of the practices of SRI?</td>
</tr>
<tr>
<td>CRS</td>
<td>Promotes human development around the world by fighting poverty, regardless of religion. Nevertheless, is a Catholic, religiously oriented organization. Focus of the organization in Sierra Leone seems to be on mothers and fertility rates.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reconnect with Jonathan (phone call) to find more details about the SILC program and to better understand how it can be adapted into WARC’s business model/outgrower scheme. Also discuss the financials associated with the project (inputs and outputs)</td>
<td>How does CRS plan to expand its SRI program in the future and what are the greatest obstacles that it has faced with implementing SRI? How has CRS encouraged farmers to adopt new SRI practices?</td>
</tr>
<tr>
<td>Welt Hunger Hilfe</td>
<td>Mission to coordinate activities in developing countries to support the most vulnerable people of those countries, with the aim of solving MDG 1: ending extreme hunger and poverty. Has been working in Sierra Leone since 2009 and will leave in Feb 2014. Working in 52 farming communities (of 100 people each) in Bo, Kenema &amp; Pujehun.</td>
<td>No direct competition with WARC</td>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td>Respond to the Hans Muller’s email and reach out to the additional contacts that he has given us. Try to understand what the possibilities of partnership with the NGO are and what the NGOs plans are with regard to their program once it leaves the country.</td>
<td>What have been the biggest obstacles in making SRI successful in Sierra Leone? How has WHH overcome these obstacles? What incentive programs have been the most effective in encouraging farmers to adopt SRI?</td>
</tr>
<tr>
<td>InterAide</td>
<td>Humanitarian organization that specializes in the realization of development programs, with the aim of giving the poorest access to development. A part of its mission is to promote public/private partnerships whenever possible. Has created its own rice production and manufacturing project that encourages smallholder farmers to produce, mill, and package their own rice. Has admitted that this project lost money, but the initiative to create a smallholder farmer organization exists.</td>
<td></td>
<td>Medium-high (for information sharing/transfer prior to departure)</td>
<td></td>
<td></td>
<td></td>
<td>Contact Yanis upon arrival to Sierra Leone. He can meet with the March trip and hopefully give us insights into SRI and smallholder agriculture in Sierra Leone.</td>
<td>What have been the largest obstacles in implementing SRI in Sierra Leone? What has InterAide done to overcome these obstacles?</td>
</tr>
<tr>
<td>Paramount Chief</td>
<td>Owner of all the land in Tormabum and is responsible for the welfare of the people living in the region. Works as guarantor for all loans. Has the final say on any activity WARC undertakes in Tormabum. Has shown genuine interest in creating an outgrower program that lends money to smallholder farmers at low interest rates.</td>
<td></td>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td>March travel team should visit and interview to discuss relationship programs and the specific requirements he wants in the program (to have continued support)</td>
<td>How can we ensure that loans will be repaid? What types of incentives need to be built into the program to encourage loan repayment and discourage side-selling?</td>
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Some analyses and recommendations are as follows:

- **World Vision**: Despite its religious affiliation, World Vision is committed to partnering with people of Sierra Leone to improve lives and implement sustainable solutions for the future. It has expressed a willingness to collaborate with WARC in creating an outgrower program but has concerns about funding and the current financial situation. WARC needs to ensure that WV’s support remains strong to secure the program’s future.

- **CRS**: This organization is known for its work in human development, focusing on poverty eradication. Despite its religious orientation, CRS seems willing to collaborate with WARC and is interested in sharing ideas about program partnerships. It requires a clear strategy to adapt its programs to Sierra Leone’s context and ensure sustained support from the government.

- **Welt Hunger Hilfe**: This organization is involved in coordinating activities in developing countries, with a focus on Sierra Leone. It has shown genuine interest in creating an outgrower program and has the financial resources to support smallholder farmers. WV needs to ensure continued support and adapt its programs to Sierra Leone’s specific needs.

- **InterAide**: As a humanitarian organization, InterAide specializes in development programs and has shown interest in partnering with WARC. However, it faces significant obstacles, such as funding constraints and the need for clear policies to ensure sustainable smallholder agriculture.

