



# SDM Case Report

Sparkx Farms - Ghana

*Public Version*

*May 2020*

# 1. Executive Summary

*Presenting a high-level overview of Sparkx' strategy, its current situation and projected performance*

# Executive summary:

## context and key strengths and weaknesses

### Relevance of Sparkx' outgrower model

- In Ghana, government and businesses are investing heavily in local rice production in order to **replace rice imports currently necessary to meet domestic consumption**.
- Sparkx is a small-scale privately owned agribusiness operating a smallholder outgrower model since 2016. Its mission is to **become a leading rice producer** in Ghana, while **improving the livelihoods of farmers** in the region.
- Sparkx is seeking to expand its **current farmer base of 690** in northern Ashanti, **to 3,595 farmers by 2023**. **Annual sourcing volumes are expected to grow to 6,400 MT rice grain and 3,500 MT certified rice seed by year 2023**.
- **Profit before taxes are projected to be \$3.6M by 2023, depending for 75% on government subsidized** certified seeds and fertilizers sales.
- Through its service offering (particularly training, inputs and mechanization on credit, irrigation and off taking) Sparkx is able to **significantly boost household incomes up from \$325 to \$2,256 per year, within 3 years (6 seasons) by increasing annual production per farmer from 2.0 MT to 10.5 MT per year**.
- This report analyzes the strategy and business model of Sparkx, the financial performance of the company and farmers, and identifies opportunities in overcoming barriers to scale and mitigating business and farmer-level risks.

### Strengths and weaknesses of Sparkx outgrower model

- **Sparkx is strategically located in northern Ashanti.** Building on a strong presence in Ejura, Sparkx seeks to expand in Bono East and Savannah provinces, regions with many rice grain farmers and only limited competition from other service providers and offtakers.
- **Sparkx has built strong relationships with its current farmer base, the broader farmer community, Centre Research Institute (CRI) and the Ministry of Food and Agriculture (MoFA).** As the CEO is also the local chief, Sparkx is well-positioned to get certain investments, like irrigation infrastructure and acquiring new lands, done with relative ease.
- **However, there are larger barriers to investment and scale.** Interest rates are extremely high at around 28-30% annually, and payment terms of Sparkx' main institutional buyers are long, up to 24 months. These working capital constraints cause Sparkx to buy only half of the rice volumes available and severely delay construction of their mill.
- **Also, farmer income and Sparkx profitability projections depend on unproven impact:** there is no data available proving increased yields, and farm size as a result of service provision. Additionally, Sparkx does not (yet) have an agronomist employed. As long as Sparkx has no data management systems and data-driven decision-making processes in place, service provision effectiveness and efficiency might be much lower than expected, worsening the financial sustainability of the model.





# Executive summary: current performance, barriers and risks



## Sparkx performance as of 2019

**695**

Smallholder provided  
with services

**2,000 MT**

Produce sourced  
annually

**\$3 M**

EBIT/year

**24%**

Profit margin  
(incl. subsidies)



## Farmer performance as of 2019

**3 acres**

Average rice plot size  
per farmer

**10.50 MT**

Annual rice grain  
production per farmer

**\$2,250**

Average annual  
household income

**51%**

Share of living income  
benchmark

### Barriers to scale

- **Capital is Sparkx' main constraint to growth**, as farmers and land are abundant. Due to very **long payment terms** from its institutional buyers it takes Sparkx **up to 24 months** to reinvest its profits. Working capital loans to cover sourcing payments or services on credit are not an option as **interest rates are high at 28-30%**, the costs of which Sparkx does not want to charge to its farmers. Moreover, lack of capital also causes delays in repairs of its irrigation infrastructure and construction of its mill.
- **Sparkx does not collect farm level data**, limiting growth in three key ways: 1. farm level **impact cannot be proven** making it difficult to build a case and attract impact investment; 2. **effectiveness of services is unknown**, and delivery thus not tailored and optimized; 3. (financial) **performance is unknown** making it near impossible for farmers to be eligible for financial services such as loans or insurance.
- **Operational excellence is lacking**. With some key positions not filled and limited systems in place, it is unclear whether Sparkx can manage the projected growth. There is **limited proof of experience in managing a fast-growing and financially sustainable outgrower model**. Currently, there is no in-depth agronomic experience in-house, and only recently has Sparkx started to build a digital infrastructure to manage data collection to facilitate data-driven decision-making.

### Main risks

- **Dependency on subsidies**, the profitability of Sparkx' certified seed and subsequent grain business is highly dependent on government subsidies on seeds and fertilizer - **75% of EBIT between 2019-2023**. While Sparkx relationships with MoFA is generally good, and plans do not change from one year to another, the degree of dependency poses a threat to the long-term sustainability of the model.
- **Damage to crops**. There is a variety of external factors that can cause lower than expected yields. Damaged infrastructure leads to fewer seasons (2 versus 3); floods can destroy entire harvests (last time in 2013); and nomadic people raising livestock can reduce yields by damaging the crops. Annual production of up to **10.5 MT per year - up from 2 MT per year** - might not be reached.
- **No presence in other regions**. While Sparkx has well-established relationships with its farmers in Ejura, they have no experience working with the farmers in more distant Bono East and Savannah districts. There is a high risk that farmers show much lower loyalty rates, significantly impacting the effectiveness and profitability of services provision. **Loyalty rates might be as low as 60%, compared to the current estimated 95%**.

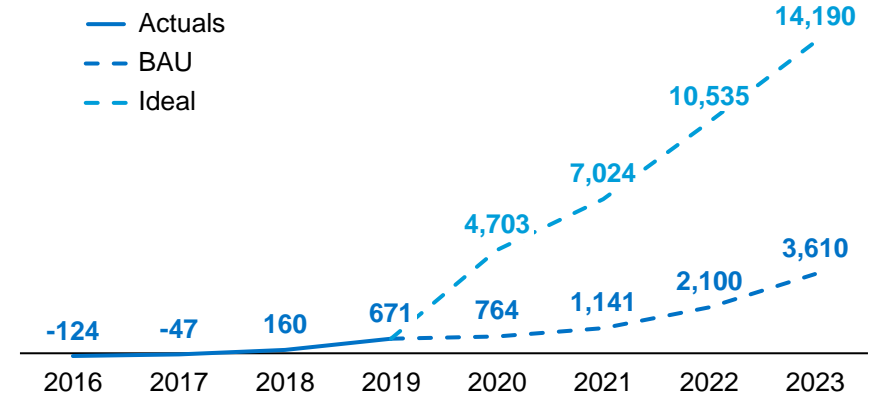
# Executive summary: opportunities for improvement

Below recommendations are identified to strengthen the SDM and to increase profitability and impact from a Business as Usual (BAU) to Ideal scenario:

- 1. Building operational excellence** is a prerequisite for quickly scaling the business. Managerial, agronomic and digital expertise needs to be strengthened and expanded. Processes need to be established to develop, test and improve Sparkx' farm service and sourcing activities. A combination of hiring the fulfilling key positions (e.g., an agronomist) and training the team (e.g., on digitalization) is strongly advised.
- 2. Implement data infrastructure** to measure farmer behaviour, service impact, agronomic and financial performance. This allows continuous improvement of service effectiveness based on data-driven insights and is necessary to access impact investment funds and/or farmer on-lending. Sparkx could benefit from external expertise to build an infrastructure that is aligned with international M&E standards, connects with fit-for-purpose software solutions and is easy to use by its employees.
- 3. Improving payment terms and attracting finance** allows faster scale up of Sparkx. First, it can shorten its working capital cycle and take on larger input and assets loans to source and process larger volumes and extend more services each year. Second, it can repair damaged irrigation infrastructure and start building new dams sooner, expanding land under irrigation. Third, it can complete its mill earlier, leading to increased processing efficiency. Conditional on a strong organizational foundation this would greatly increase the sourcing volume growth rates and farmer incomes as seen in the graphs to the right.
- 4. Tailoring services to female farmer needs and climate change risks** will make this SDM more inclusive and resistant against climate shocks. While Sparkx is aware of gender disparities and climate change impacts, minimal actions are taken to specifically tailor services to women; or roll-out resilience-enhancing services that go beyond increasing yields. External support for the creation and implementation of a strong gender and climate-resilience strategy would ensure rice production in central Ghana is scaled up while being inclusive and prepared for future climate change impacts.

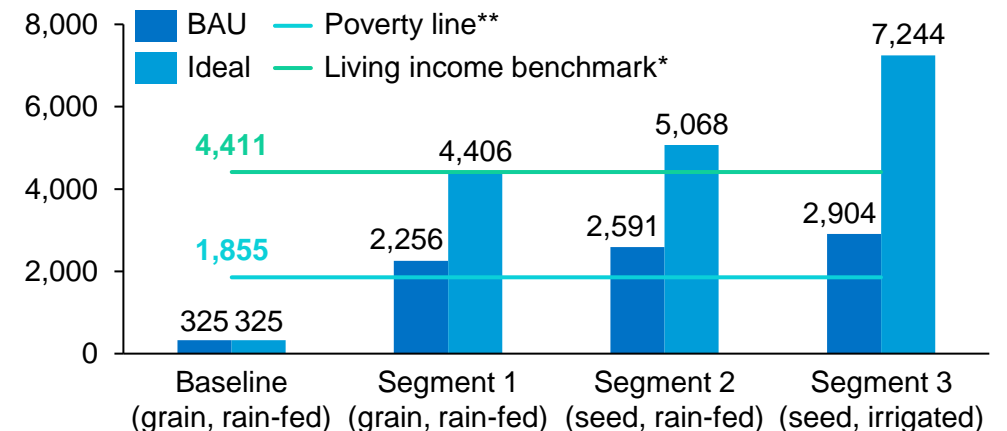
## Sparkx annual EBIT ('000 USD/year)

