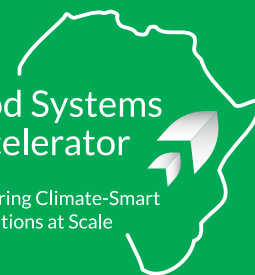




Food Systems  
Accelerator

Delivering Climate-Smart  
Innovations at Scale



# FOOD SYSTEMS ACCELERATOR Agri-Innovation Report





# FOOD SYSTEMS ACCELERATOR Agri-Innovation Report

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## FOOD SYSTEMS ACCELERATOR | Agri-Innovation Report

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Cover Photo: Ukama Ustawi

# CONTENTS

FOREWORD.....	3
AGRI-INNOVATION REPORT .....	4
1. INTRODUCTION TO THE PROGRAM .....	6
1.1. Description.....	7
2. OBJECTIVES OF THE FOOD SYSTEMS ACCELERATOR .....	8
2.1. Program design .....	10
2.2. Overview Of Workstreams .....	11
3. RESULTS .....	16
KENYA .....	17
3.1. STABLE FOODS LTD .....	18
3.2. THE INSECTARY KENYA.....	28
3.3. SHAMBA RECORDS LTD .....	40
3.4. BATIAN NUTS LTD.....	52
RWANDA .....	63
3.5. AFRI-FARMERS MARKET LTD .....	64
3.6. AGGREGATOR TRUST LTD.....	80
UGANDA .....	93
3.7. EASTERN AGRICULTURAL DEVELOPMENT COMPANY LTD .....	94
3.8. YELLOW STAR PRODUCE AND PROCESSORS (U) LTD .....	106

<b>ZAMBIA.....</b>	<b>121</b>
3.9. FARM DEPOT CO. LTD.....	122
3.10. FOREST AFRICA ZAMBIA LTD .....	136
<b>ENDNOTES.....</b>	<b>148</b>
<b>REFERENCES .....</b>	<b>154</b>

# FOREWORD



Agribusinesses are the bedrock of the African food systems economy. These enterprises are not just commercial ventures; they are essential contributors to food security, economic development, and sustainable livelihoods across the region. With a myriad of value chains, they are intricately woven into the fabric of East and Southern Africa's agricultural landscape.

However, a stark reality is hindering growth in the sector. Agribusinesses find themselves chronically underfunded, facing a complex web of challenges that hinder their potential. Two key reasons underlie this financial constraint. First, the lack of access to affordable credit and investment opportunities hampers their ability to expand operations and adopt modern, efficient technologies. Second, market instability and unpredictability deter investors and lenders from engaging with agribusinesses.

The CGIAR Food Systems Accelerator presents innovative and effective solutions to strengthen the agribusinesses and support them in delivering impact at scale.

By providing a blend of demand-driven, science-based technical assistance and investment-readiness, the program is designed to bridge the gap between potential and progress. By connecting agribusinesses with leading food systems scientists, we are equipping agribusinesses with the tools, knowledge, and resources they need to thrive.

The results of the 6-month engagement represent tangible evidence of the program's impact. From the development of Africa's first vegan milk made from indigenous fruits, to improved irrigation systems that enhance productivity while reducing environmental impacts, to new product lines for baby food made from soy, these examples illustrate the real-world benefits of our collaborative efforts.

This report is a testament to CGIAR's serious commitment to address the funding challenges facing agribusinesses. It showcases our collective determination to create a future where agribusinesses flourish, investments flow, and research translates into practical change. We invite you to explore these success stories and consider joining us in reshaping the future of agribusiness in East and Southern Africa.

Thank you for your engagement and support.

Sincerely,

**Hauke Dahl**

Food Systems Accelerator Co-Lead

# AGRI-INNOVATION REPORT

This report presents the consolidated outputs of the CGIAR researchers involved in the first cohort of the CGIAR Food Systems Accelerator.

The Food Systems Accelerator was established to bolster Ukama Ustawi, a CGIAR initiative focused on transforming agri-food systems in East and Southern Africa (ESA). This program, spanning from 2022 to 2024, aligned scientists with agribusinesses to bring CGIAR innovations to scale in ESA. It achieved its objectives by providing CSA Technical Assistance to agribusinesses, enabling the adoption of climate-smart agricultural practices and de-risking their operations. Furthermore, the program offered Impact Measurement and Management support, helping agribusinesses measure and manage their environmental and social impacts effectively. Lastly, it provided Investment Readiness Technical Assistance to increase the agribusinesses' capacity to absorb capital, facilitating their access to funding for sustainable growth and ecological impact. By combining science-driven support and investment readiness, the Food Systems Accelerator Program aims to ensure resilient and sustainable agribusiness development in ESA.





**1.**

# INTRODUCTION TO THE PROGRAM



Photography: Ukama Ustawi

## 1.1. Description

### 1.1.1. CGIAR

CGIAR is a global research partnership for a food-secure future dedicated to transforming land and water systems in a climate crisis<sup>1</sup>.

### 1.1.2. Ukama Ustawi

Ukama Ustawi is a CGIAR initiative developed to transform agri-food systems in East and Southern Africa (ESA) through sustainable intensification through mixed-maize systems and crop diversification to de-risk other systems. The program aimed to empower women, young farmers, and value chain actors to promote healthier diets and protect natural environments from further degradation. Ukama Ustawi was born from the in-depth understanding that some major underlying reasons for poor agricultural performances in ESA are associated with less efficient agricultural value chains, and the systems are characterized by low climate resilience. Numerous agricultural value chains are fragmented and characterized by unstable relationships between off-takers, smallholders, and emerging farmers, and the inefficiencies mostly affect the farmers. Farmers face significant market dynamics and systems hurdles, i.e., affordable inputs, advisories, logistics, finance, and market linkages. Agribusinesses address these challenges through various means, i.e., their products and services and farmer support to improve productivity, income, and resilience to climate change. These are particularly important in ESA, where farmers primarily produce maize, which is vulnerable to climate change. Maize faces a 15% climate-related yield decline without adaptation and challenges from diminished cropland sustainability, poor agronomic inputs and management, and degraded environmental bases with declining soil fertility and degraded water systems<sup>2</sup>.

# 2.

## OBJECTIVES OF THE FOOD SYSTEMS ACCELERATOR

The Food Systems Accelerator Program was set up to support Ukama Ustawi in designing a Climate-smart Agriculture (CSA) business support program that can be implemented in ESA. The Food Systems Accelerator Program is aimed at creating a demand-driven, responsive to market needs, gender, and youth-inclusive and targets high-growth, high-impact agribusinesses that express demand for technical assistance and links to financing opportunities to strengthen food systems and advance sustainable and inclusive growth. The Food Systems Accelerator Program achieved these objectives through **3 main thematic areas** implemented across the four selected countries in ESA over the initiative's duration between 2022 and 2024.

The objectives were achieved through:



**Provision of CSA Technical Assistance (TA):** the agribusinesses were provided with coordinated and specialized evidence-based TA support that encouraged adoption, strengthened their CSA practices, and addressed their concrete ecosystem challenges. CSA TA supported the de-risking of agribusinesses (especially those involved in production) and improved their bankability. The CGIAR network of scientists provided this TA.



**Provision of Impact Measurement and Management (IMM) Technical Assistance:** Understanding how to effectively measure and manage impact is critical to ensuring agribusinesses achieve their desired result in contributing towards positive environmental and social impact. The agribusinesses were encouraged to use the IMM data to improve business performance, identify areas where values can be created, and make informed decisions to maximize positive impact while minimizing negative impacts. Further, agribusinesses were advised to use IMM data if impact or responsible investors require it. The CGIAR network of experts provided the training.



**Provision of Investment Readiness Technical Assistance:** Funding provides crucial resources enabling agribusiness to develop new products, expand production capacity, and access new markets. Securing financing is essential in establishing a foundation for long-term growth and sustainability. However, agribusinesses must be investment-ready to secure long-term growth and sustainable funding. Management teams were made to understand their growth plan and financing needs to ensure that new funding must support instead of hindering their paths to sustainability. Further, agribusinesses were equipped on how to position their businesses to potential investors and further negotiate with them. This support was provided by the IFDC-2SCALE and its network of scientists. The outputs of this workstream are provided separately.

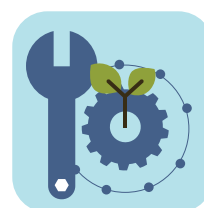
## 2.1. Program design

The impact logic of the Food Systems Accelerator Program is to ensure the support and development of sustainable (diversified and di-risked) and resilient agribusinesses across ESA. The unique blend of investment readiness and science-driven technical assistance supports commercial growth while ensuring sustainable ecological and social impact.

### 2.1.1. Phases

There were three (3) phases of technical assistance (TA) delivery:

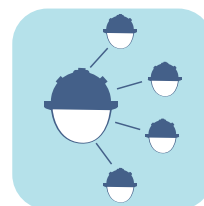
**Design and diagnostics:** In February 2023, the CSA technical team organized in-person design and diagnostic sessions for the agribusiness. The session was instrumental in assessing the company's technical needs; after that, the design and diagnostics sessions' outputs informed the program curriculum's design<sup>3</sup>.