- **Paramount Chief**: Responsible for all land in Tormabum, the Paramount Chief holds significant influence over the local community. His support is critical for any agricultural projects. WARC must engage effectively to ensure continued support and adapt its programs to align with the Chief’s priorities.

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**Pioneering High-Yield Rice Production in Sierra Leone**: This section discusses various approaches to promoting rice farming in Sierra Leone, including the adaptation of new technologies and the need for strategic partnerships. It emphasizes the importance of collaboration, risk management, and effective communication in the development of sustainable agricultural practices.
## Pioneering High-Yield Rice Production in Sierra Leone

### Company Name: Abaja Rice
- **Description of Company**: Seed rice production company located in Sierra Leone that has shared ideas and consulted with WARC about rice cultivation in Turmabum. Abaja has shared ideas about farming in Sierra Leone, but before it can potentially transfer this program to other countries, it has found that it initially overextended itself in Sierra Leone. Now it is only focusing on microfinance loans, agriculture is not a primary focus for the organization according to conversations had with BRAC during a January field visit.
- **Potential Risk**: High
- **Collaboration Potential**: Low
- **Potential for Collaboration**: Doesn’t seem interested in these areas. Abaja is currently producing rice for sale; only produces seed rice and is working in Northern Sierra Leone, away from Turmabum.
- **Recommended Actions/Potential Next Steps**: Follow-up with the president (again) to try to better understand current yields and risks better for Abaja to enter the rice production market and be in direct competition with WARC.
- **Main Question/Insight from the Organization**: How has Abaja established a report in Turmabum and how has it used its influence to encourage farmers to repay loans?

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<tr>
<td>Abaja Rice</td>
<td>Abaja is a seed rice production company that has created a sort of loan program to farmers working in the area. They pay for the farmers inputs (seed rice) and then take their payments from the farmers at the end of the season in the form of the farmers output. Potential competitor, but not currently producing rice for sale. Had originally intended to produce rice but moved to seed rice because it was more profitable. Located in Turmabum</td>
<td>No competition: focuses solely on microfinance loans, agriculture is not a primary focus for the organization according to conversations had with BRAC during January field visit</td>
<td>High</td>
<td>Has shared ideas and consulted with WARC about rice cultivation in Turmabum. WARC could buy their seeds from Abaja in the future</td>
<td>Low</td>
<td>Located in Turmabum and has considered establishing an outgrower program, but as of yet has done nothing on this front. It would be easy for Abaja to enter the rice production market and be in direct competition with WARC.</td>
<td>Follow-up with the president (again) to try to better understand current yields and risk varieties that the company is developing. Also try to better understand why they switched to seed rice and why they have not advanced in developing their outgrower program.</td>
<td>How has Abaja established a report in Turmabum and how has it used its influence to encourage farmers to repay loans?</td>
</tr>
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### Company Name: IFAD
- **Description of Company**: International microfinance organization that has recently begun operations in Sierra Leone. The company is currently restructuring itself because it has found that it initially overextended itself in Sierra Leone. If it is only focusing on microfinance loans it is trying to better understand current yields and how schemes in Sierra Leone can be used. The company has done microfinance for smallholder agriculture in other countries in the past, has the potential to transfer this program to other countries, but before it can do this smallholder farmers need to be commercially viable. According to BRAC, this seems unlikely in the immediate future.
- **Potential Risk**: Low
- **Collaboration Potential**: Low
- **Potential for Collaboration**: Doesn’t seem interested in these areas. Abaja is currently producing rice for sale; only produces seed rice and is working in Northern Sierra Leone, away from Turmabum.
- **Recommended Actions/Potential Next Steps**: Reconnect with BRAC and ask about the agricultural program (in progress, awaiting response). Even if BRAC is no longer doing this program the program can serve as a good indicator for what will and will not work in Sierra Leone. It would also be interesting to know BRAC’s opinions about input financing options (maybe other than microfinance).
- **Main Question/Insight from the Organization**: What sort of funding and sponsorship opportunities exist for advancing the development of outgrower programs?