Includes sourcing and service costs, revenues, and subsidies



## Household annual income per segment in USD/year

Compared to poverty line and living income benchmark



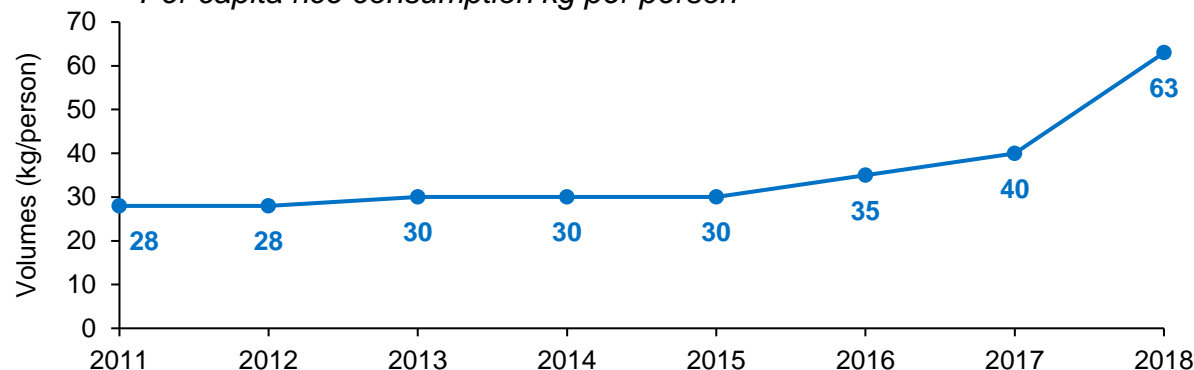
# 2. Context

*Introducing the Ghanaian rice sector, it's challenges and priorities*

# Domestic demand outstrips supply, forcing Ghana to import 54% (\$1 Bn) of its rice consumption

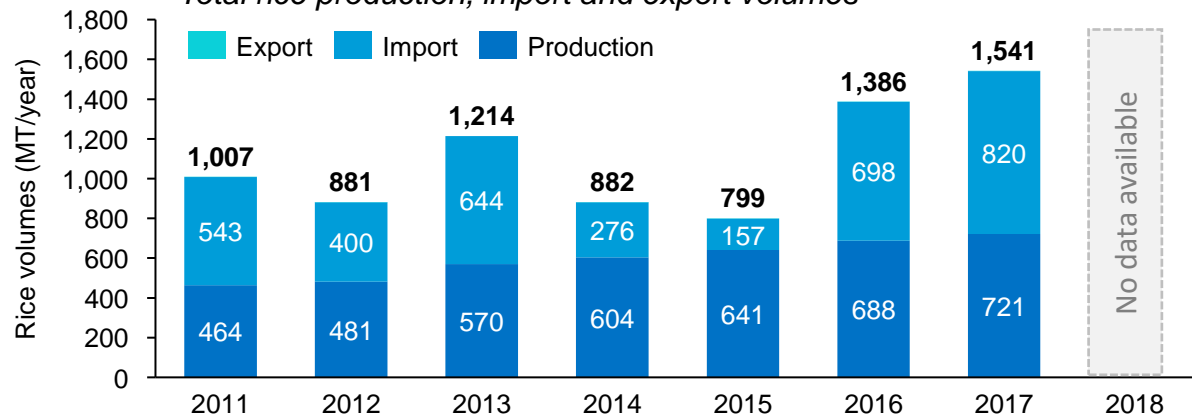
## Growing demand for rice in Ghana

Per capita rice consumption kg per person



## Ghana's production falls behind

Total rice production, import and export volumes



## Demand outstrips supply

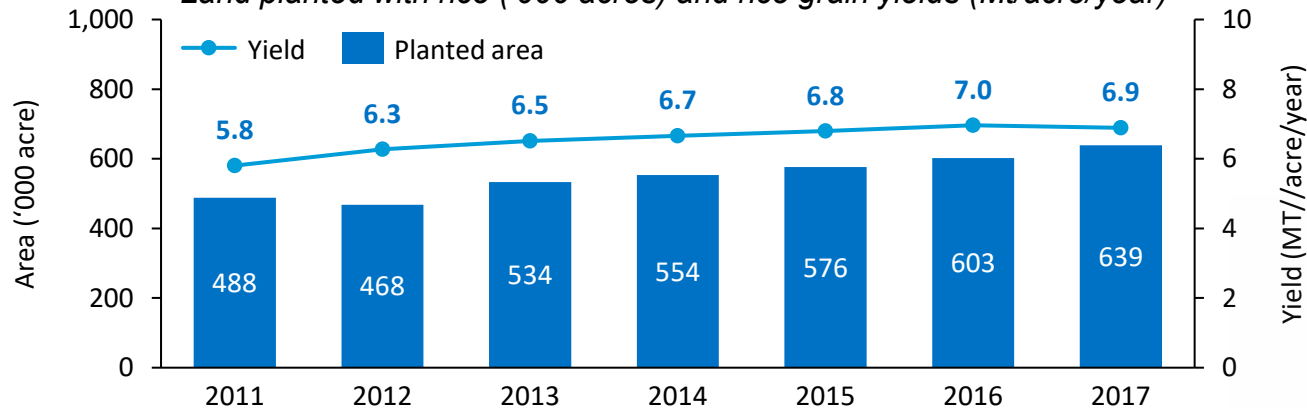
- **Ghanaian rice demand increases** as population grows and per capita consumption increases due to changing food preferences<sup>2</sup>.
- **Urban areas consume 75% of total rice** - both local and imported long grain aromatic rice from Vietnam and Thailand.
- Urban areas only consume 20% of local rice due to 1) the low-quality perception, 2) it being marketed as broken – low quality – rice, and 3) its scattered availability<sup>5</sup>.
- A decreasing price gap between imported and local rice favors imported over local rice<sup>5</sup>.
- Gradual increase in **local production is not enough to meet the rapidly growing demand**.
- This results in Ghana fulfilling 53% of demand by importing 820,000 MT of rice in 2017, valued over 1 Bn USD.

Sources: 1) FAOSTAT (2019); 2) FAO (2013) Analysis of incentives and disincentives for rice in Ghana; 3) USDA FAS (2018) Ghana grain and feed update; 4) AGRA (2018) Ghana receives support to boost rice production; 5) BMGF (2012) Overview of the rice value chain in Burkina Faso, Ghana, Nigeria and Tanzania; 6) AGRA (2017)

# With only gradually increasing land area and stabilizing yields, Ghana falls behind ECOWAS countries in production volumes

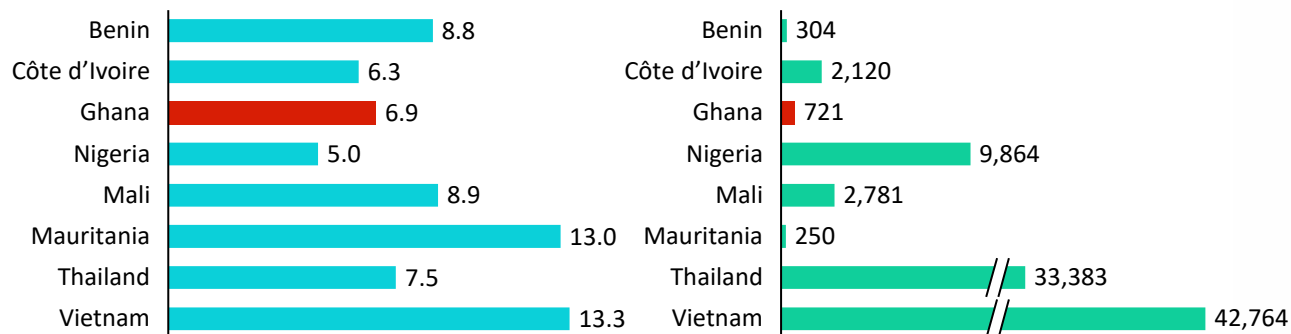
## While area under cultivation grows, yield stagnate

Land planted with rice ('000 acres) and rice grain yields (Mt/acre/year)



## Causing Ghana to be an average performing rice producer in the region

Average country-wide yields (MT/year/acre) and total production (000' MT/year)



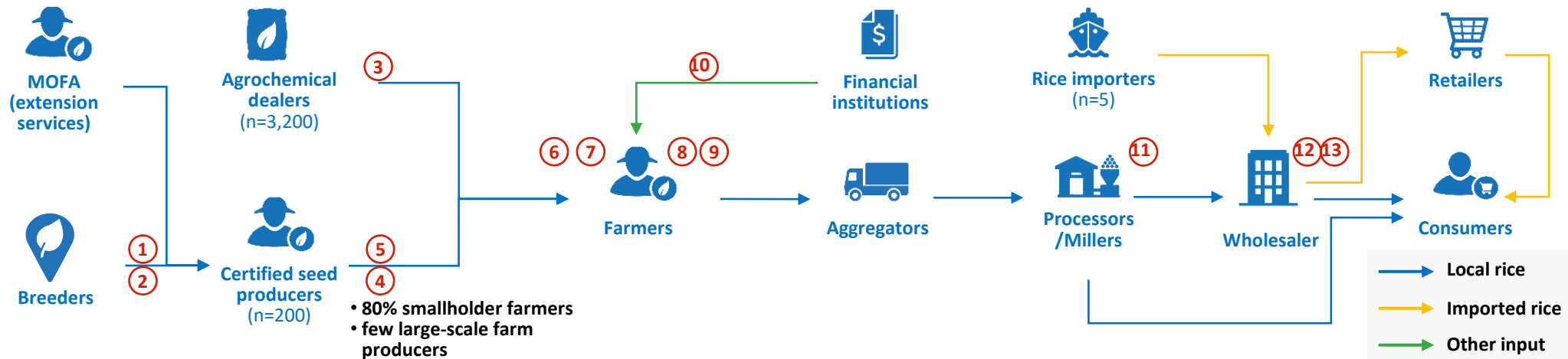
## Competitiveness of the sector

- The government of Ghana aims to **reduce rice imports with 10% by 2020**.
- To meet the targeted import substitution and to cover the continuously growing demand, **domestic production needs to increase with a minimum of 400,000 MT<sup>3</sup>**.
- **Supportive policies** have led to increased land attribution to rice production.
- **Yields have remained stable** over the past years at around 7 MT/acre.
- While Ghana cannot compete with Asian rice producers, it can **become a major rice producer in the region**. It has comparable yields with other ECOWAS\* countries, while there is room to expand area under cultivation.

Sources: 1) FAOSTAT (2019); 2) FAO (2013) Analysis of incentives and disincentives for rice in Ghana; 3) USDA FAS (2018) Ghana grain and feed update; 4) AGRA (2018) Ghana receives support to boost rice production



# Historically, the sector is facing structural lack of investment, particularly in seed breeding, extension capacity and inputs



## Inputs

1. Limited variety choice due to long release duration (average of 42 months).
2. Low seed quality due to low inspection capacity (32 inspectors in 10 regions).
3. High volumes of fake seed and counterfeit agrochemicals on the market.
4. Insufficient supply of quality foundation seed due to lack of financial resources.
5. Low seed sales due to limited competitiveness (4 companies generate 72-98% of seed sales).

## Cultivation

6. Few farmers own land and land tenure rules are unclear, discouraging land investments.
7. Farmers re-use seeds resulting in low yields.
8. Price and demand information asymmetry makes farmers sell at low prices.
9. Agrochemicals are applied wrongly and in incorrect quantities.
10. No access to finance.

## Processing

11. Small village mills are outdated or badly managed resulting in lower conversion rates.
12. The cost of transporting local rice from farms to mills and on to urban areas for sale is very high. This discourages importers and local traders, and limits the market access for farmers.
13. Farmers sell at low farm gate prices to aggregators or wholesalers as there is low market access.

# A healthy seed sector is key in boosting quality and quantity of grain production, in turn achieving food self-sufficiency

**A well-functioning and collaborative seed sector can contribute to food security in the country and increase quality grain production:**

- **Accessibility:** Creating an adequate seed production and delivery system will lead to higher awareness and adoption of new varieties by farmers<sup>1</sup>
- **Affordability:** Decreasing rice variety registration time -currently three years- , will lead to increased seed availability and competition between seed developers. Driving down seed prices and leading to faster implementation.

## Government priorities and policies

**Policies aimed at boosting domestic rice seed production:**

- Doubling domestic rice production by 2018, thereby assuming a 10% annual production growth rate (National Rice Development Strategy, 2009-2018)<sup>1</sup>.
- Increasing food production and processing capacity to enhance food security while generating jobs in the process (Planting for Food and Jobs (PFJ), 2018)<sup>2</sup>.

**Governmental programs and actions:**

- Government extension services for the seed industry and support on private sector commercialization of the seed industry (Ghana's National Seed Plan, 2015)<sup>3</sup>.
- Provision of improved seeds, fertilizers and extension services to 600,000 smallholder farmers at a 50% subsidy as part of PFJ<sup>2</sup>.
- "Ghana Rice Initiative" Public Private Partnership of \$ 2.5million including provision of subsidized certified seeds and technical and infrastructural support to 200,000 farmers<sup>2</sup>.