**Co-development:** As soon as the sessions to identify the company's needs were concluded, the technical team and the agribusiness co-designed a curriculum and structure of TA delivery systems. These included the number of sessions, durations, specific topics to be covered, types of trainers required, and the targeted outputs. The technical team provided a wide spectrum of advisory services throughout the implementation period, using hybrid delivery methods and a mix of group sessions for general training and one-on-one sessions to address more specific needs. To ensure the effectiveness of the co-development phase, the TA experts received prior general guides and recommendations on how best to prepare for training and mentoring sessions from the accelerator team<sup>4</sup>.



**Delivery:** The agribusiness received training from the TA experts according to the identified needs. The accelerator program provided high-quality TA experts with proven practical experience. Execution-oriented training enabled the agribusiness to deliver concrete and tangible results.



## 2.2. Overview Of Workstreams

Four different workstreams were established to provide a comprehensive support mechanism. Those four workstreams are on the Enabling Environment, Gender and Social Inclusion, Impact Measurement, and Innovation-specific Technical Assistance. Each company has received advisory services across the four workstreams, resulting in various outputs that support the companies in their development. The workstreams are described below, and the results are summarized in Section 3.



### 2.2.1. Enabling Environment

In successful agribusiness acceleration, a supportive enabling environment is as fundamental as addressing the financing gap. The enabling environment comprises policies, rules, and regulations created by governments that are fundamental for agribusinesses to launch and grow successfully. Challenges in devising a conducive enabling environment reflect upon enterprises with high risks and transaction costs and prevent them from making a profit in return for their investment. Enabling environment technical assistance under the Food Systems Accelerator seeks to help agribusinesses tackle these challenges to the extent it is realistic during the program period. The team thereby adapts a low-hanging fruit strategy that will help address some of the biggest challenges highlighted by enterprises in a time-efficient manner. The prioritized assistance is research-based and short-term: mapping the policy and regulatory environment and the opportunities for public-private partnerships and market expansion. Examples may include providing demand-driven transparent information regarding quality standards and environmental compliances, bureaucratic processes, and land and water rights and fees. For some enterprises, the action plan includes identifying key partners and public- and private-sector parties and linking them with enterprises to form market and partnership connections. Apart from that, long-term assistance includes policy advocacy, such as working with governments to design incentives and enact export duty and tax exemptions for agribusinesses, driving significant social and environmental change. During the first cohort of the FSA Program, the Enabling Environment Unit supported five agribusinesses.



### 2.2.2. Gender Equality and Social Inclusion (GESI)

Gender and Social Inclusion (GESI) is a key strategic factor that determines the economic, social, and environmental (climate) resilience and sustainability of any business, especially Agribusinesses in Africa. This element of the technical assistance focused on highlighting why GESI should matter to businesses while illustrating why women and youth require additional support to participate fully in agricultural value chains. A business case was made by outlining what strategic benefits the Accelerator partners would enjoy by being more inclusive. An individual GESI Action Plan was developed for each Partner.



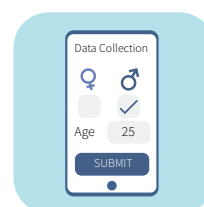
A GESI Action Plan is a powerful mainstreaming tool that will help the Accelerator Partners derive the benefits and impact of being GESI smart by guiding them and their teams in the development and adaptation of inclusive strategies and practices. Additionally, the plan will help monitor the implementation progress of the same. An effective plan allows the business to attain better performance, manage risk, retain good talent, implement business solutions more effectively and efficiently, and engage with aligned gender lens investors effectively.

### **2.2.3. GESI Action Plan Development Approach**

The following key steps were followed in developing the GESI Action plan. They included baseline data collection, analysis, and development of gender goals and activities.

#### **A. BASELINE DATA COLLECTION**

The process began with collecting gender and age-disaggregated baseline data through an online questionnaire guided by the 2X Criteria. Data was collected on entrepreneurship (founding and ownership), leadership (senior management and board positions), employment (internal and external workforce and partners), and consumption (products, services, and communication).



#### **B. DATA ANALYSIS**

The baseline data was analyzed to understand and assess the current gender equality and social inclusion profile of the business. The identified gaps and opportunities for higher inclusion formed the plan's basis.



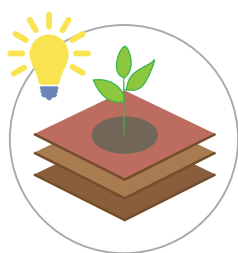
#### **C. DEVELOPMENT OF GESI GOALS AND TARGETS**

Following the GESI analysis and assessment and identifying inclusion gaps and opportunities, a list of goals and activities was developed and summarized into a GESI action plan presented as a schedule/ table (Section 2.3 in each plan). The targets were developed for the primary themes/gender outputs that guided the collection of the baseline data, as summarized above.



Three main frameworks guided the GESI outputs and target development: the 2X Global Criteria, the CGIAR GESI framework, and the gender-responsive business model canvas.

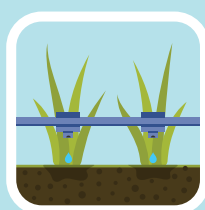




#### 2.2.4. Climate-Smart Agriculture technical assistance

The Food Systems Accelerator focused on four specific Innovation Themes. In their application to the program, successful companies demonstrated the ability to scale an innovation that falls into one of the four themes. Through the participatory co-design of action plans, companies and researchers created a TA program that matched the companies' needs with relevant researchers' areas of expertise.

The four innovation themes are the following:



##### A. MECHANIZATION AND IRRIGATION

Mechanization in agriculture involves using machinery to boost productivity, encompassing tools and equipment for farming. In contrast, mechanized irrigation, using pumps and other methods, enhances water efficiency, contributing to climate action through innovations like solar-powered irrigation and storage solutions.



##### B. CONSERVATION AGRICULTURE

Conservation agriculture promotes minimal soil disturbance, permanent soil cover, and crop diversification to enhance natural processes, reduce the need for chemical fertilizers, and improve overall agricultural sustainability. This approach is based on three principles: minimal soil disturbance, soil cover maintenance, and crop diversification, along with other practices like sustainable intensification, Integrated Soil Fertility Management, and Integrated Pest Management.



##### C. NUTRITION

Nutrition-sensitive, climate-smart agriculture is the solution to decreasing the trade-offs between agricultural productivity, climate change, and human and animal nutrition. They make farming more climate-sensitive and produce more nutritious food while maintaining productivity. Some examples of innovations under this theme include products such as legumes, cassava, livestock, dairy, oil seeds, horticulture (fresh produce and vegetables), and other staples.



##### D. AGRICULTURAL RISK MANAGEMENT

Agricultural Risk Management (ARM) is the identification, evaluation, and prioritization of risks in agricultural activities, including coordinated and economic applications to minimize, monitor, and control the probability or impact of unfortunate events and maximize opportunities. They make farming more predictable and increase the resilience of farmers. Some examples of innovations under this theme include advisory services, market linkage services, digitizing the value chain, and financial products (microinsurance, savings, lending, and credit guarantees).



Photography: Ukama Ustawi



### 2.2.5. Impact Measurement and Management

Measuring and managing impact helps agribusinesses to (i) attract new finance streams, such as climate-oriented impact investors and emerging funds for incentivizing climate-smart business models; (ii) identify risks and opportunities for building the climate resilience of their supply chain(s); (iii) build credibility and competitive advantage on the market; and (iv) periodically revisit and refine their business models to maximize returns and impacts.

This technical assistance aimed to improve companies' understanding of and access to practical, science-informed tools to assess their contribution to climate-smart agriculture impacts for smallholder farmers and rural, peri-urban, and urban communities.

These impacts refer to (i) sustainable increases in productivity and incomes to ensure food and nutrition security;

(ii) reduced vulnerability, increased adaptive capacities, and climate resilience; and (iii) reductions or capture of greenhouse gas emissions<sup>5</sup>.

Throughout the technical assistance, the agribusinesses were engaged in a co-design and co-learning process, allowing them to develop tailored solutions while building their knowledge and skills with their peers. The program equipped agribusinesses with the essential steps to measure and manage CSA-related impacts on their business operations. The knowledge and skills were then harnessed to craft robust impact pathways, which showcase how business innovations provide solutions for addressing poverty, food insecurity, malnutrition, and climate vulnerabilities by creating new jobs, improving farm productivity, profitability, and livelihoods, by increasing resilience to climate risks and reducing contributions to climate change. These impact pathways are integrated into their business models and foundation for identifying, measuring, and tracking indicators pertinent to each agribusiness.