### Company Name: BRAC
- **Description of Company**: Seed rice production company located in Northern Sierra Leone that is interested in figuring out the best ways to increase rice production yields in Sierra Leone. The company follows a philosophy of taking its time and slowly developing seeds so that it can make effective and sustainable changes to rice production in the future. Potential competitor, but not currently producing rice for sale; only produces seed rice and is working in Northern Sierra Leone, away from Turmabum.
- **Potential Risk**: Low
- **Collaboration Potential**: Low
- **Potential for Collaboration**: Doesn’t seem interested in these areas. Abaja is currently producing rice for sale; only produces seed rice and is working in Northern Sierra Leone, away from Turmabum.
- **Recommended Actions/Potential Next Steps**: Follow-up with Peter and Annette about smallholder agricultural programs and the potential for creating these programs in Sierra Leone. Ask more questions about what needs to be done to effectively increase production yields and how smallholder farmers can transition into commercial farmers.
- **Main Question/Insight from the Organization**: What are optimum rice yields and how long do they think it will take for them to achieve those yields? |
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<tr>
<td>Standard Chartered Bank</td>
<td>Large international bank with 3 branches in Sierra Leone (2 Freetown, 1 Bo). Has microfinance and agribusiness sections in other countries, but not yet in Sierra Leone</td>
<td>Has no competition with WARC; large international banking company. Different markets, mission, vision, and value</td>
<td>Low</td>
<td>Medium</td>
<td>Standard/Chartered does not currently do microfinance in Sierra Leone. The challenge would be convincing the bank to start a program in the country and then to invest in WARC’s outgrower model</td>
<td></td>
<td>Contact someone at Standard/Chartered in the agribusiness department and discuss potential of 1. the bank entering agricultural markets in Sierra Leone 2. the bank partnering with a company like WARC</td>
<td>What sort of initiatives would Standard Charter be willing to finance in terms of loans to smallholder farmers?</td>
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<tr>
<td>FAO</td>
<td>International UN organization dedicated to helping solve food security issues in developing countries around the world by ensuring that people have regular access to food to lead healthy lives. Included in this mandate is increasing agricultural productivity</td>
<td>Has been instrumental in creating the ABC program that links small farmers to post-production processes in the rice industry. While many of these ABCs have failed, it should be noted that if the program were more successful it could pose a threat to WARC in the post-production sub-sector of rice</td>
<td>Low</td>
<td>Medium</td>
<td>The ABC program is in the process of being restructured. FAO is planning to transition them into cooperatives. If WARC could find a way to be a part of the program and partner with ABCs, this would be beneficial to all parties.</td>
<td></td>
<td>Reconnect (phone call) with FAO to discuss potential partnerships with WARC, holding off the idea that WARC is currently using the ABC in Bo to sell its rice</td>
<td>Is it possible for the FAO to reorganize their PBI/ARCs in the Tonkolili area to fit into WARC’s outgrower program?</td>
</tr>
<tr>
<td>WFP</td>
<td>WFP is the food arm of the UN and uses food policy as a way of mitigating food security issues within countries. It uses food to support economic and social development, tries to support nutrition in food poor countries, and tries to create sustainable food chains</td>
<td>Purchases rice from a variety of producers as a part of its PBI program. WARC is one of its suppliers, but WARC’s current prices are too high and therefore the order from WARC was not as large as it could have been. WFP currently has larger orders with other suppliers</td>
<td>Medium</td>
<td>Medium</td>
<td>WFP creates artificial markets when it buys directly from smallholder farmers. WARC could act as the intermediary. Additionally, WFP is constrained by prices and cost concerns</td>
<td></td>
<td>Should contact WFP to find out if they would be willing to purchase more rice from WARC (even given higher price) once smallholder program starts since it is cutting out the intermediary market</td>
<td></td>
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<td>Company Name</td>
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<td>Government</td>
<td>Government has put agriculture, and rice development specifically, at the center of the new administration policy. The focus on rice has meant that a lot of time and money has been invested in the sector and will likely continue to be invested in the sector in the future</td>
<td>Significant investment in rice has led to inefficiencies in the sector, with government promises (and sometimes handouts) and little improved output. The government competes with WARC in the sense that it artificially encourages rice production by producers who are maybe not the best suited to produce rice.</td>
<td>Medium</td>
<td>It is in the best interest of both the government and WARC to work together on an outgrower scheme. Sometimes, WARC will have the idea and the government has the funding allocated to improving the efficiency of the rice sector.</td>
<td>Medium (but WARC needs to find a specific department within the government to partner with)</td>
<td>The government is disorganized and often makes empty promises. Any collaboration with WARC will take a long time.</td>
<td>Remain in contact with the Ministry of Agriculture (Nathan?) and try to find someone willing to work with WARC on developing a public/private partnership around an outgrower scheme (if WARC is interested in creating a public/private partnership)</td>
<td></td>
</tr>
<tr>
<td>SLEIPA</td>
<td>Agency that is focused on promoting foreign direct investment in Sierra Leone. Helps new investors to establish relationships with local businesses and government</td>
<td>No competition: wants companies like WARC to start investing in Sierra Leone.</td>
<td>Low</td>
<td>Has helped WARC establish many of its business contacts around Sierra Leone. Continues to provide technical support and advice to the company.</td>
<td>Low: no connection to local agricultural markets</td>
<td>Works as intermediary between WARC and other companies. If a funder or other private sector company existed (Standard Chartered?) SLEIPA could be instrumental in making the introduction.</td>
<td>Follow up with Victor on the documents that he sent us about investment in Sierra Leone; try to understand if there is a potential foreign investor who is interested in doing business in Sierra Leone that can finance the outgrower model</td>
<td></td>
</tr>
<tr>
<td>Rural Development Foundation</td>
<td>Non-profit consultancy that supports governments to efficiently manage and increase domestic revenues by improving revenues from natural resources and property tax</td>
<td>No competition with WARC, but could be a potential obstacle for WARC obtaining more land since they oversee natural resource management (although this is probably for diamonds)</td>
<td>Low</td>
<td>Can make it easier for WARC to obtain land for sustainable, long-term leases since it is interested in increasing government income.</td>
<td>Low</td>
<td>Mostly focused on natural resource management, could be a potential partner if WARC could convince them that SRI preserves the soil in some way. Also deals with the government, not with local chiefs.</td>
<td>Make WARC aware that they exist, could be a potential obstacle in the future as WARC grows.</td>
<td></td>
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<tr>
<td>Green Scenery</td>
<td>Local NGO that promotes livelihood security, environmental promotion and protection, and integrated advocacy and lobbying for policy change</td>
<td>Potential obstacle for WARC interested in fighting against large scale land acquisition by foreign private companies</td>
<td>Medium</td>
<td>Interested in the impact of investment on the farmers, WARC would need to make it clear to them that their program helps the subsistence farmer</td>
<td>Low</td>
<td>Could be a potential block to WARC further acquisition of land in Sierra Leone.</td>
<td>Make WARC aware that they exist, could be a potential obstacle in the future as WARC grows.</td>
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Annex VIII: January Interview Guide