## Privatization of the seed sector

- More private companies are getting involved in seed multiplication<sup>1</sup>. In 2017 the private seed sector produced approximately 1,400 MT of rice seed<sup>2</sup>. But most of the seed sector activities remain in hands of the public sector, including development of new varieties<sup>2</sup>.
- In the last 10 years, private sector investment into state-of-the-art rice mills, have made the Northern region the area with the largest milling capacity<sup>3</sup>.

## Customer requirements

- Addressing customers' needs<sup>1,2</sup> and creating the varieties the farmers want, yields can be increased, farmers can gear towards more grain production including production for own consumption.
- Customers prefer varieties that have high cooking and aromatic qualities
- Farmers demand varieties that are suitable for the local terrain (lowland and irrigated rice ecologies), high-yielding varieties that are tolerant to diseases.

Sources: 1) FAO (2013) Analysis of incentives and disincentives for rice in Ghana; 2) AGRA (2017) Six new rice varieties released in Ghana; 3) Bill & Melinda Gates foundation. Developing the rice industry in Africa. Ghana assessment.

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# Investing in women and climate adaptation is key in guaranteeing stable short- and long-term rice supply



## Key gender role related risks and opportunities

Women have fewer assets and limited access to services

Women are constrained in working on income generating activities

Women are more loyal and conscientious in their work



## Key climate related risks

Increasing temperatures

Droughts

Erratic rainfall

- **Gender stereotypes are persistent** in rural areas in Ghana. While women have longer working days, they have less time to dedicate to income earning activities<sup>1)</sup>, reduced access to household decision making, resources and services. At the same time, interventions in agriculture focus in Ghana mostly on parts in the value chains where men are more competitive. This can exacerbate the position of women in agriculture.<sup>1,2</sup>
- Research on the participation of women in rice cultivation, finds **women are very actively involved in the rice value chain**. Males in general participate less in domestic work which provides them more time to engage in rice production than females.<sup>3</sup> **Benefits from rice production are not shared equally**. Influencing factors are beliefs, poverty, land tenure and inability to access credit facilities.
- Key actions to take by sector stakeholders are **targeting women to improve their access to services; sensitizing men and women about currently held beliefs and their impact on equal opportunities; offer affordable day-care, promote and enforce equal participation and opportunities** of women in agriculture

- **Rice is an extremely thirsty crop, ideally grown in regions where temperatures range from 20 °C to 27 °C, rainfall measures between 170-300 cm annually**, and on a flat surface with a constant water standing level of around 25 mm. Additionally, paddy rice needs large amounts of fertilizer (nitrogen, phosphorus and potassium).
- The biggest climate related risks impacting rice yields in Ghana are **increasing temperatures and increasingly erratic droughts and rainfall**. One study<sup>1</sup> shows **future rice yields in West-Africa will drop** by at least -10%, sometimes more than -30% without adaptation strategies, for both rain-fed and irrigated fields. With adaptation measures however, future yields are projected to change by only -10% to 10% for rain-fed and between +10% and +30% for irrigated fields.
- The main adaptation measures mentioned are using **drought-resistant varieties**, investing in **water conserving measures**, and **planting of cooling shade trees**. Other measures are **mulching**, and provision of timely and accurate weather forecasts enabling **optimal timing of sowing**.

1) FAO (2018): National gender profile of agriculture and rural livelihoods; 2) Agboh-Noameshie et al. (2013) Integrating Gender Considerations in Rice Research for Development in Africa; 3) Addidon et al. (2016) Gender Role, Input Use and Technical Efficiency among Rice Farmers at Ahafo Ano North District in Ashanti Region of Ghana

# 3. Strategy

*Understanding Sparkx' strategy and business model*

# Sparkx seeks to become a leading rice grain and seed producer contributing to improved food security in Ghana



## Goals & Aspirations

- Realize solid profitable growth.
  - Outperform market growth (i.e. grow market share)
  - Grow revenues > 5% p.a. until 2023
  - High single digit profit growth (improved margins)
- Grow portfolio of high-performing certified seed varieties.
- Improve relationships with government and main buyers.
- Manage rice business.



## Where to Play

### High Priority Areas

- Strengthen seed production in Ejura region Ghana.
- Become main seed supplier in South-West.
- Be recognized by farmers and buyers as high-quality certified seed supplier.
- Be recognized among institutional buyers and consumers as high-quality rice supplier.

### Lower “priority” areas

- Expand rice grain production on Sparkx’ owned land in Northern Ghana.



## How to Win

### Points of Differentiation

- Farmers receive all services at cost
- Not taking on expensive loans. further reduces cost of services
- Strong brand presence in Ashanti by owning a radio station.
- Price paid by Sparkx for paddy is far above market price to reduce side selling.
- Having access to resilient, high yielding varieties rice seed will provide extra rice grain yield against reduced cost.

### Points of parity

- Good governmental relationships which provides access to foundation seed, grain offtake and irrigatable land.



## Capabilities Required

### Critical capabilities

- Reliable seed and grain supply.
- Superior brand building capabilities towards farmers.
- Affordable working capital loans for faster scale up.
- Affordable asset financing to complete construction of mill.

### Supporting capabilities

- Development of effective digital infrastructure to support financing decisions.
- Strong management team to handle steep growth.
- Financial reserves to absorb potential shocks.



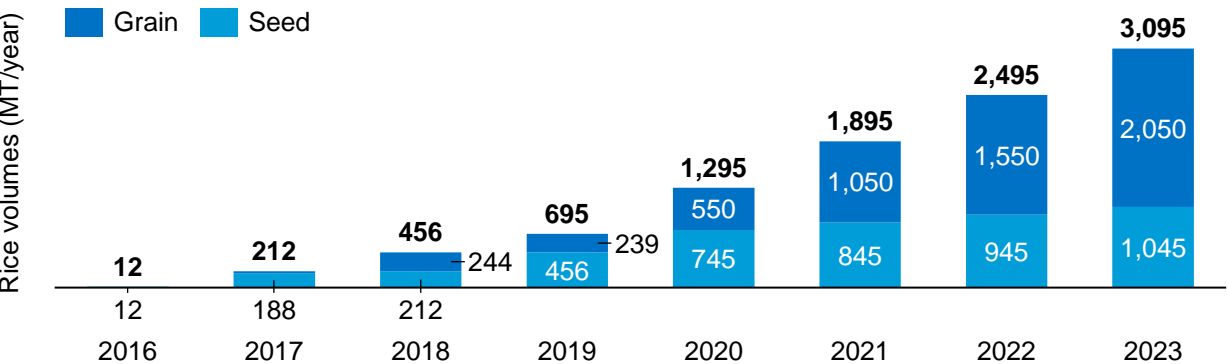
# Sparkx is based in northern Ashanti, and expanding into Bono East and Savannah districts scaling towards 3,500 farmers

## Sparkx' outgrower model

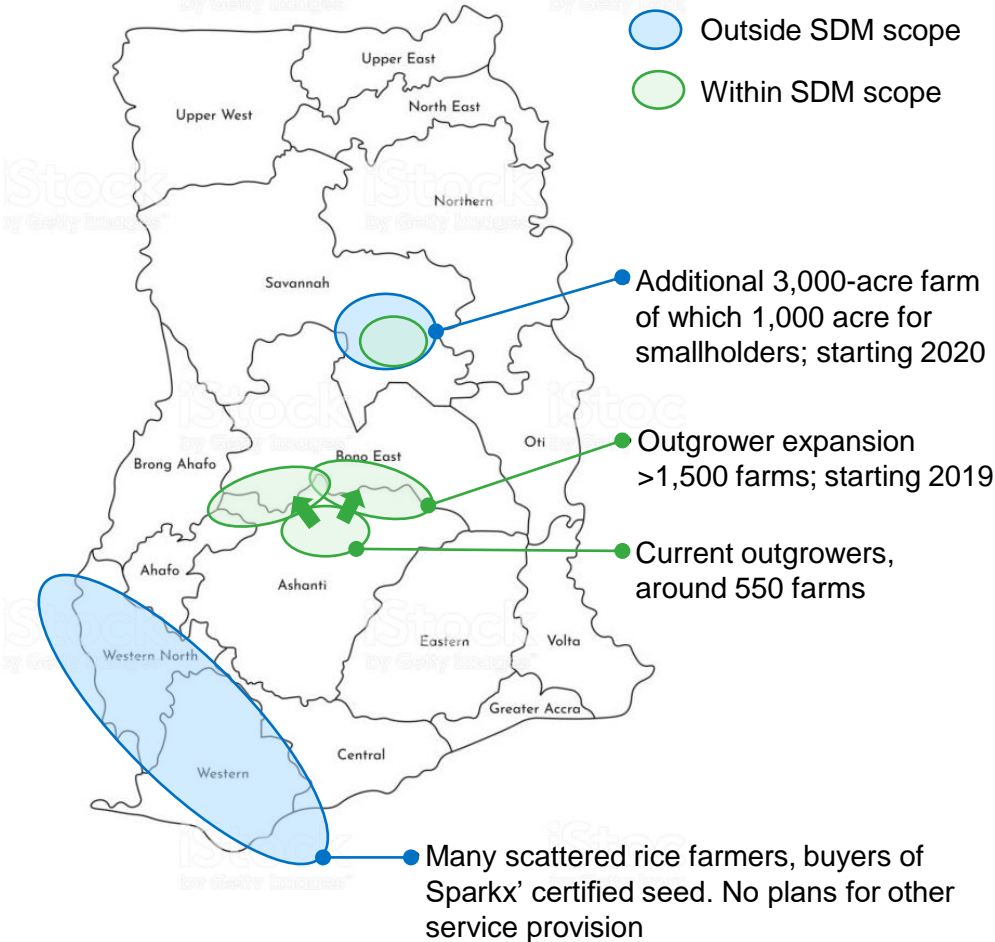
- **Sparkx owns 5,000 acres** on which it mainly grows maize and cowpea to feed its livestock production. It has concrete plans to **purchase an additional 3,000-acre plantation** to expand its rice production.
- **Sparkx leases part of their irrigated fields** to certified rice seed farmers and it is scaling up its rice grain business, aiming for total of 3,500 farmers by 2023.
- **Sparkx currently sources around 3,100 MT seeds**, selling 2,500 MT to government as part of the Planting for Food and Jobs program, and selling 600 MT back to farmers. Future grain will be sold to government programs and local markets.
- **The company employs 26 people as of 2019** of which 19 are field and/or sourcing staff, supported by 3 government extension workers and 3 CRI workers.