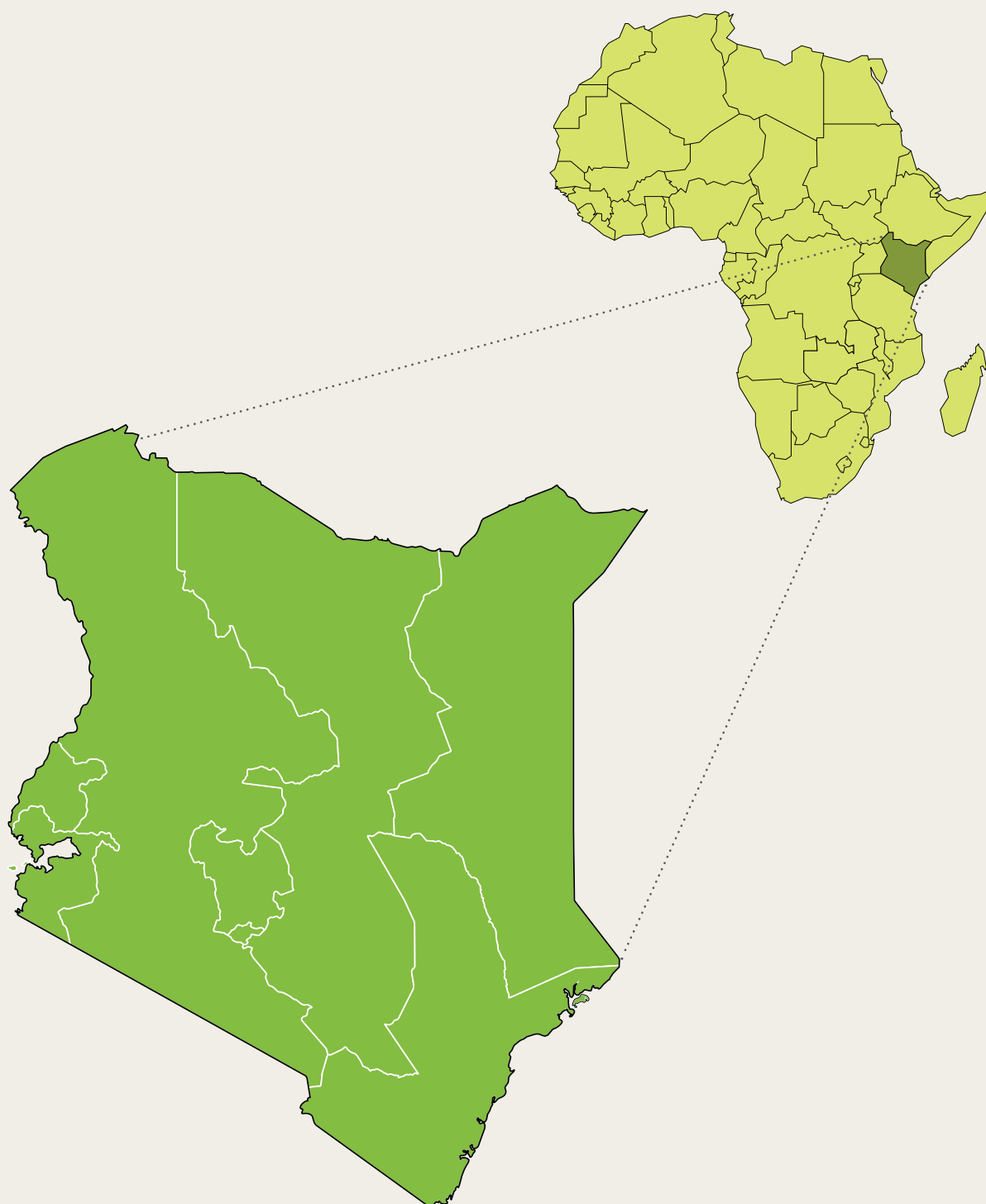


# 3.

## RESULTS

COUNTRY:

KENYA



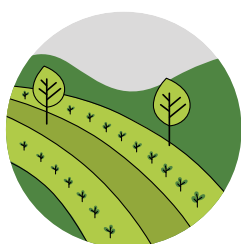


**3.1.**

**STABLE FOODS LTD**



**Stable Foods Ltd.**, based in Kenya, provides comprehensive, tailored-made services to smallholder farmers to increase their agricultural production outputs. Specifically, Stable Foods believes that it is not possible to make the journey from subsistence farmer to high-value, high-yield commercial crop farmer without a foundation of irrigation. Accordingly, SF's primary innovation is its irrigation-as-a-service (IaaS) product, which brings irrigation to SHF more affordably than ever before. Beyond that, the company provides smallholder farmers with additional need-specific services that close the production/value chain gap: as-a-service and inputs and agronomic-related (i.e., regenerative agriculture) training provisions and, finally, a guaranteed offtake program. From the menu of products and services Stable Foods provides, smallholder farmers can create different solutions based on their unique needs. The company's business model relies on the sales of its crops on leased land and produces from its partners and subscriptions from its irrigation-as-a-service product, as well as the income from IaaS payments and input/services purchases. Stable Foods LTD has enabled economies of scale and driven down the costs of drip irrigation per unit area through leveraging shared capital expenditure (i.e., solar pumps and reservoirs) through networked irrigation solutions feeding into smaller plots in the same area and does not sell IaaS subscriptions to individual customers<sup>6</sup>. The company has further proven that economies of scale can drive down the costs per unit for smallholder farmers, making irrigation work even for tiny plots of land at an affordable price point to any smallholder farmer<sup>7</sup>. Progress and traction with real farmers have proven that the suite of services provided by Stable Foods (irrigation, inputs, training, and offtake programs) is incredibly successful in increasing yield and partner profit. Stable Foods targets a farmer partner yearly output of 25,000kg per acre, which would effectively eradicate food insecurity within the region if scaled to 1% of smallholder farmers, and the company targets a 10x increase in farmer profit vs. pre-Stable Foods interventions. Both metrics have been achieved in the early stages.



## Sector Spotlight

Kenya's population is mainly rural, divided into pastoral, smallholder agricultural, and large farm areas. Population census has previously estimated that more than 70 percent of Kenya's population lived in smallholder agricultural areas. Poverty is more prevalent in the country's smallholder agricultural areas, but incidences may be higher in some parts. Different poverty estimates in agricultural smallholder areas suggest that about 25% of the smallholder agricultural households were poor enough and unable to afford what is regarded as minimum food requirements<sup>8</sup>. There are still major constraints in smallholder productivity and commercialization of smallholder farmers in Kenya, i.e., the link between production and marketing, as well as practices that will give them a competitive advantage and improved productivity. The smallholder farming industry of the country requires support to improve its productivity through innovative collective action models that combine the strengths of both the private and public sectors<sup>9</sup>.

**Kenya's population**  
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70%



70 percent of  
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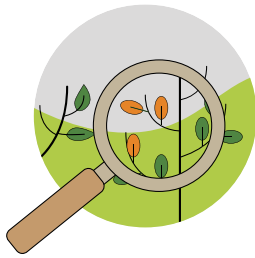
Stable Foods Ltd.  
has raised about

**\$ 600,000**

to support smallholder  
farmers...







## Challenge

### What problems is the company solving?

The reliance on imported food has steadily increased food prices, particularly of staple foods in Sub-Saharan Africa<sup>10</sup>. Staple food prices have risen by an average of 23.9% between 2020 and 2022, the highest since the 2008 global financial crisis<sup>11</sup>. In Kenya, there has been political attention towards improving staple food productivity to stimulate increased incomes and food security at the household level and offsetting costs of food imports<sup>12</sup>. Despite the soaring food prices and political interventions, smallholder farmer earnings have stagnated due to several factors, including increasing fertilizer prices, lack of access to finance, and limited understanding of agronomic practices that effectively respond to climate change and water scarcity<sup>13</sup>.

### Why is it important?

There exists an evident productivity gap in smallholder farming. On the other hand, there is alarming evidence that implementing irrigation improves yields and income in smallholder farms. Despite the evidence gap, less than 3% of smallholder farmers have access to irrigation in Kenya today due to a lack of affordability. Thus, leveraging shared capital expenditure through networked irrigation solutions could be a solution to improving smallholder yield and income productivity in Kenya<sup>14</sup>.

### Highlights of the Entrepreneur

Stable Foods Ltd. has raised about \$ 600,000.00 to support smallholder farmers with various tailored needs they may require at the point and time. Through access to the funding, the company has aimed to expand its concept to about 100 farmers by the end of 2023<sup>15</sup>.



## Enabling Environment

### Lead advisor profile

Dr. Idil Ires is a political economist-consultant specializing in agrarian change, trade, and industrialization in East Africa. She will assist the Accelerator Partners by conceptualizing an Agribusiness Enabling Environment (AEE) focusing on targeted technical assistance, mapping, and policy advocacy. This aided in tackling significant operational barriers, prioritization of the agribusiness partner's needs, providing relevant industry associations, and establishing policy harmonization.

### The enabling environment

With Stable Foods Kenya, a similar significant gap in interactions with the government and a lack of knowledge of bureaucratic steps around water permit acquisitions was identified. Stable Foods indicated that some officials and local guiding persons sought to capitalize on the unfamiliarity of this enterprise to these steps in the county of operations, giving conflicting information about the permit acquisition process and the associated costs. As a result, this enterprise has been impacted by a significant delay in the timely registration of permits at the core of its irrigation business. To help Stable Foods gain transparent information about the permits and in the later stages of its business, linkages with the county governmental office are established, which showed a willingness to support, and introductions are facilitated.