WARC: Farmers Semi-Structured Interview Guide
January 2013

I. Background / Self-Introduction
Hello, my name is ________. My partner and I are students from Columbia University in the USA, and we wonder if you would be willing to help us with some research we are doing for a class. We are conducting a research project on agriculture in Sierra Leone and developing a way to involve smallholder farmers in commercial rice production which is more than their families’ need/beyond self-subsistence level. The interview would only take about 15-30 minutes.

II. Informed Consent
We would like to let you know that everything we talk about today will be kept confidential, only for use by my partner and I for our research. We would only share your responses with our professors and some classmates, and we wouldn’t need to record your name. We hope that this lets you feel completely comfortable in sharing your responses and views without fear of publication. Your name will not be attached to any of the future write-ups or transcripts, and you do not have to answer any questions that you are not comfortable with. [If you want to record the interview, also add: Would you mind if we record our conversation, to make sure we don’t miss anything? We would erase the recording as soon as we complete our assignment.]

Would you be willing to answer our questions now?

We’d really appreciate your help.

Lastly, please feel free to end the interview at any point.

(Are you ok with these terms? Are you ready to continue?)

III. Opening Questions / Interviewee Profile
1. What is your name?
2. How many years have you been farming for?
3. Do you do farming for your family needs?
4. What do you and your family members eat generally?
5. How was the harvest last year?