## Scale of outgrower model





Number of rice grain and seed farmers per year



## Location of current and future Sparkx operations

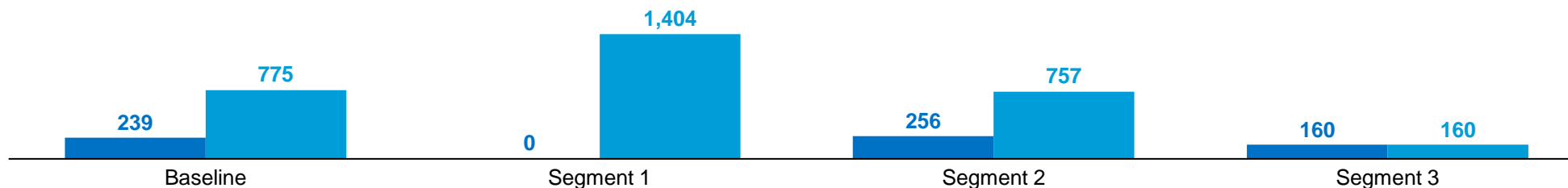


# Sparkx works with rain-fed and irrigated rice seed farmers and increasingly with rain-fed rice grain farmers

				
	Baseline	Segment 1	Segment 2	Segment 3
<b>Description</b>	<ul style="list-style-type: none"> <li>Farmers working in the region but not accessing or adopting services provided by Sparkx</li> </ul>	<ul style="list-style-type: none"> <li>Farmers with own lands accessing Sparkx services on credit</li> </ul>	<ul style="list-style-type: none"> <li>Segment 1 farmers growing seed after 2 years compliance to certification criteria</li> </ul>	<ul style="list-style-type: none"> <li>Farmers leasing Sparkx' irrigated lands and accessing full-service package since 2016</li> </ul>
<b>Production system</b>	<ul style="list-style-type: none"> <li>Rice grain</li> <li>Rain-fed</li> </ul>	<ul style="list-style-type: none"> <li>Rice grain</li> <li>Rain-fed</li> </ul>	<ul style="list-style-type: none"> <li>Certified rice seed</li> <li>Rain-fed</li> </ul>	<ul style="list-style-type: none"> <li>Certified rice seed</li> <li>Irrigated fields</li> </ul>
<b>Services</b>	<ul style="list-style-type: none"> <li>Sourcing relationship only</li> <li>(and/or services received but not applied)</li> </ul>	<ul style="list-style-type: none"> <li>Training, inputs, mechanization on credit</li> </ul>	<ul style="list-style-type: none"> <li>Training, inputs, mechanization on credit</li> <li>Inspection</li> </ul>	<ul style="list-style-type: none"> <li>Training, inputs, mechanization on credit</li> <li>Inspection</li> <li>Access to irrigated lands</li> </ul>

Number of farmers

■ 2019  
■ 2023



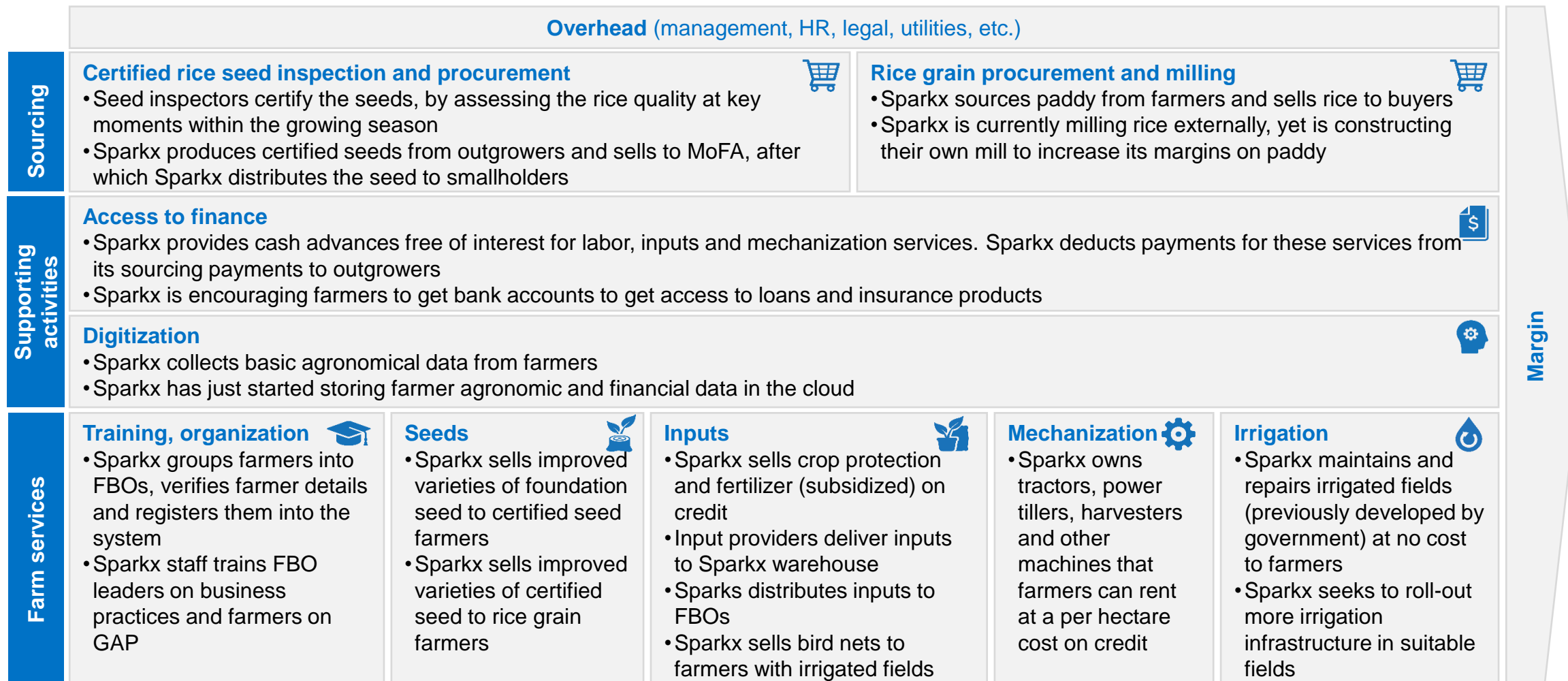
# Sparkx prioritizes solving farmer cash-constraints and improving yields; limited focus on social and environment

## Farmer challenges and priority ( High Medium Low )






## Measures taken (👉 attention needed)

Economic	<ul style="list-style-type: none"> <li>• <b>Cash constraints</b> refrain farmers from expanding their farms beyond 2 acre. Cost of inputs and labor-intensive activities are main bottlenecks.</li> <li>• <b>High interest rates</b> on loans at around 25-30%.</li> <li>• <b>Limited adoption of bank accounts</b>, preventing digital payments or the use of other financial services.</li> <li>• <b>Most farmers are not diversified</b>, 90%+ of their income is derived from rice production.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Service provision on credit</b> at 0% interest.</li> <li>👉 Limited to no control over by SDM operator.</li> <li>• Active <b>engagement of farmers to get bank accounts</b> through FBOs.</li> <li>👉 No plans on diversifying farmers' crop portfolio.</li> </ul>
Agronomic	<ul style="list-style-type: none"> <li>• <b>Low-yielding varieties</b> are commonly used. Improved varieties are expensive or unavailable. Many farmers prefer aromatic seeds.</li> <li>• <b>Most farms are rain-fed</b>, limiting farmers to two seasons per year.</li> <li>• <b>Migratory birds</b> feed on rice fields during the main season, damaging the crops. Manual scaring of birds is labor-intensive and expensive.</li> <li>• Most farmers buy <b>expensive, low quality inputs</b> from local shops.</li> </ul>	<ul style="list-style-type: none"> <li>• Multiplication of <b>best-performing locally developed varieties</b> and provision of certified seeds at cost.</li> <li>• Repair and maintenance of <b>irrigation infrastructure</b>.</li> <li>• <b>Bird net provision</b> at cost.</li> <li>• <b>Subsidized fertilizers provision</b> (fertilizers recommended and tested by CRI).</li> </ul>
Social and environmental	<ul style="list-style-type: none"> <li>• <b>Occasional floods</b> can destroy entire harvests.</li> <li>• <b>Increased agrochemical volumes</b> will damage the environment.</li> <li>• <b>Illiteracy is wide-spread</b> among farmer base.</li> <li>• <b>Women have fewer assets</b> yet are preferred to work with (due to higher e.g., loyalty, conscientiousness).</li> <li>• <b>Women have fewer hours</b> available for income earning activities.</li> <li>• <b>Ageing farmer population</b> impacts long-term viability of the sector.</li> <li>• <b>Occasional droughts</b> reduce yields.</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of <b>crop insurance</b>.</li> <li>• Promotion and <b>provision of manure</b>.</li> <li>👉 No specific services planned.</li> <li>👉 No specific services planned.</li> <li>👉 No specific services planned.</li> <li>• Promotion of farming among youth in trainings, on radio.</li> <li>• Drought resistant seeds.</li> </ul>