## Gender Equality and Social Inclusion

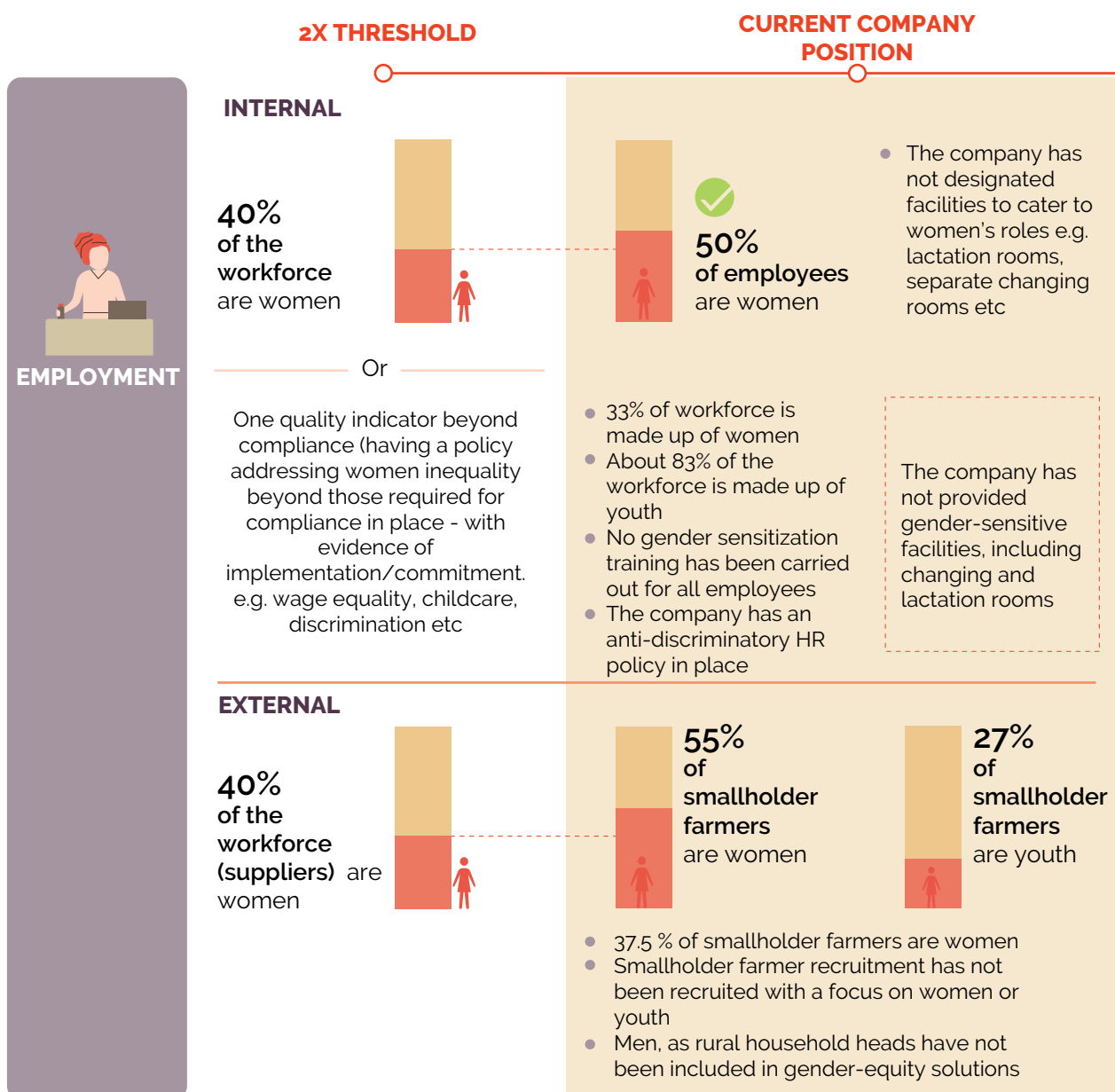
### Lead advisor profile

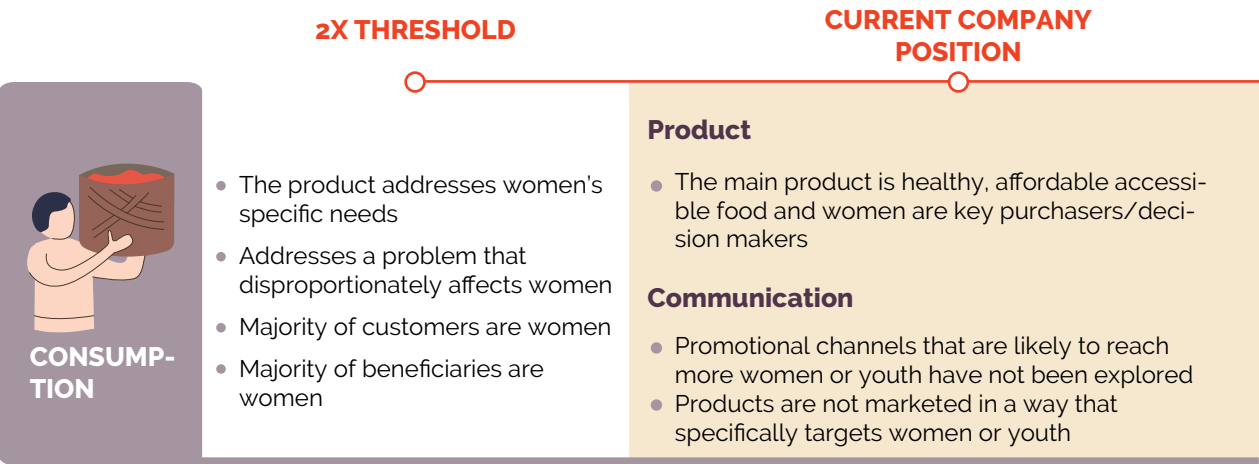
The Gender Equality and Social Inclusion (GESI) technical assistance implementation process was led by The Rallying Cry team in collaboration with Dr. Karen Nortje. The Rallying Cry is an ecosystem initiative working to shift private sector capital at the nexus of gender, climate, and agribusiness. At the same time, Dr. Karen Nortje is a senior researcher and social inclusion subject matter expert. The team supported the Accelerator Partners by equipping them to strengthen the capacity and agency of both the men and women within their agribusiness value chain(s). To achieve this, the team developed a gender action plan for Stable Foods Ltd to help address the barriers to gender inclusivity.

## Company GESI profile and summary

The analysis of the company's GESI baseline data showed that the company already has gender resources, including policies and a standing Gender Action Plan (from which info was pulled out and updated into the updated plan). Women are fairly well represented in the small-holder farmers (37.5 %) as well as in the workforce (33%) and senior management (40%). In terms of youth, 83% of the workforce is made up of youth. A majority of customers and beneficiaries are women.

A summary profile is given below:





The activities designed for the Accelerator Partner were geared towards making them more inclusive to youth and more responsive to their customers who are mainly women. For example, the company needs to organize gender mainstreaming training for management and the rest of the employees and adjust the facilities to cater to the unique needs of women. Finally, given the nature of the product-healthy and affordable food, marketing communication needs to be more targeted towards women.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Tinashe Dirwai provided technical support on irrigation systems design, evaluation, and agricultural water management (AWM) strategies. The AWM components include applying crop, water, and land-based models to perform scenario analyses for improved natural resource use efficiencies.

### The innovation

The company and CGIAR partners innovated a field guide for irrigation and agronomic farm performance assessment. The field guide was critical for the company to strengthen irrigation water management and agronomy for effective water productivity and long-term environmental sustainability.