IV. Introductory and Follow-up questions
Transition: We would now like to ask you a few questions that are specific to farming.
**Topic 1 - Farming:**
1. Do you own your land?
   - Yes
     - If yes, how many acres do you own?
     - Do you have written or oral proof that you own this land (possession of a title)?
     - Have you had any problems with land tenure issues?
   - No
     - How many acres do you farm? (if farmers rent)
     - What do you take in return?
2. What crops do you plant?
3. Do you ever change what you plant?
   - If so, what influences your decision making?
   - If there was a larger market for rice, would you plant rice?
   - What were you growing 3 years ago?
     - Has anything changed that would have made you decide to grow a different crop? (global warming, poor soil quality, price support systems, etc)
4. What is the role of government in agriculture?
   - Does the government give support prices?
   - Do they issue land tenure?

**Transitions between topics:** We have a few more questions about the inputs you use on your farm

**Topic 2 - Inputs:**
1. What kind of inputs do you use for farming for each crop?
2. How accessible are seeds and other inputs (like fertilizer, basic machinery, etc.) in the beginning of the season?
3. How do you finance your inputs?
4. Do you have any problems getting all of the inputs you need?
5. Does government provide inputs for farming or provide support to you to have them?
6. Have you ever taken a small loan from an NGO or other organization to pay for inputs?
   a. if yes, what terms (interest rate, repayment method) were associated with the loan
7. Would you be willing to take loans from microfinance organizations in the future?

**Transitions between topics:** We are also curious about what happens to the produce once it leaves your farm

**Topic 3 - Outputs:**
1. Do you have buyers for your output at the end of the season?
a. If yes, who? Do they give fair prices?
2. How are the prices of crops determined? Before the season or after?
   a. If no, how do you arrange to get your product to market?
3. What is the role of middlemen in agriculture?
   a. What is the benefit of selling to middlemen instead of to the market?
4. Do you do any post-production processes?
   a. If yes, what do you do?
5. What are the benefits of partaking in post-production processes?
6. Did you/your wife/your husband have any difficulty finding sufficient food for your family?

Transitions between topics: Now we want to learn more if you come together as farmers to help each other and to discuss issues on agriculture in your village.

Topic 4 - Farmer Organizations:
1. Are you a member of a cooperative / Farmer Based Organizations (FBOs)?
   • Yes
      o If yes, how long have you been part of this cooperative/FBO?
      o How many members does the cooperative/FBO have?
      o How do you share input costs; profits?
   • No
      o If not, what are some of the reasons you have not joined a cooperative/FBO?
2. Do you think there are any benefits to forming a cooperative/FBO? Please list______
3. What conditions are needed to operate a successful cooperative/FBO?
   Probing: Trust, democratic practices, equal participation?
4. Do you think the conditions for a successful cooperative/FBO exist in your community?
5. Have there ever been any disputes among members of the cooperative/FBO?
   a. What have been the causes for the disputes? (money, unmet production quotas)
   b. How have these disputes been resolved?

Transitions between topics: It would also help us to know if you are familiar with some of the private-sector players in rice production

Topic 5 - WARC:
1. Have you ever heard of the West Africa Rice Company?
   a. If yes, what is your impression of the company?
b. If no, (describe the company)

2. Would you be interested in participating in an outgrower program (brief description of what this is)/does this program sound like something that might interest you? why or why not? What specifically?

3. What incentives would WARC have to have to encourage your participation?

Transitions between topics: Part of our research is about contracts in Sierra Leone

**Topic 6 - Contracts**

1. Have you ever signed a contract with a company for selling your products to that company?

2. How was it, written or oral?

3. How willing are you to sign contracts in the future?
   a. What are some concerns/reservations that you have about signing contracts?

**Closing:**

Do a quick summary.

Thank you so much for your time, and for helping us for our research. Is it ok if we contact you in the future if we have additional questions?