# Sparkx seeks to grow sourcing volumes and margins by providing farm services at cost (or at subsidized rates)

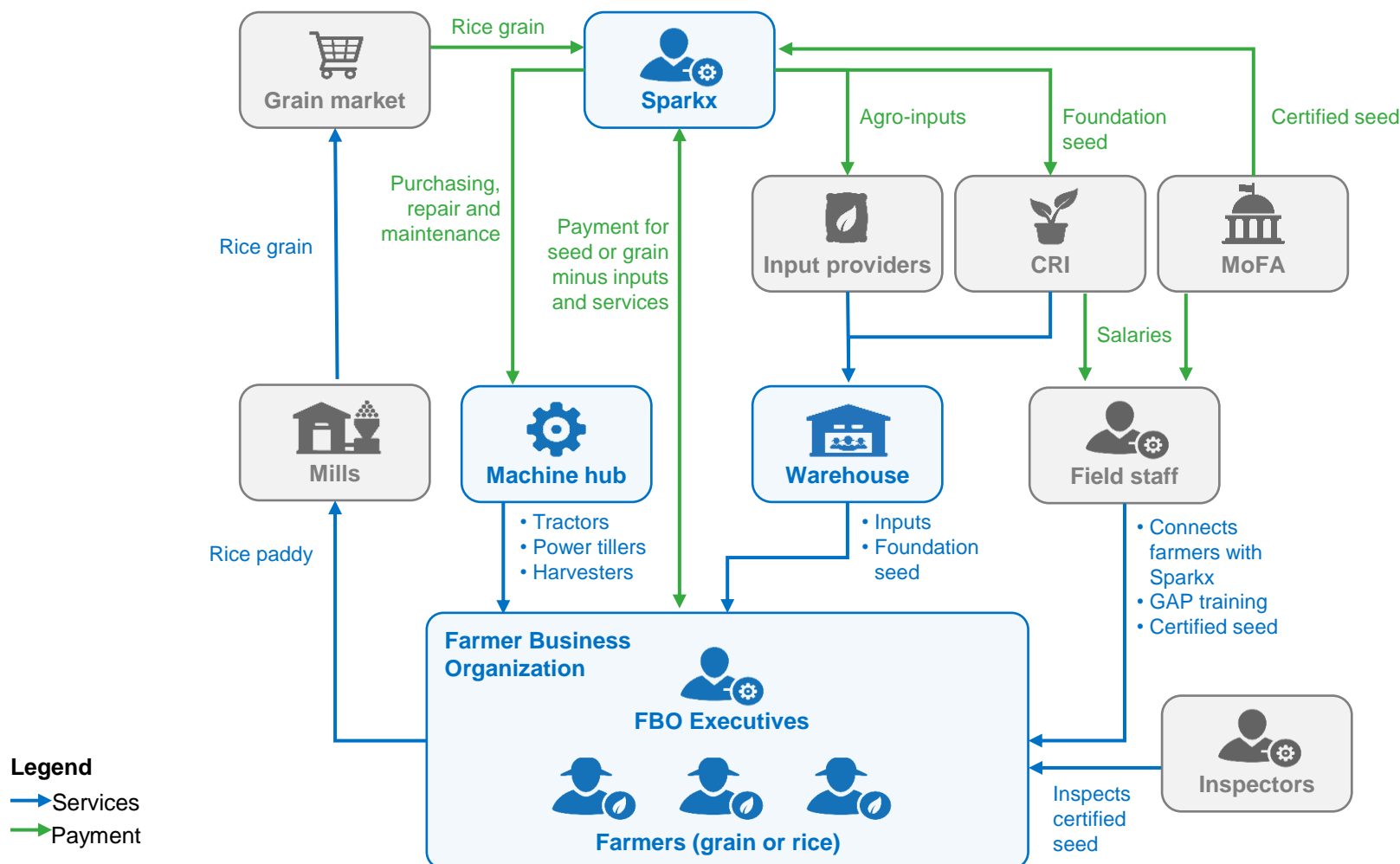


# MoFA, CRI, banks and input providers are essential in providing knowledge and materials to Sparkx and farmers

Actor	Legal Status	Function (within this SDM)	Revenue model (within this SDM)	Incentive to participate (within this SDM)
 <b>Input providers</b>	Private limited companies	<ul style="list-style-type: none"> <li>Sells crop protection and fertilizers to Sparkx</li> <li>Delivers inputs to Sparkx central warehouses</li> </ul>	<ul style="list-style-type: none"> <li>Margin on product sales</li> </ul>	<ul style="list-style-type: none"> <li>Increased sales volumes</li> </ul>
 <b>Crop Research Institute</b>	CSIR-CRI is a Governmental Institute aimed at developing technology and building capacity for sustainable food production	<ul style="list-style-type: none"> <li>Provides foundation seed to Sparkx</li> <li>Pilots new seed varieties on Sparkx' land</li> </ul>	<ul style="list-style-type: none"> <li>Receives income through the sales of foundation seed</li> </ul>	<ul style="list-style-type: none"> <li>Creates improved seed varieties</li> <li>Creates demand for these varieties</li> </ul>
 <b>Ministry of Food and Agriculture</b>	Ministry of Food and Agriculture (MOFA) is responsible for the development and growth of agriculture in the Ghana	<ul style="list-style-type: none"> <li>Subsidizes certified seed</li> <li>Subsidizes other inputs</li> <li>Provides extension services</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Catalyzes the development of the rice value chain in Ghana to reduce import by 50% in 2025</li> </ul>
 <b>Banks</b>	Private limited companies	<ul style="list-style-type: none"> <li>Provides Sparkx with loans</li> <li>Provides farmers with bank accounts and (in future) loans</li> </ul>	<ul style="list-style-type: none"> <li>Interest on loans</li> </ul>	<ul style="list-style-type: none"> <li>Increase sales volumes</li> </ul>
 <b>Insurance companies</b>	Private limited companies	<ul style="list-style-type: none"> <li>Partners in developing insurance products for farmers</li> </ul>	<ul style="list-style-type: none"> <li>None yet</li> <li>Insurance premiums (in future)</li> </ul>	<ul style="list-style-type: none"> <li>Increase sales volumes</li> </ul>



# Collaboration with CRI and MoFA at management and field level is critical to ensure effective delivery of services



# 4. SDM performance

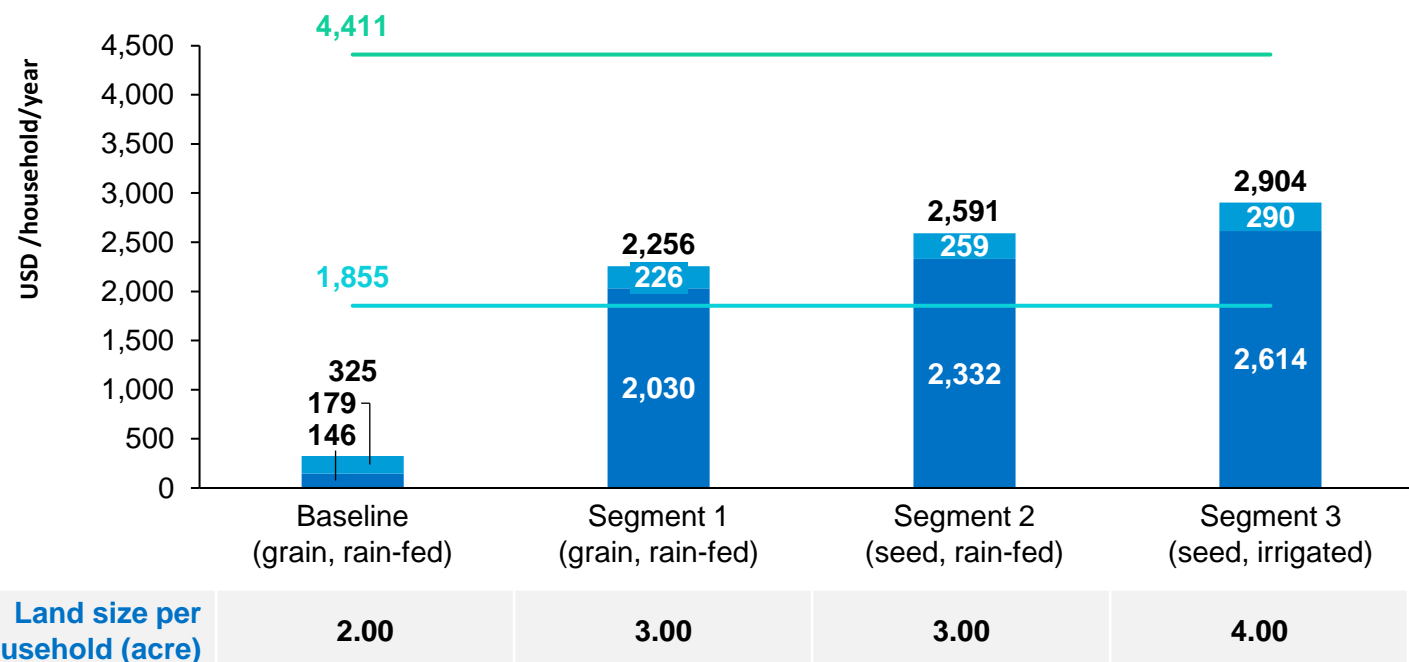
*Assessing farm-level impact', financial performance and opportunities for improvement*

# Sparkx' business model improves farmers' livelihoods, raising them above the poverty line but not living income benchmark

## Comparing household income, living income benchmark and poverty line

Shown for each farmer segment, in USD/household/year

■ Net income from rice      — Poverty line\*\*  
■ Net income from other sources      — Living income benchmark\*



## Impact on farmer incomes

- Given that envisioned service impacts will materialize, Sparkx significantly boosts farmer incomes from rice from **\$146 to between \$2,030 and \$2,614** per household per year. Key income drivers are discussed under [farmer profitability](#) and [farmer cash-flow](#).
- When service impact is proven, it is critical for Sparkx to rapidly grow its farmer base. In contrast to baseline farmers, **all farmer segments** accessing Sparkx' service offering will be able **earn more than the Worldbank poverty line from rice alone**.
- Still, with rice incomes alone, **all households are still earning below the living income benchmark** with \$2,155 (49%), \$1,820 (41%) and \$1,506 (34%) per household per year for segments 1, 2 and 3 respectively.
- How the living income gap can further be decreased** is discussed in the [recommendation section](#).

\*The living income benchmark for cocoa farmers in Ghana assumes a basic but decent standard of living for a typical size family of 2 adults and 3 children

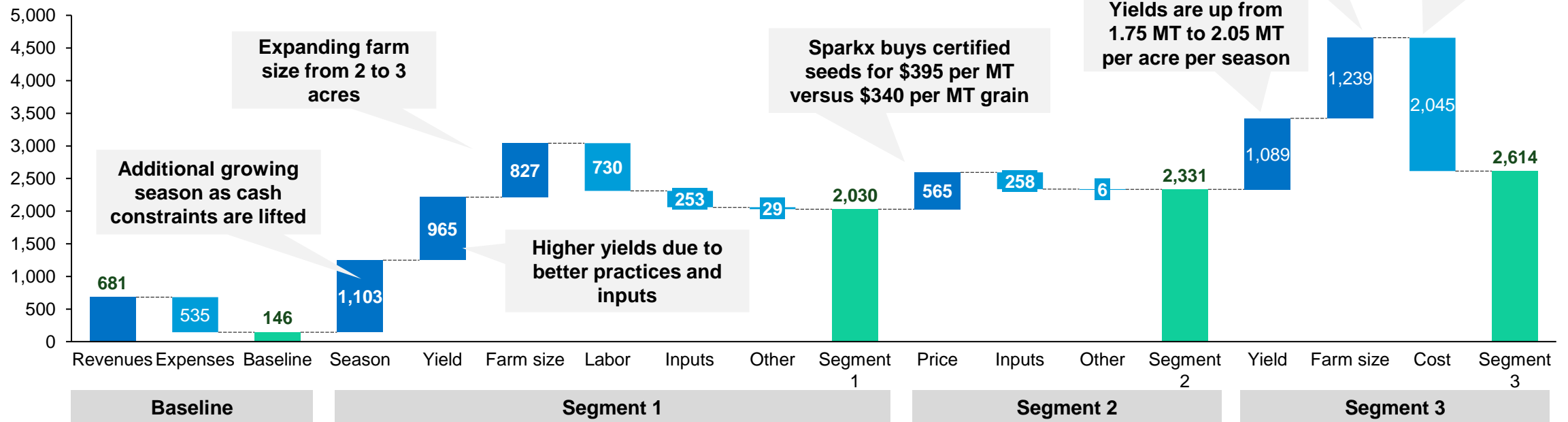
\*\*Based on the international poverty line of 1.9 USD/capita adjusted using the PPP conversion factor for Ghana<sup>1</sup> and assuming 7 household members<sup>2</sup>.

Sources: 1) World Bank (2018), Online PPP database, private consumption 2) PDC; 3) International Cocoa Initiative (2018) Living income report – Rural Ghana

# Sparkx services significantly improve farmer incomes as they can expand their farms and invest in higher quality inputs

Comparing net incomes of baseline and SDM farmers  
Split by revenue and expenses drivers, in GHS/year