Photography: Ukama Ustawi



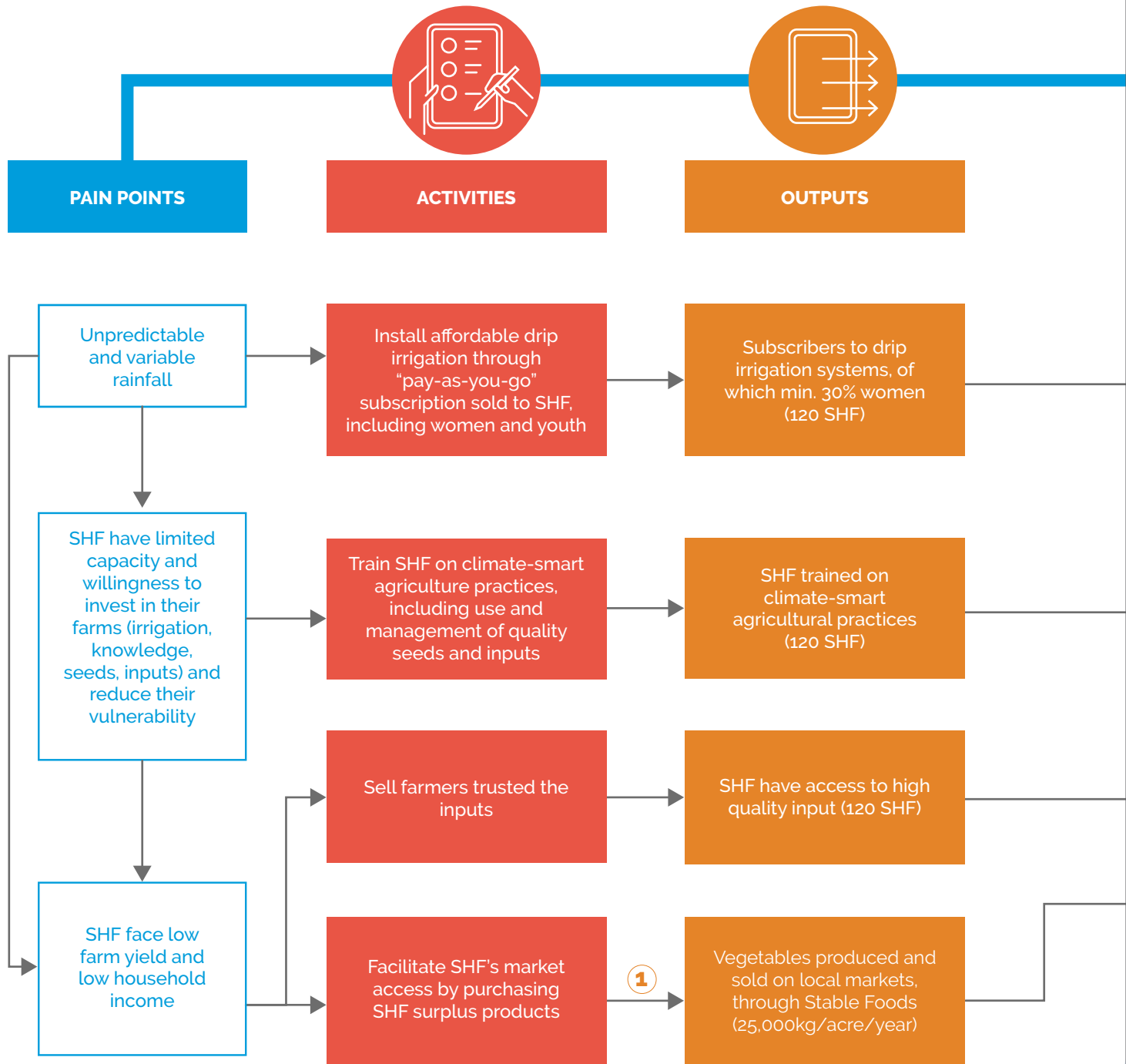
## Impact Measurement and Management

### Lead advisor profile

The impact pathway was delivered by Andreea Nowak, a social science researcher at the Alliance of Bioversity and CIAT, with an interest in how to improve the assessment and reporting on climate adaptation and resilience. Within the FSA, her interests were to assess the current impact measurements and metrics used by the agribusinesses and develop additional indicators for impact measurement reporting, data collection, consolidation, and fundraising. Together with a team of researchers, she has conducted interviews and workshops and co-designed the below-impact pathway with the agribusiness.t pathway was delivered by Andreea Nowak, a social science researcher at the Alliance of Bioversity and CIAT, with an interest in how to improve the assessment and reporting on climate adaptation and resilience. Within the FSA, her interests were to assess the current impact measurements and metrics used by the agribusinesses and develop additional indicators for impact measurement reporting, data collection, consolidation, and fundraising. Together with a team of researchers, she has conducted interviews and workshops and co-designed the below-impact pathway with the agribusiness.

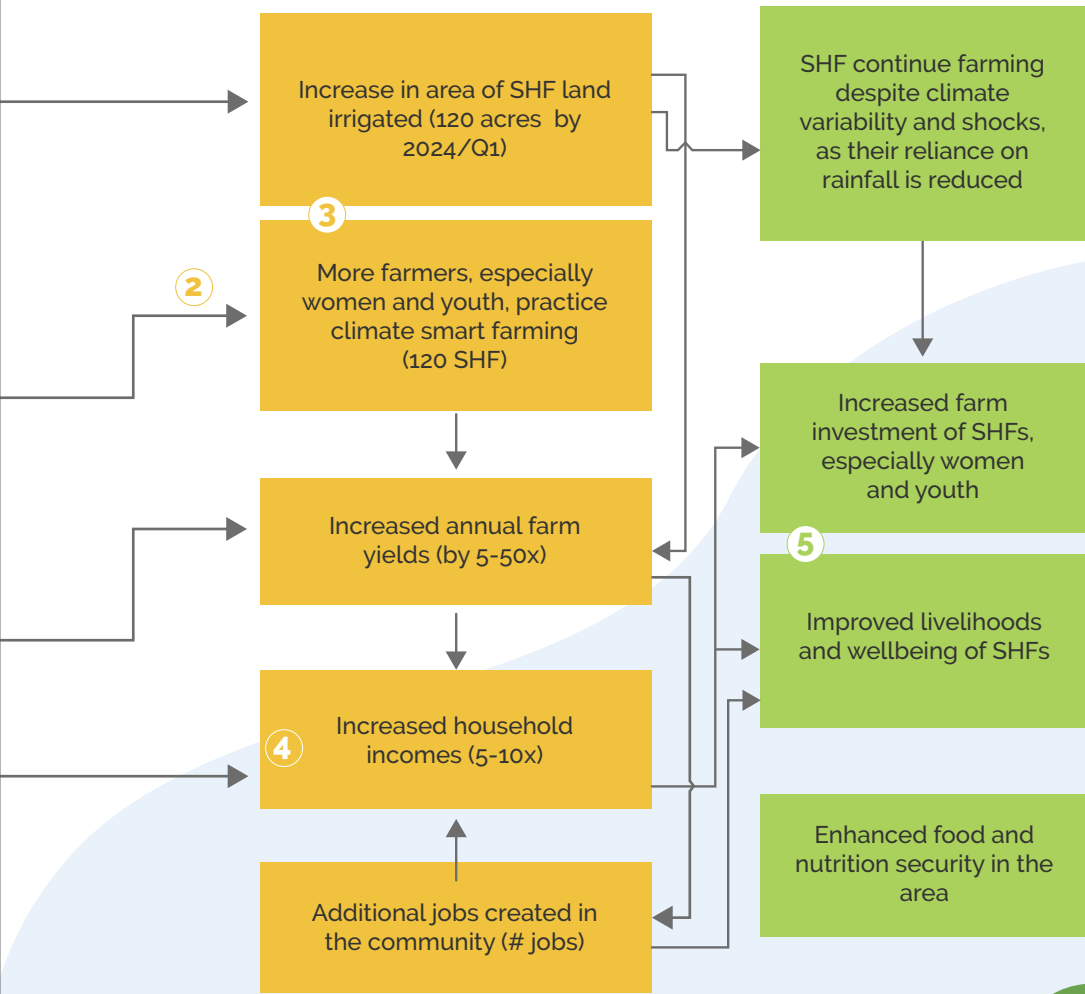
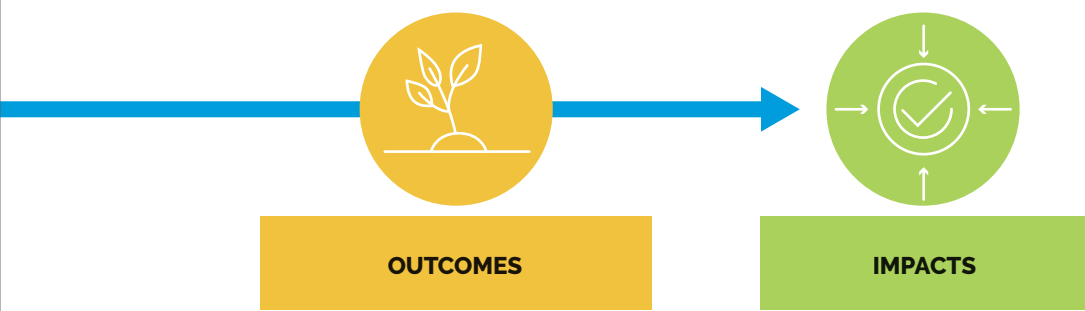
The impact pathways

Stable Foods provides affordable and sustainable irrigation to thousands of smallholder farmers (SHF) in Kenya. This allows them to engage in farming, to improve crop yields and income, leading to enhanced resilience, livelihoods, food security and nutrition security in their communities



Assumptions: 1) There is market demand for farmers' products; 2) Farmers implement recommendations shared during training; 3) Women and youth have access to land that they could farm; 4) Increases in yields and farm income make agriculture more appealing to people in the community, especially women and youth; 5) SHF are able to use farm income to improve their livelihoods and wellbeing





# 3.2.

## THE INSECTARY KENYA

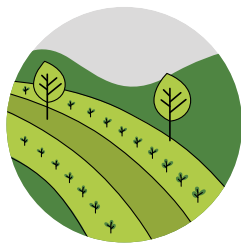


Photography: Ukama Ustawi





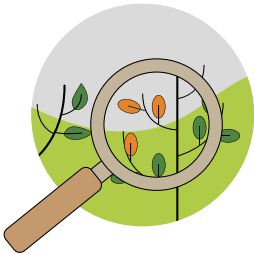
**The Insectary Kenya** is an enterprise established in 2018 that uses Black Soldier Flies (*Hermetia illucens*) to produce an alternative protein source for animal feed, thus employing circularity principles of returning food waste into the chain<sup>16</sup>. The company's business model is based on providing high-quality and protein-rich Black Soldier Fly larvae, pupae, and eggs to the animal feed, aquaculture, and waste management industries<sup>17</sup>. Insectary Kenya's business model is based on three principles: (i) Sustainability, which reduces the environmental impact associated with protein production, i.e., reduced greenhouse gas emissions; (ii) Quality assurance: production processes follow high safety and quality standards, and (iii) Research and Development: inhouse research team continuously work innovating to improve breeding techniques, optimizing feed formulation, and exploring new applications for the Black Soldier Fly products<sup>18</sup>.