Do you have any questions for us?
Annex IX: March Interview Guide

WARC: Interview Guide for Farmers
March 2013

Introduction:
I. Background / Self-Introduction
Welcome everyone to our discussion. We want to thank you for choosing to speak with us today. My name is __________. My partner and I are students from Columbia University in the USA. We are conducting a research project for the West African Rice Company to develop a way to involve smallholder farmers in commercial rice production. We would like to know if you would be willing to help us with this research. The focus group should take about one hour to complete.

II. Informed Consent
We would like to let you know that everything we talk about today will be kept confidential, only for use by my partner and I for our research. Please note that we are not employees of WARC, so none of the answers you provide today will affect future opportunities for you to work with WARC. We would only share your responses with our professors and some classmates, and we wouldn’t need to record your name. We hope that this lets you feel completely comfortable in sharing your responses and views without fear of publication. Your name will not be attached to any of the future write-ups or transcripts, and you do not have to answer any questions that you are not comfortable with.

[If you want to record the interview, also add: Would you mind if we record our conversation, to make sure we don’t miss anything? We would erase the recording as soon as we complete our assignment.] Lastly, please feel free to end the interview at any point.

Do you agree with these terms? Would you be willing to answer our questions now?

III. Introductory Questions:
To begin, we would like to get an idea of your current farming practices.

1. Can everyone go around and say their name, how long they have been farming, how much land they own, and what crops they grow in a typical season/year

2. What factors influence what you grow?
   a. Weather
   b. What other farmers in the area are growing
   c. Government subsidies
   d. Potential market for product

Transition to speaking about WARC and markets for rice

IV. Rice Output/Production Questions:
Now we would like to focus on those of you who said that you primarily farm rice.
1 Why do you choose to grow rice?
2 On average, how much time (a day?/month?) do you spend growing rice?
   a At which points during the season do you spend most of your time tending to your rice crop?
3 Where do you get your rice seeds?
   a What type of seed variety do you purchase?
   b How much do you pay for seeds?
4 What kind of tools do you use to grow rice?
   a Do you own these tools or do you borrow/rent them
5 Have you ever used fertilizer?
   a If you had access to fertilizer, would you be willing to use it?
   b Do you think that fertilizer would help you increase the amount of rice you grow?
6 Have you ever hired labor to help you tend to your fields?
   a If so, how do you pay for labor: with cash? with a portion of your rice harvest?
7 Would you be interested in increasing the amount of rice that you produce?
   a If so, what would you plan to do with this additional rice
8 What kind of assistance do you think you would need to grow more rice?
   a Training
   b Access to inputs such as seed, fertilizer
9 Have you ever sold your harvest to a buyer in the past? If so, to whom?
   a How much did you sell the rice for?
   b How did you negotiate the sale price? Was the price negotiated pre- or post-harvest?
10 If there was a guaranteed buyer of rice at the end of the season would you be willing to grow more rice?
   a Would the price per bushel of rice need to be set before or after the season (this might be too specific for a focus group and should be left for individual interviews)

V. Outgrower Programs Questions:
1 Are you familiar with the practice of outgrowing / contract farming? Please describe for us what you know about outgrowing.
2 Do you think that this is something that can work in Tormabum? Why/Why not?
3 Would you be interested in participating in an outgrower program?
   a In your opinion, what are the benefits of participating in an outgrower program?
   b What would encourage you to participate in such a program?
      i Training
      ii Access to inputs

Transition: WARC is interested in creating an outgrower program that uses a technique called the System of Rice Intensification (SRI) to increase rice yields

VI, SRI Questions:
1 Have you ever experimented with any new farming techniques?
1. How/where did you get training on these new techniques?
2. If there was a new technique that would help you increase the amount of rice you currently grow, would you be willing to try this new technique?
   a. If this new technique would require you to spend more time farming rice, would you still be willing to try this new technique?
3. What have you heard about SRI and what is your understanding of the system? [Provide a brief description of SRI after participants have shared their understanding]
4. Would you be willing to adopt SRI as a process for planting rice?
   a. What incentives would WARC need to provide to encourage you to adopt SRI?
   b. How much of your land would you be willing to use for SRI?