Revenues Costs Net income

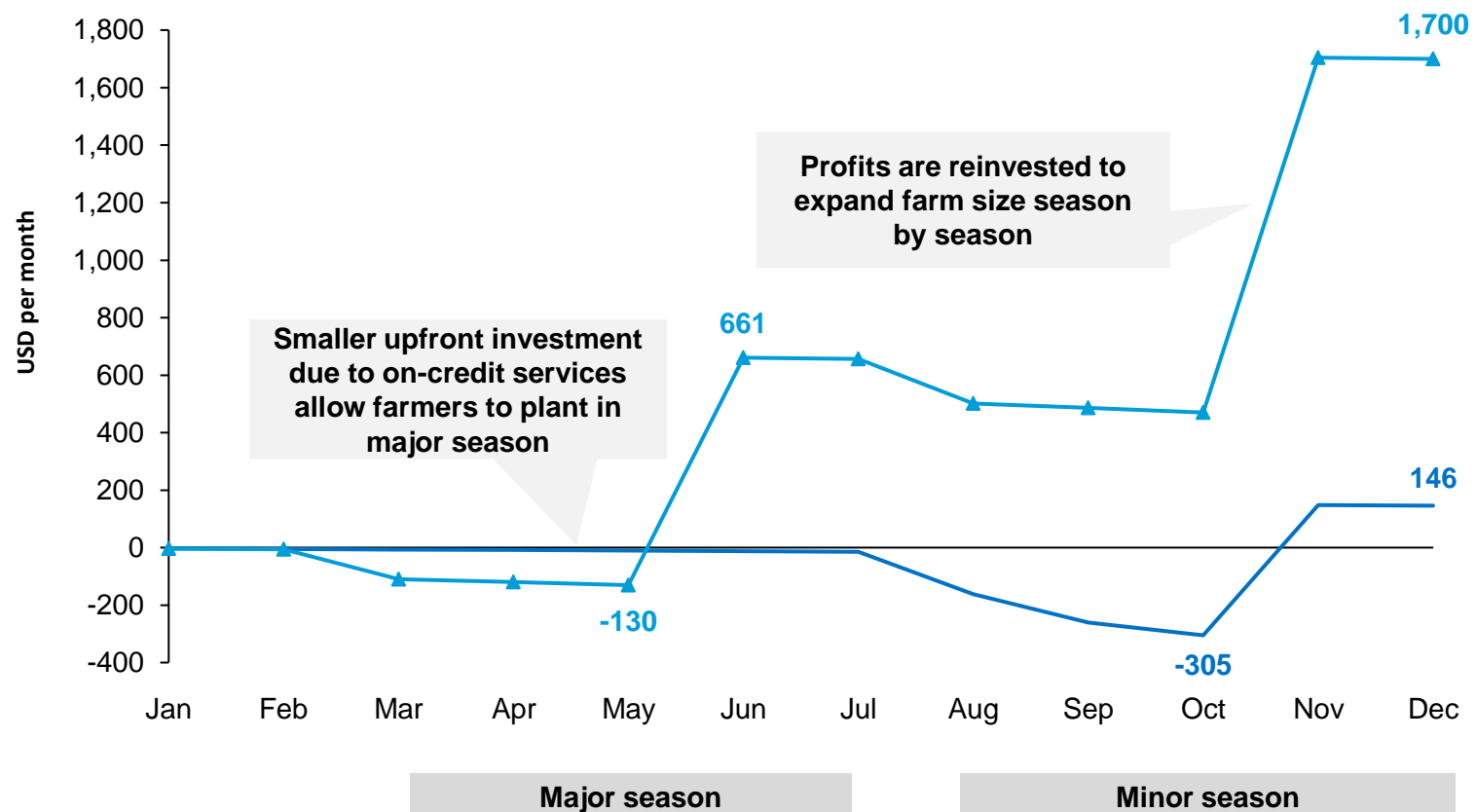


# Credit services remove farmer's cash-constraint enabling them to invest in quality inputs and expand their farms

## Comparing cash flows of Baseline and SDM farmers

Cumulative in USD/month

— Baseline (grain, rain-fed) —▲ Segment 1 (grain, rain-fed)



## Expanding farm size through on credit services

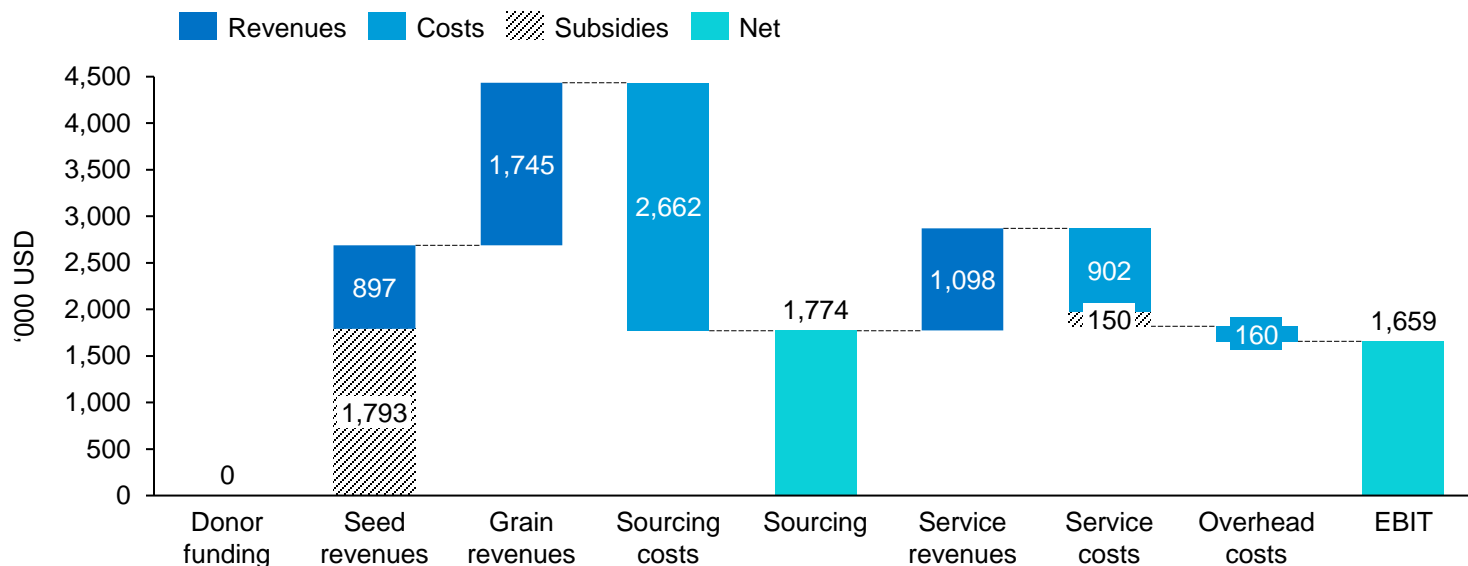
- **An average farmer grows rice on a 2 acre farm**, the maximum area for which he/she can afford labor and inputs.
- **Farmers typically do not grow rice during the main season** as the harvesting is more laborious and costly due to high water levels.
- Sparkx' inputs, mechanization on credit and labor advances **allow rice grain farmers to significantly expand their rice farms**— up to 3 acres for most – and **grow rice during the main season**. It takes about 2 to 3 seasons for farmers to expand from 2 to 3 acres.
- **Rice seed farmers with own land follow a similar trajectory as rice grain farmers** in the graph to the left.
- **Rice seed farmers renting Sparkx' irrigated lands are confined to 2 times 2-acre plots** per household.



# Sparkx generates a net profit as it relies on rapidly growing rice grain and heavily subsidized certified rice seed sales

## Sparkx profitability

Profit and loss in '000 USD, annual average 2016-23



**Certified seeds are heavily subsidized.**  
Subsidy of 4,000 GHS/MT on a price of 6,000

**Projected increase in grain revenues are dependent on high yielding certified seeds**

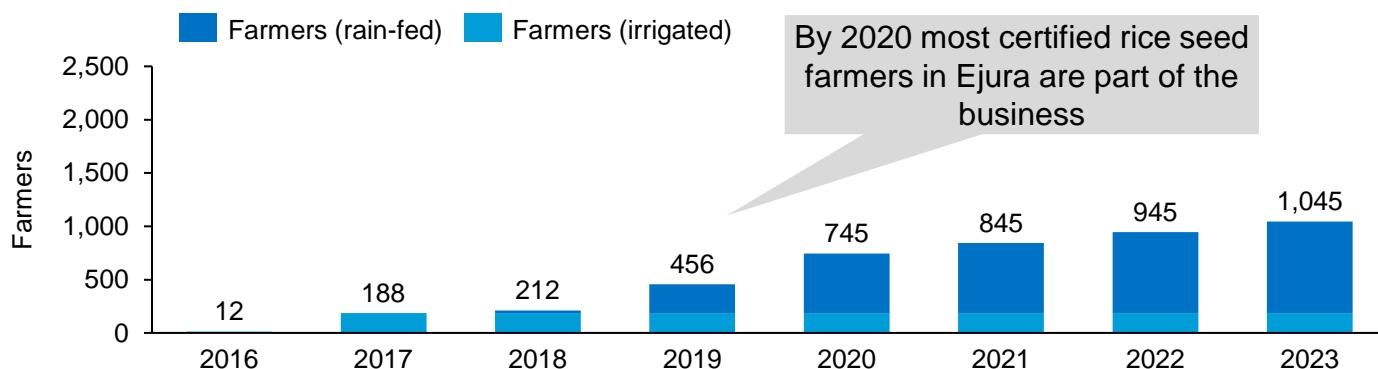
**Fertilizers are subsidized as part of PFJ government program**

## Financial sustainability

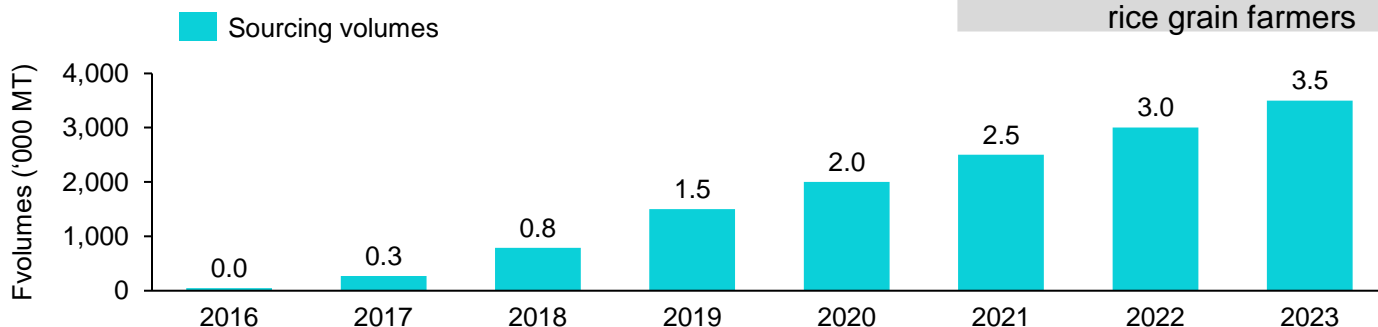
- Sparkx makes a **net profit before taxes** between 2016-2023, reaching an EBIT of 3,614 by 2023.
- The **main revenue sources** are rice seed (47%), rice grain (31%) and farm services (22%).
- The business is **relying heavily on government subsidized** certified seeds and fertilizers (120% of EBIT).
- **Sparkx has received no grants** up until today. To accelerate growth – beyond the current rate that is limited by their own investment and cash-flow cycle – they seek to attract affordable trade-finance.
- Sparkx' out-grower business is able to benefit from **low overhead costs** as management, infrastructure and machine costs are shared with Sparkx' own rice, maize, cowpea, poultry and pig production.