## Sector Spotlight

Kenya's population is mainly rural, divided into pastoral, smallholder agricultural, and large farm areas. Population census has previously estimated that more than 70 percent of Kenya's population lived in smallholder agricultural areas. Poverty is more prevalent in the country's smallholder agricultural areas, but incidences may be higher in some parts. Different poverty estimates in agricultural smallholder areas suggest that about 25% of the smallholder agricultural households were poor enough and unable to afford what is regarded as minimum food requirements<sup>19</sup>. There are still significant constraints in smallholder productivity and commercialization of smallholder farmers in Kenya, i.e., the link between production and marketing, as well as practices that will give them a competitive advantage and improved productivity. The smallholder farming industry of the country requires support to improve its productivity through innovative collective action models that combine the strengths of both the private and public sectors<sup>20</sup>.

Kenya's population  
is mainly rural, divided into



## Challenge

### What problems is the company solving?

In the wake of a need to reduce landfill waste and the increase in atmospheric greenhouse gas emissions associated with the production chain of other protein sources, i.e., livestock, there is a need to explore alternative environment-friendly animal feed. Hence, the innovation by The Insectary Kenya Ltd. to use Black Soldier Flies in converting organic waste into a valuable protein source<sup>21</sup>.

### Why is it important?

Reducing landfill waste and the intensity of atmospheric greenhouse gas emissions is one of the grand challenges of the 21st century. Thus, Insectary Kenya's innovation of applying the circularity principles through producing protein-rich feed from waste repurposes waste that would otherwise end up in landfills and increase the production and subsequent greenhouse gas emissions<sup>22</sup>.

### Highlights of the Entrepreneur

Insectary Kenya currently collaborates with a wide range of universities, research institutions, and businesses to advance the field of insect farming and its applications, intending to innovate and broaden the scope of sustainable solutions<sup>23</sup>.



Photography: Ukama Ustawi



## Gender Equality and Social Inclusion

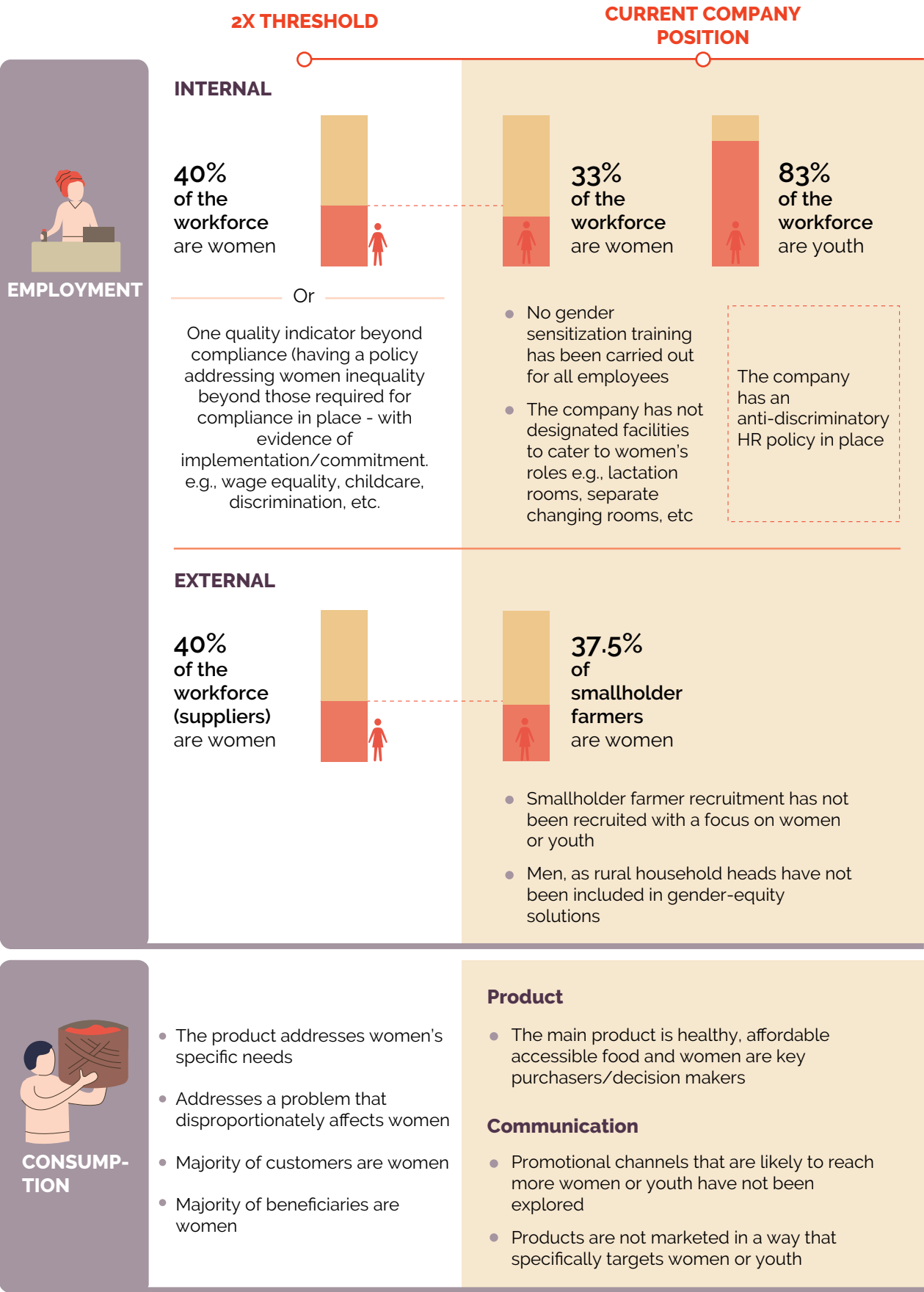
### Lead advisor profile

The Gender Equality and Social Inclusion (GESI) technical assistance implementation process was led by The Rallying Cry team in collaboration with Dr. Karen Nortje. The Rallying Cry is an ecosystem initiative working to shift private sector capital at the nexus of gender, climate, and agribusiness. At the same time, Dr. Karen Nortje is a senior researcher and social inclusion subject matter expert. The team supported the Accelerator Partners by equipping them to strengthen the capacity and agency of both the men and women within their agribusiness value chain(s). To achieve this, the team developed a gender action plan for The Insectary Kenya to help address the barriers to gender inclusivity.

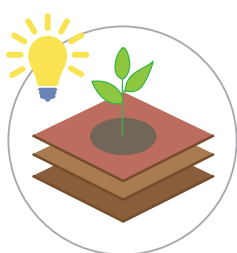
### Company GESI profile and summary of activities

The analysis of the GESI baseline data showed that the company already has gender resources, including policies and a standing Gender Action Plan (from which info was pulled out and updated into the updated plan). Women are fairly well represented in the small-holder farmers (37.5 %) as well as in the workforce (33%) and senior management (40%). In terms of youth, 83% of the workforce is made up of youth. A majority of customers and beneficiaries are women.

A summary profile is given on the next page:



The activities designed for the Accelerator Partner were geared towards making them more inclusive to youth and more responsive to their customers who are mainly women. For example, the company needs to organize gender mainstreaming training for management and the rest of the employees and adjust the facilities to cater to the unique needs of women. Finally, given the nature of the product-healthy and affordable food, marketing communication needs to be more targeted towards women.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Nathaniel Petersen assisted the company in delivering its innovation. Nate is an agriculture and natural resource economist with a Ph.D. in Decision Theory and Behavioral Economics who has been working in research, agribusiness strategy, and running farms in Kenya for 6 years. Much of his work is focused on understanding how farmers perceive risks and risk mitigation strategies, some of which can be complex and/or confusing, like insurance, drip irrigation, agroforestry, and bundled product/service modules. As such, he's primarily aligned with the CG's work in Agriculture Risk Management. He is especially good at designing and testing communications and interactions with new products and services and learning from those tests. Especially for farmer-centric digital, financial, and risk-management solutions, he can help the Partners explore how your solution can contribute to increasing farmers' autonomy over their economic role and livelihoods and ultimately make them and their activities more resilient to climate change.

### The innovation

The Insectary Kenya returns food waste to the food chain by using black soldier flies to produce an alternative protein source for animal feeds. Their research-based solution targets medium-scale farmers seeking an affordable and consistent supply of protein.

The agricultural sector is considered a risky investment for microfinance institutions because of market and price risks, climate risks, and other crop risks such as pests. A failure in rainfall, unseasonal rains, cyclones, hailstorms, high-temperature spells, and pests affect crops adversely and have the capacity to impact all the farmers in a single region. Since micro-finance institution (MFI) work in geographically compact areas, they can be severely affected by the high co-variant risk crop-input

borrowers face. When many borrowers face crop losses due to weather or pest events, the MFI faces a higher risk of loan defaults or delayed repayments. A spike in loan defaults can impact the MFI's liquidity and overall sustainability, affecting its ability to provide financial services to other clients. In addition, market volatility and fluctuations in commodity prices could impact the income generation of farmers, which affects their loan repayments to an MFI, which can harm their reputation and trust among clients.

Seasonality is another risk that MFIs consider when it comes to lending out crop loans to farmers. During the planting season, many farmers are forced to borrow money at nearly the same time, which places peak demand on MFIs, which they cannot mobilize. Therefore, MFIs evaluate an agricultural cooperative's susceptibility to such risks, which can impact crop harvests and income. MFIs also analyze the sector the company is in and its outlook, as well as the company's projections and historical figures.

Seasonality itself may be a unique market opportunity for the Insectary, which can capitalize on the increased spending power of farmers to sell systems to farmers or cooperatives when they can best afford it.