Transition: As part of the outgrowers program, we are researching the possibility of setting up a loan program to help farmers have access to credit to purchase inputs

VII. Loan and Funding Questions:
1. Have you ever taken out a loan before?
   a. Who did you get a loan from?
2. Have you ever given a loan to anybody?
   a. Who do you lend money to?
3. Would you require a loan to help pay for seeds and fertilizer?
   a. If you would not require a loan, how would you pay for seeds and fertilizer?
4. What guarantees can you make to repay the loan?
   a. What would you do if you were unable to repay the loan?
   b. What types of promises are you willing to make to WARC to encourage them to give you loans?
5. Would you prefer to take a loan at 20% interest to purchase inputs or have the cost of inputs taken from the amount you would get paid at the end of the harvest?

Other:
What are costs of producing rice?

Closing:
Do a quick summary.
Thank you so much for your time, and for helping us for our research. Is it ok if we contact you in the future if we have additional questions?
Do you have any questions for us?
## Annex X: SRI Adoption by Other Stakeholders

<table>
<thead>
<tr>
<th>Name of NGO/Organization</th>
<th>Location</th>
<th>Details</th>
<th>Success of SRI</th>
<th>Farmers Interest</th>
<th>Other Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Vision</td>
<td>Freetown</td>
<td>Rice Varieties: Rok 10, Wusui, Patae, Peipei Inland Valley Swamp</td>
<td>5.3 ton/ha yields from SRI plots, all average yields were higher with SRI, and a gross benefit of 4,869,000le/ha compared to 3,522,000le/ha (non-SRI), but higher weed regrowth in SRI plots</td>
<td>Farmers were very interested in the technology, but are worried about the higher weed rate; WV is now trying to promote mechanical hand weeders to mitigate this</td>
<td>WV is the most successful NGO that has done SRI in Sierra Leone</td>
</tr>
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<td></td>
<td>Kono</td>
<td>Ground prepared with power tiller 2 plots next to each other: SRI and broadcast 8 acre plots On farm demonstration of SRI practice</td>
<td>Participation from the farmers has been the most challenging part of SRI, since farmers want immediate results.</td>
<td>Program needs to be made in the interest of the farmers</td>
<td>Farmers need to recognize the use of the program</td>
</tr>
<tr>
<td></td>
<td>South/Eastern</td>
<td>South/Eastern Land prepared with power tiller 2 plots next to each other: SRI and broadcast 8 acre plots On farm demonstration of SRI practice</td>
<td>Farmers are beginning to adopt parts of SRI technology, but not the entire process</td>
<td>70% of the farmers are interested, but give food and travel allowance to convince the farmers to attend the trainings. Farmers only pay 20-25% of the inputs</td>
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<td>Welt Hunger</td>
<td>Bo</td>
<td>Inland Valley Swamp</td>
<td>SRI has resulted in visible increases in yields; allows the seeds to &quot;tiller&quot; well, some farmers and families have adopted some SRI practices, but not the entire technology</td>
<td>Participation from the farmers has been the most challenging part of SRI, since farmers want immediate results.</td>
<td>Program needs to be made in the interest of the farmers</td>
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<td></td>
<td>Kenema</td>
<td>On farm demonstration of SRI practice 4-5 trainings throughout the year Exchange visits: seeing is believing Close supervision to monitor practices</td>
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<td></td>
<td>Pujehun</td>
<td>Inland Valley Swamp</td>
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<tr>
<td>Catholic Relief Services</td>
<td>Conoco</td>
<td>SILC (Savings and International Lending Communities) to support SRI programs Demonstration plots Peer-to-peer learning</td>
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<tr>
<td>CARE</td>
<td>Koinadugu</td>
<td>Partnered with World Vision on its SRI project</td>
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<td></td>
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<tr>
<td>USAID, agriculture and food security program</td>
<td>Koinadugu</td>
<td>Partnered with World Vision on its SRI project</td>
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</tr>
<tr>
<td>Madam (Mankind’s Activities for Development Accreditation Movement)</td>
<td>Koinadugu</td>
<td>Sustainable access to inputs and technical skills necessary to increase agricultural productivity Link with institutions providing the necessary inputs Building trust and linkages within communities</td>
<td>Not sure if they’re doing SRI</td>
<td></td>
<td>Need to contact to get more information</td>
</tr>
</tbody>
</table>