# Sparkx' seed operations in Ejura is maturing, limited by land and cash constraints, growth comes from other regions

## Number of certified seed farmers



## Certified seed sourcing volumes ('000 MT/year)

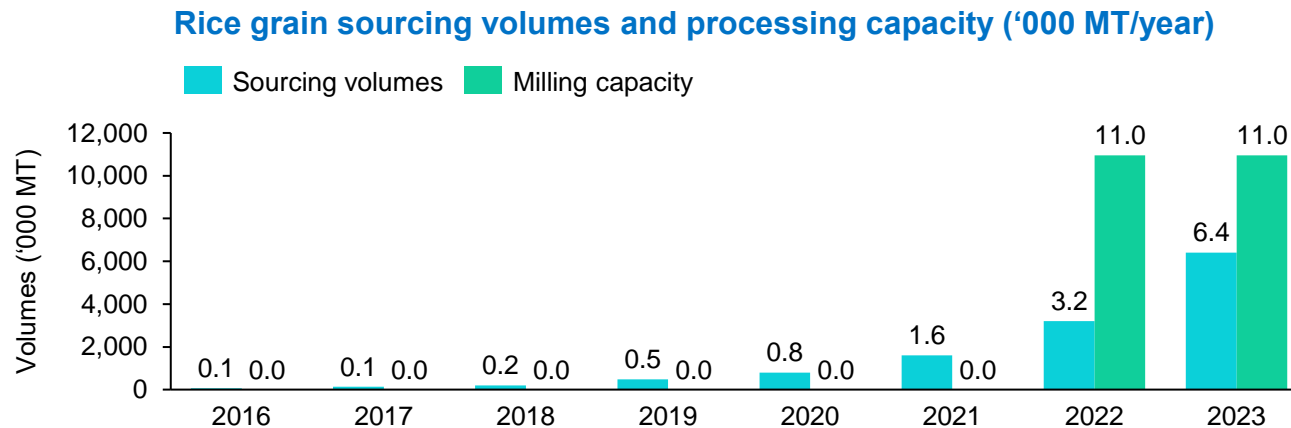
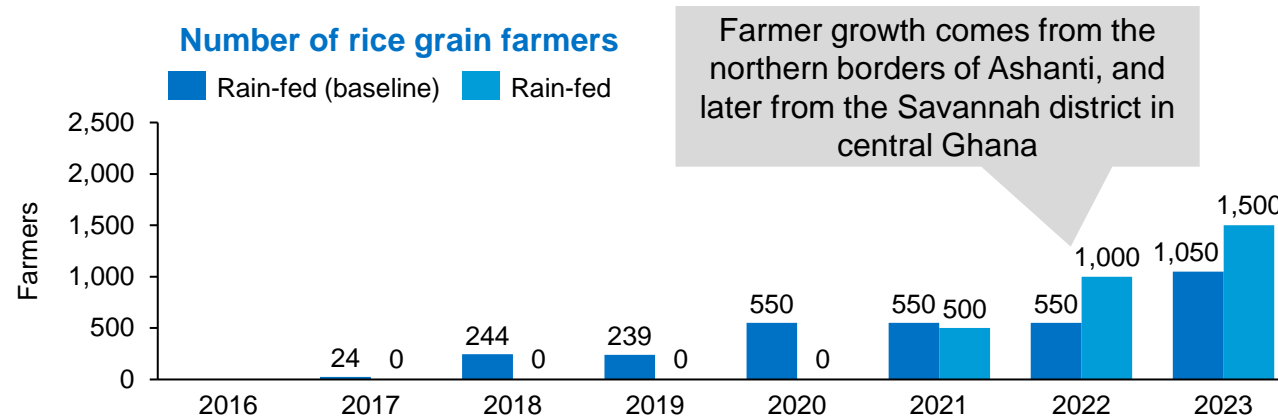


Sourcing is severely limited (see gap between best case and BAU) due to working capital constraints. Growth could be faster from a supply perspective

## A maturing seed business

- **Future growth in farmer numbers** comes from high performing grain farmers converting to seed. These farmers, mostly active in other regions, can significantly expand their farm size, driving volumes.
- **The number of farmers on irrigated land** stays constant as there are no plans to invest in irrigation infrastructure.
- **Long payment terms of buyers** refrain Sparkx from sourcing larger volumes as there are no affordable working capital loans available (25-30% interest).
- **With current excess supply**, sourcing volumes can grow the moment cash constraints are lifted. This could lead to a downward pressure on the farmgate price of paddy and/or to a more aggressive sourcing strategy.

# With many unserved farmers in the region, Sparkx can rapidly expand operations, building a rice mill to improve efficiency

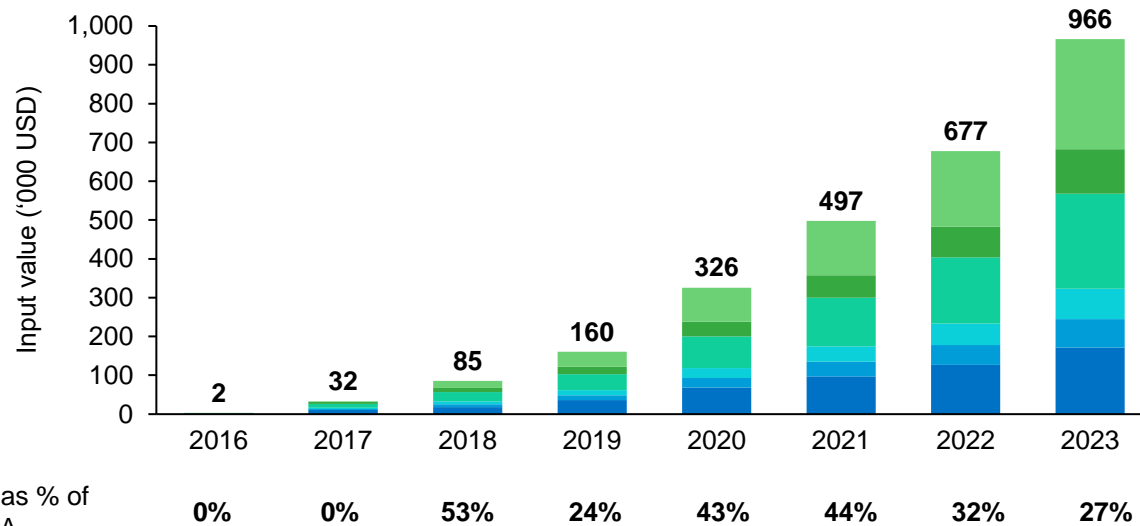
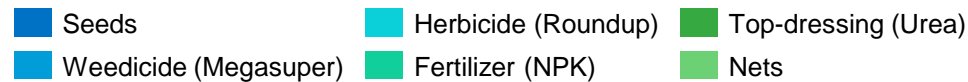


## Scaling rice grain production

- Nearby regions to the North of Ejura host **many rice grain farmers with limited competition** and large opportunities for effective service provision.
- **Inputs on credit** enables the average farmer in those regions to expand their farm size from 2 to 4.5 acre.
- Again, key to rapid growth is that Sparkx gains **access to affordable capital to overcome long payment terms and high interest rates**.
- **In-house milling** is key to improve processing margins. Affordable asset financing can speed up completion of mill construction. Construction is currently on hold as Sparks is awaiting payments from key buyers.

# However, cash constraints are a major bottleneck preventing Sparkx from reaching its growth targets

## Peak input loans outstanding ('000 USD)



## Input financing

- In order to provide all farmers the required inputs on credit, total loans outstanding are expected to double from 2019 to 2020 and increase by around 40% per year until 2023.
- Loans are outstanding for two seasons of four months per year, from April to July and August to November, Sparkx bearing interest rates of between 25% to 30%.
- Sparkx is expecting to be unable to meet 2020's working capital requirement, being forced to limit its input provision and sourcing volumes.

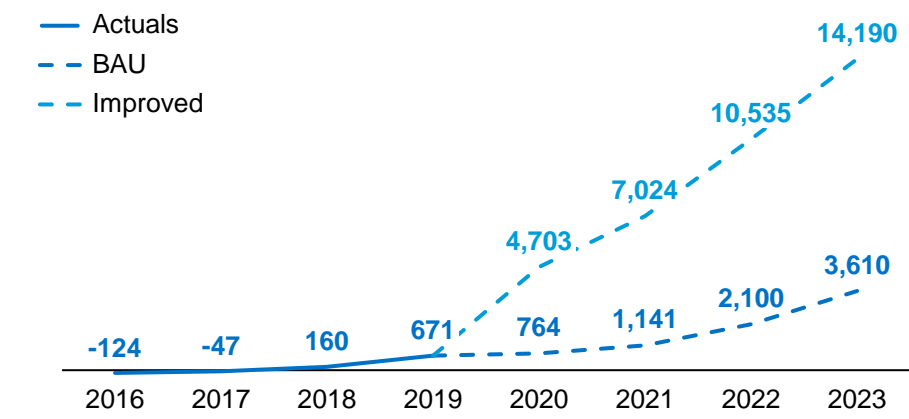
# 6. Recommendations

*Strengthening the organization to accommodate faster scale up*



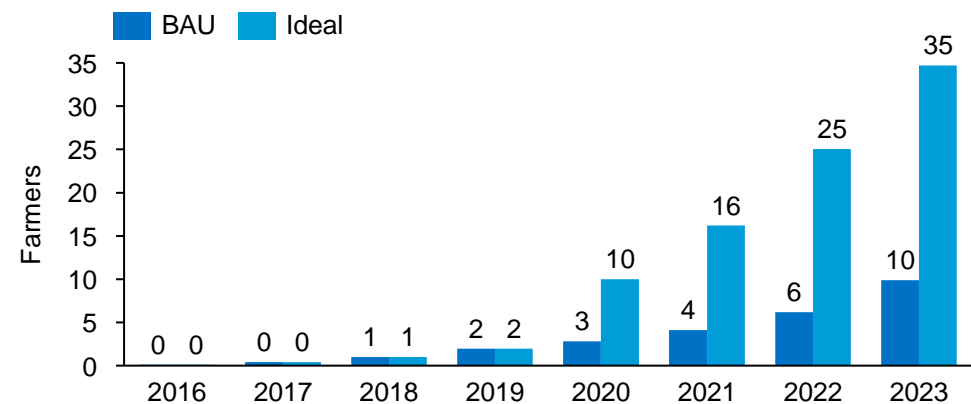
# Shortening payment terms and attracting affordable finance is key to enable faster scale up

Sparkx EBIT ('000 USD/year)



Sourcing volumes (thousand MT/year)

Showing for BAU and ideal scenario



Scenarios

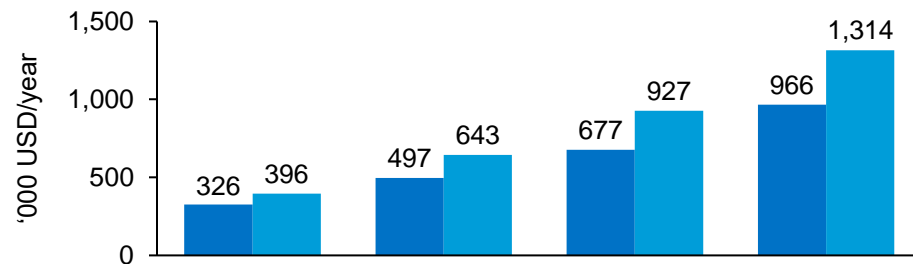
Lever	Rationale	BAU	Improved
Payment terms	Better contractual terms should be negotiated, potentially with the support of a third-party convener. Shortening payment terms to 6 months would allow Sparkx to reinvest its revenues every other season.	Up to 24 months	6 months
Interest rate	By attracting affordable finance, Sparkx would be able to take larger loans required to cover working capital and asset financing needs at lower cost.	30%	15%
Impact	Rationale	BAU	Improved
Farm size	Sparkx can source and process larger rice volumes, allowing farmers to grow rice on larger areas of their lands	3 ha	4.5 ha
Harvest per year for irrigated farms	Sparkx can provide extensive irrigation services allowing irrigated seed farm to be harvested three times a year.	2 harvests	3 harvests
Harvests until max farm size	Reinvesting sales revenues allows Sparkx to provide more inputs on credit per farmer, taking them fewer seasons to expand their rice area up to the maximum available land.	3 seasons	2 seasons
Service and processing capacity	More affordable financing allows Sparkx to invest in assets to cover larger areas for service provision and store and process larger volumes.	See analysis on additional financing needs	