Below are potential risks and mitigation strategies that The Insectary Kenya should consider before borrowing money from MFIs. The assessments are built from an adapted Agriculture Risk matrix:

		Impact				
		Very Low (0.05)	Low (0.1)	Moderate (0.2)	High (0.4)	Very High (0.8)
Probability	Very High (0.9)	MODERATE (0.05)	SEVERE (0.09)	SEVERE (0.18)	CRITICAL (0.36)	CRITICAL (0.72)
	High (0.7)	SUSTAINABLE (0.04)	MODERATE (0.07)	SEVERE (0.14)	CRITICAL (0.28)	CRITICAL (0.56)
	Medium (0.5)	SUSTAINABLE (0.03)	MODERATE (0.05)	MODERATE (0.10)	SEVERE (0.20)	CRITICAL (0.40)
	Low (0.3)	SUSTAINABLE (0.02)	SUSTAINABLE (0.03)	MODERATE (0.06)	SEVERE (0.12)	CRITICAL (0.24)
	Very Low (0.1)	SUSTAINABLE (0.01)	SUSTAINABLE (0.01)	SUSTAINABLE (0.02)	MODERATE (0.04)	CRITICAL (0.08)



Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
1. Familiarity with market competitors operating at a larger scale and with more esteemed partners. Explaining to potential site partners why Insectary is a better fit than pursuing other partners, like Insectipro, likely involves blunt communication about why they are too small for other partners and unlikely to create successful models.	Very High (0.9)	Very High (0.8)	Critical (0.72)	Focus on building trust and credibility with your consumers, invest in strategic plans such as free trials, and create awareness through effective marketing and advertising.[1]	Medium (0.5)	Low (0.1)	Moderate (0.05)
2. Miscommunication between waste suppliers and the insectary. For example, there is a certain measure of waste that a certain number of BSF can be used to transform the food waste into valuable protein. A mix-up in these ratios, for instance, having more waste than required, will decay and generally cause bad odour in the whole area.	High (0.7)	Very High (0.8)	Critical (0.56)	Clear communication and collaboration between waste suppliers and the insectary, using guidebooks, pamphlets and simple pictographs to explain the biological processes and risk mitigation techniques.	Medium (0.5)	Moderate (0.2)	Moderate (0.1)
3. Environmental conditions for breeding, including temperature management for egg laying and hatching.	Medium (0.5)	Moderate (0.2)	Moderate (0.1)	Understanding the breeding conditions of BSF with suitable humidity, light exposure and temperature to maintain a healthy growing population of BSF shall improve the overall productivity.	Low (0.3)	Very Low (0.05)	Sustainable (0.02)

Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
4. Health hazards for the sites. The top producers of food waste and companies and businesses that rely on food safety, such as processors and restaurants. Training site managers to ensure hygienic practices	Very High (0.9)	Very High (0.8)	Critical (0.72)	With proper management and organisation, the Insectary should ensure that proper sanitation is maintained safety guidelines and protocols are adhered to otherwise health hazards.	Very Low (0.1)	Very Low (0.05)	Sustainable (0.01)
5. Efficiencies in operational activities. For example, assume that five restaurants have come together and decided to have a common waste pit, but as they bring in their waste, it needs to be measured because, as expected, the more weight you bring, the greater your profit share will be.  However, a note should be taken that one can bring in waste full of hard bones (which will be hard for the BSF to convert the waste), and another restaurant can bring in their waste full of avocado peels, which are easy to convert thus an increase in production rate. With efficient operational activities, different waste suppliers should be given a fair profit distribution depending on their waste input.	Very High (0.9)	Very High (0.9)	Critical (0.56)	Both quality and quantity of waste should be considered by observance.  Set up surveillance where monitoring can be done of the different wastes being disposed of per waste supplier .	Medium (0.5)	Moderate (0.2)	Moderate (0.1)