# With input loans already a bottleneck, faster scale-up requires additional input loan and asset financing

## Input loans outstanding ('000 USD/year)

Showing investment in expected year per type of asset

■ BAU ■ Ideal

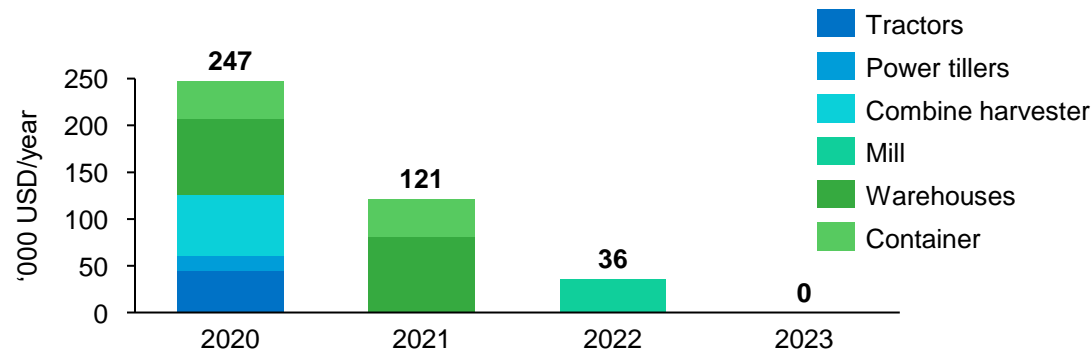


## Loans as % of EBITDA

BAU	43%	44%	32%	27%
Ideal	10%	11%	11%	11%

## Asset financing needs ('000 USD/year)

Showing investment in expected year per type of asset

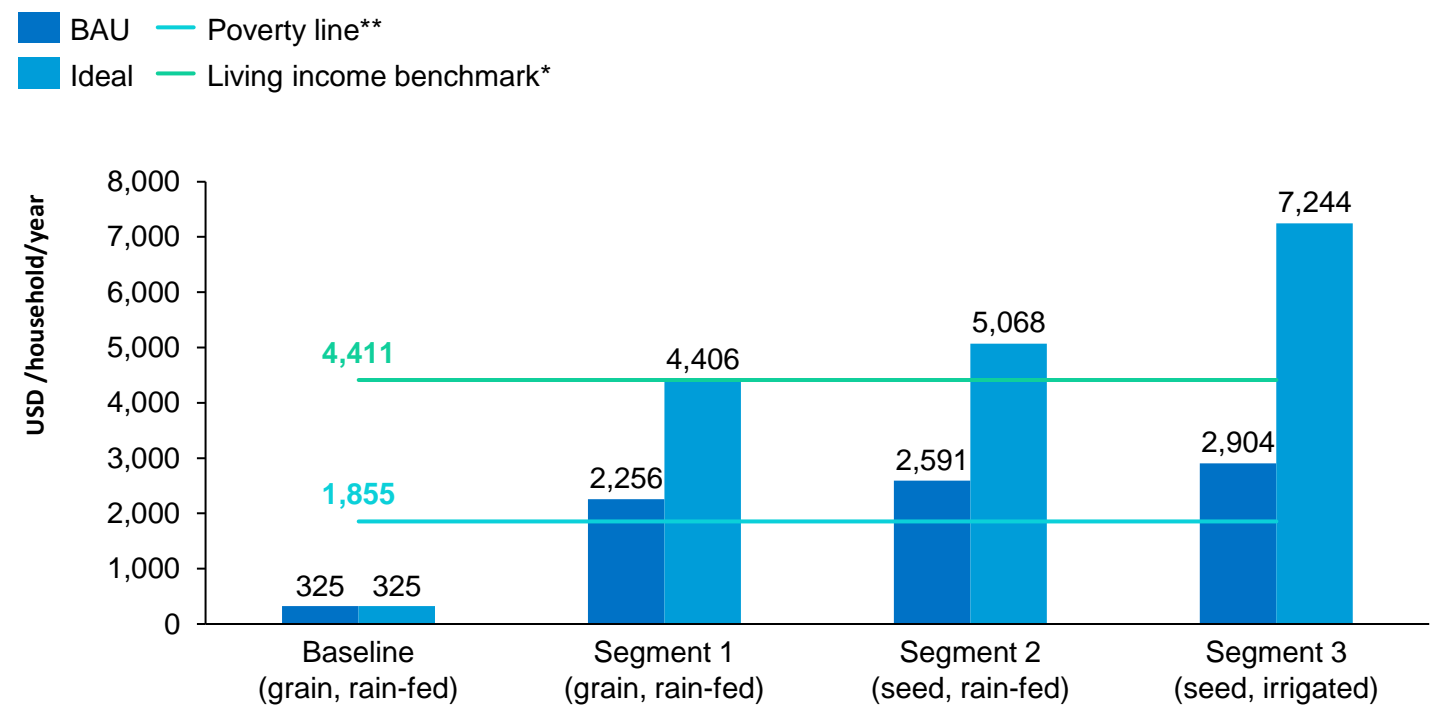


## Facilitating faster scale up

- Given current payment terms and high interest rates, Sparkx is **unable to make the capital investments required to scale up its input provision on credit, mechanization services** (tractors, power tillers, combine harvesters) **and storage and processing capacity** (mill, warehouses, containers) to accommodate faster growth in terms of sourcing per farmer and total volumes.
  - For example, the mill currently under construction is put on hold due limited available cash. It is not expected to be completed in 2022 earliest.
  - Another planned expansion, converting 3,000 acres in rice farms (of which 1,000 acres are reserved for SHF), is at risk of being delayed as it requires tractors, combine harvesters and a second warehouse.
- Affordable loans would allow Sparkx to provide more inputs loans and make the infrastructural investment in time to accommodate more efficient and faster scale up.

# Increased investment in service provision and sourcing will benefit farmers, closing the living income gap

Comparing household income, living income benchmark and poverty line  
Shown BAU and ideal scenario for each farmer segment, in USD/household/year



## Farm-level impact

- Increased farmer income is mainly driven by the ability to **expand the rice plot size** for rain-fed farms from 3 to 4 acres; and **increase the number of harvests per year** for irrigated farms from 2 to 3.
- Land seems to be abundant**, with most farmers already owning pieces of fallow land, not having the resources to cultivate it.
- Another factor, is the **faster expansion of the plot size**, reducing the number of seasons to full scale from 3 to 2.
- The ideal scenario assumes increased yields of 2.15 and 2.40 MT/acre/season for rain-fed and irrigated farms respectively as a result of a more professional team and granular farm-level data to further improve effectiveness of service delivery.

## Gap to living income

BAU	93%	49%	41%	34%
Ideal	93%	0%	0%	0%

# To accommodate the projected growth the SDM must strengthen the team, data management and service design

Area	Situation	Recommendation
<b>Management team</b>	<ul style="list-style-type: none"> <li>The SDM is driven by one project manager with extensive experience as a field officer, closely supervised by the CEO of the company. The team further exists of one financial officer, M&amp;E, technician, marketing and legal person. No agronomist is present.</li> </ul>	<ul style="list-style-type: none"> <li>With different levels of experience and backgrounds the team would benefit greatly from external trainings on strategic thinking, business and project management, and data management practices. A professional and aligned team is critical to facilitate fast growth.</li> <li>Sparkx should strengthen team by recruiting an HR person, an agronomist and additional field staff to support operations handle the expected growth of the SDM.</li> </ul>
<b>Data management</b>	<ul style="list-style-type: none"> <li>There is no data collected at farm level. A database is being developed in-house driven by one recently hired technician.</li> <li>Most other types of data are collected hard-copy and only occasionally stored electronically.</li> </ul>	<ul style="list-style-type: none"> <li>Sparkx could benefit from bringing in external expertise on how to setup a strong farmer data collection and management platform. Advice could support key decisions on what software is most cost-effective; what data points must be collected, at what intervals; how data can be best used to inform strategic and service design decision-making.</li> <li>Further digitalization of commercial, operational and financial data flows is necessary to increase the SDMs efficiency and effectiveness. Having more real-time data can optimize buying and logistics efficiency; data on farmer assets and financial history is conditional on drawing on farmer on-lending and minimizes risks and costs.</li> </ul>
<b>Service design</b>	<ul style="list-style-type: none"> <li>Services are designed based on the teams' experience with the main emphasis on improving yields. There is no data to back up services are indeed having the desired impact.</li> <li>Services are not designed with inclusivity, nor farmer resilience in mind.</li> </ul>	<ul style="list-style-type: none"> <li>With more granular data at farm level, services can be tailored to the farmer needs, increasing effectiveness and efficiency.</li> <li>At the same time, services should better integrate business skills, inclusiveness and farmer resilience. For example, adding more business topic to the trainings, sensitizing farmers on gender roles, providing female farmers with maternity support, and actively promoting crop rotation.</li> </ul>

# To ensure impactful growth services should be designed with gender inclusiveness and farmer resilience in mind

## Sparkx is gender intentional. Sparkx:

- Mentions gender as a strategic goal in their scaling strategy;
- Has just started to collect data disaggregated by sex. It serves all farmers with the same services but does not tailor its services to gender;
- Has taken steps to understand the different needs and constraints of women and men in its internal process with the goal of ensuring both women and men have access to resources.

## Sparkx could strengthen its gender strategy by:

- Where data / information has been collected about how women and men's needs and preferences may be different, incorporate these in overall approach and ensure staff is aware of these.
- Ensure meetings are held in spaces that are safe and socially acceptable for both men and women.
- Facilitate child-care arrangements during the time of the meeting
- Ensure trainings, relevant documents (e.g., contracts), and mobile technologies can be understood by farmers with different levels of literacy (e.g., use audio and visual tools, simple language)
- Recruit and train both women and men to serve as leaders of marketing groups, out grower schemes, and contract committees

## Sparkx is aware of exposure to climate risks. Sparkx:

- Recognizes the need for drought resilient seeds and actively promotes these among its farmers.
- Understands the importance of water availability, providing irrigation where possible and planning to expand area under irrigation.
- However, implements these services with yield improvements as its main objective. It does not mention farmer resilience.

## Sparkx could strengthen its farmer resilience strategy by:

- Expanding the training curriculum to cover more management, business and climate resilience training topics for farmer to make better investment decisions.
- Providing training on intercropping and crop rotation practices and providing services for maize and beans to facilitate multiple income streams and decrease dependency on rice as sole revenues source.
- Building on availability of financial data and track records of farmer to facilitate crop insurance.
- Allocate sufficient funding to expand irrigation infrastructure and have reserves to conduct timely repairs of damaged dams and canals. Maintain strong relationships with government to co-fund such repairs.

# Contact



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# Farmfit Intelligence portal: designed to support you in serving smallholders – profitably, inclusively

The image shows a screenshot of the Farmfit Intelligence portal. At the top left is the IDH Farmfit Intelligence logo. A navigation bar at the top lists: INNOVATIONS, BENCHMARKING, BUSINESS MODELLING, RESOURCES, and CONTACT. The main content area features a background image of a farmer in a field. Overlaid on this are several blue callout boxes with white text:

- Top left: Practical examples of impactful and viable business models
- Top right: Case studies, insights reports and more
- Center left: Compare your SDM to others or learn about average costs and impact
- Center right: Build a financial model for your SDM and the farmers you serve

At the bottom, there are three white icons in rounded squares, each with text below it:

- Icon of a building: Data on: 60+ companies
- Icon of three leaves: 11 supply chains
- Icon of a location pin: 18 countries

[farmfitintelligence.org](https://farmfitintelligence.org)