Photography: Ukama Ustawi

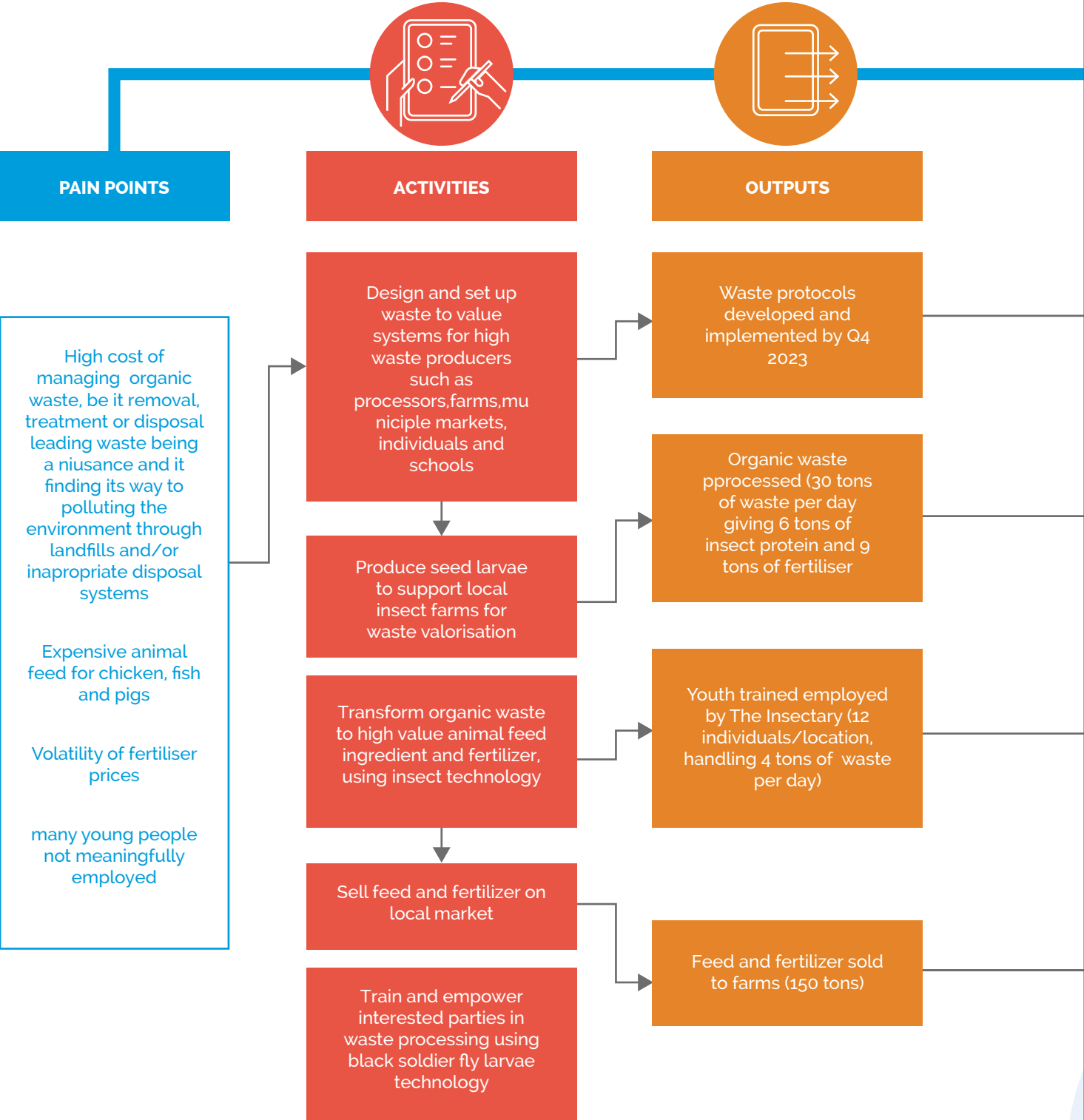


## Impact Measurement and Management

### Lead advisor profile

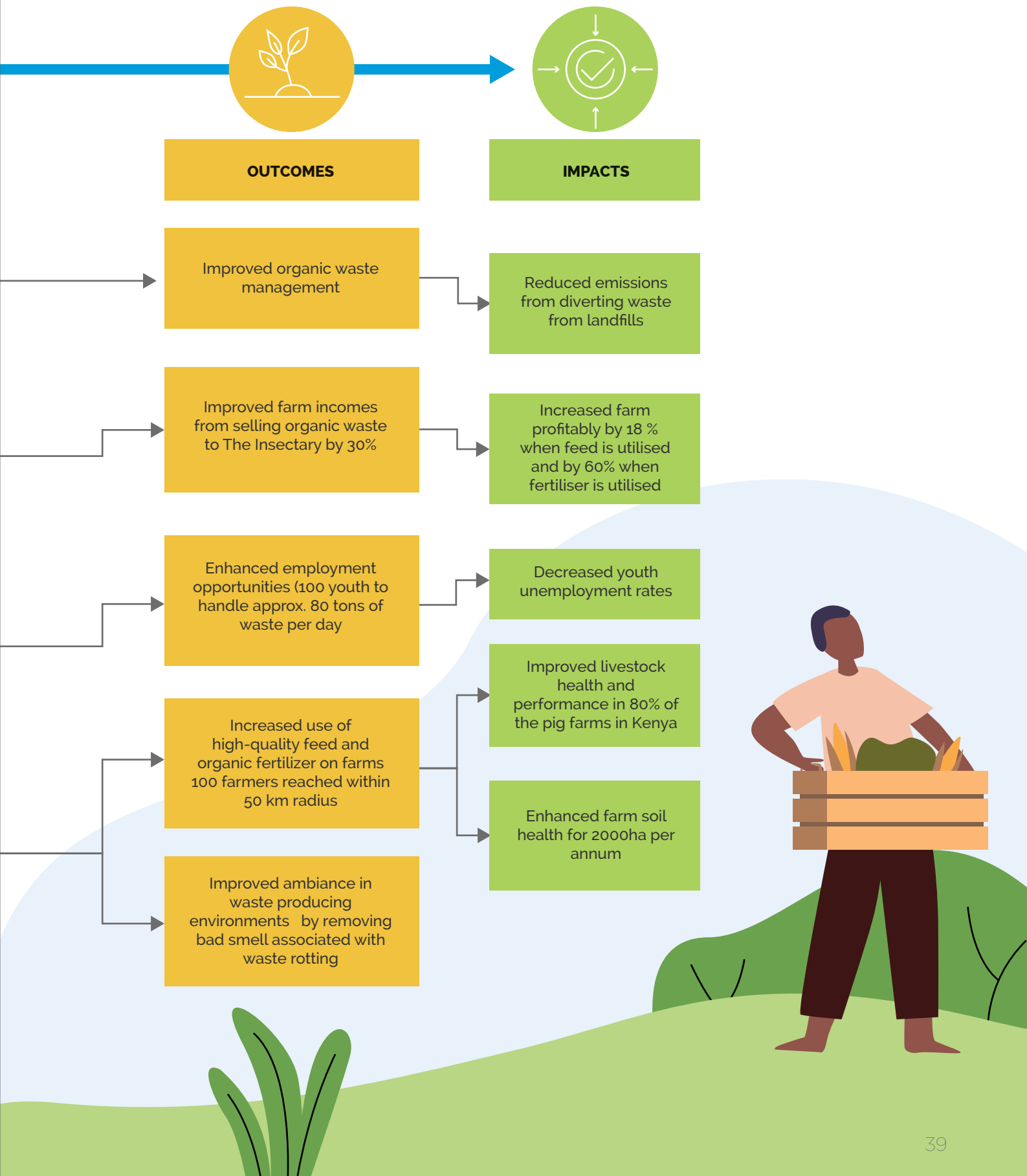
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The impact pathways



Assumptions: Farmers knowledge of application rates of frass and usage rates larvae, Rearing technology well embraced; Investments in on site infrastructure critical, standardised application rates for the insect breeding and rearing, Technical support available for the teams and owners of the rearing uniits

The Insectary Kenya Limited turns organic waste into Value by applying insect technology which transforms the input to feed and soil ammendment, thereby contributing to healthier humans, animals, plants and environment



**3.3.**

# SHAMBA RECORDS LTD

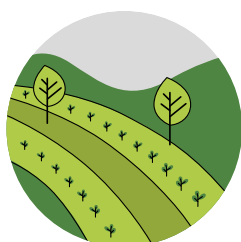


Photography: Ukama Ustawi



**Shamba Records Ltd.** is an AgTech company based in Kenya, established to digitize the agriculture sector in Sub-Saharan Africa<sup>24, 25</sup>. The company offers tailor-made enterprise resource planning (ERP) and farmers' customer relationship management (CRM) for the tea, dairy, fruits, coffee, and cassava value chains. Through automation and digitization innovations, Shamba Records Ltd. has been able to link smallholder farmers with distributors for their produce, loans, extension services, and insurance to cover livestock loss and the general health of the farmer. The company also offers a Farmer's Wallet, which can unlock credit to farmers and the development of pension schemes<sup>26</sup>.

The automation and digitization portfolio of Shamba Record Ltd. involves digitizing the agriculture sector and increasing the incomes of smallholder farmers in Sub-Saharan Africa. At the same time, the extension services include guided farming methods to assist farmers with improving yield quality and yields. On the other hand, the company's smallholder financing portfolio involves connecting smallholder farmers to loans, trade financing, and pension schemes. The livestock insurance portfolio involves the farmer's livestock against sickness and accidental death<sup>27</sup>.



## Sector Spotlight

Kenya's population is mainly rural, divided into pastoral, smallholder agricultural, and large farm areas. Population census has previously estimated that more than 70 percent of Kenya's population lived in smallholder agricultural areas. Poverty is more prevalent in the country's smallholder agricultural areas, but incidences may be higher in some parts. Different poverty estimates in agricultural smallholder areas suggest that about 25% of the smallholder agricultural households were poor enough and unable to afford what is regarded as minimum food requirements<sup>28</sup>. There are still major constraints in smallholder productivity and commercialization of smallholder farmers in Kenya, i.e., the link between production and marketing, as well as practices that will give them a competitive advantage and improved productivity. The smallholder farming industry of the country requires support to improve its productivity through innovative collective action models that combine the strengths of both the private and public sectors<sup>29</sup>.

Kenya's population  
is mainly rural, divided into



pastoral,



smallholder  
agricultural,



and large  
farm areas.

70%



70 percent of  
Kenya's population  
lived in smallholder  
agricultural areas



Shamba Records Ltd. has  
positively impacted over

**10,000**

smallholder farmers

with an average yield and  
income growth of about

**25%**



the company has (in its database)

**13,000 farmers**

has

**20 cocperatives**

with ERPS

has assisted

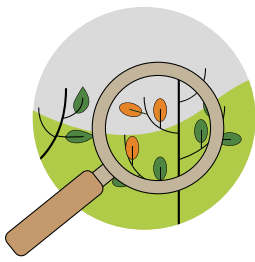
**2300 farmers**

in unlocking financing

employs about **100**

**extension agents**





## Challenge

### What problems is the company solving?

Due to a lack of access to capital to invest in sophisticated software and systems, several smallholder farmers still need to use traditional (paper-based) means of ERP and CRM, which may sometimes be vulnerable to risks<sup>30</sup>, i.e., fire and misplacement. Traditional means of ERP and CRM need more real-time availability of credit financiers, insurance brokers, loan providers, and distributors of farmer produce. Thus, Shamba Records Ltd's automation and digitization innovation addresses the challenge of the real-time availability of records, which may hinder productivity and the improvement of the economic situations of smallholder farmers and the rural economy.

### Why is it important?

The digitization and automation services offered by Shamba Records Ltd. address the need for traditional paper-based record-keeping methods for ERP and CRM systems amongst smallholder farmers, which may sometimes be vulnerable to loss risks and inaccuracies<sup>31</sup>.

### Highlights of the Entrepreneur

Shamba Records Ltd. has positively impacted over 10,000 smallholder farmers with an average yield and income growth of about 25%. In its database, the company has 13,000 farmers, has assisted 2300 farmers in unlocking financing, has 20 cooperatives with ERPS, and employs about 100 extension agents<sup>32</sup>.



# Gender Equality and Social Inclusion

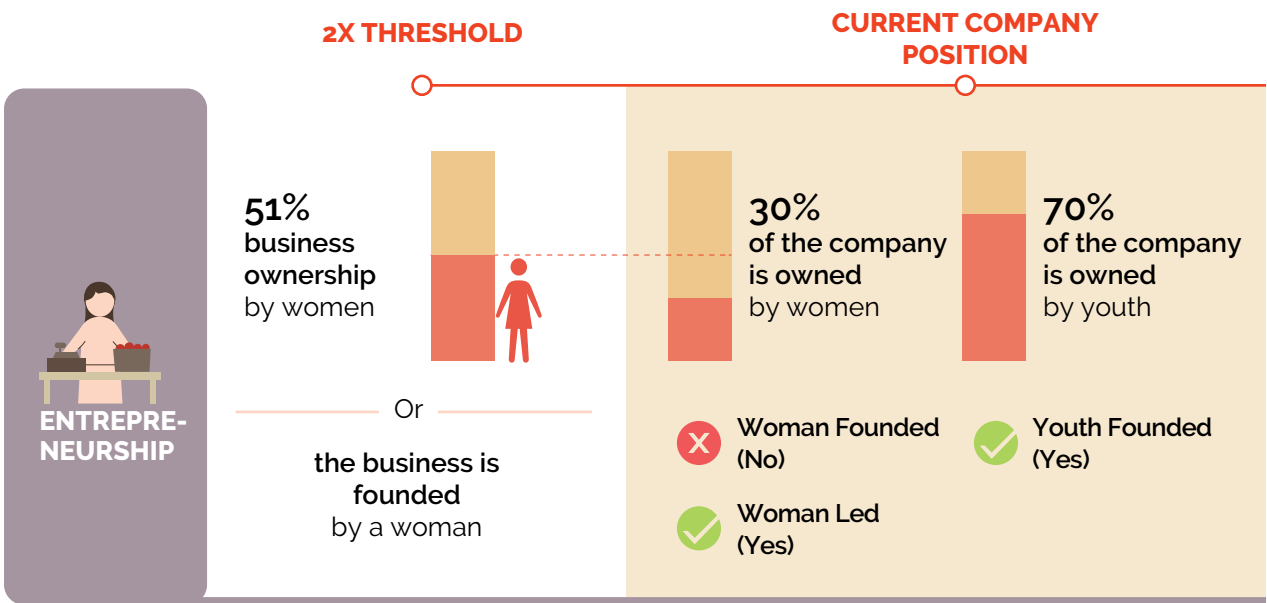
## Lead advisor profile

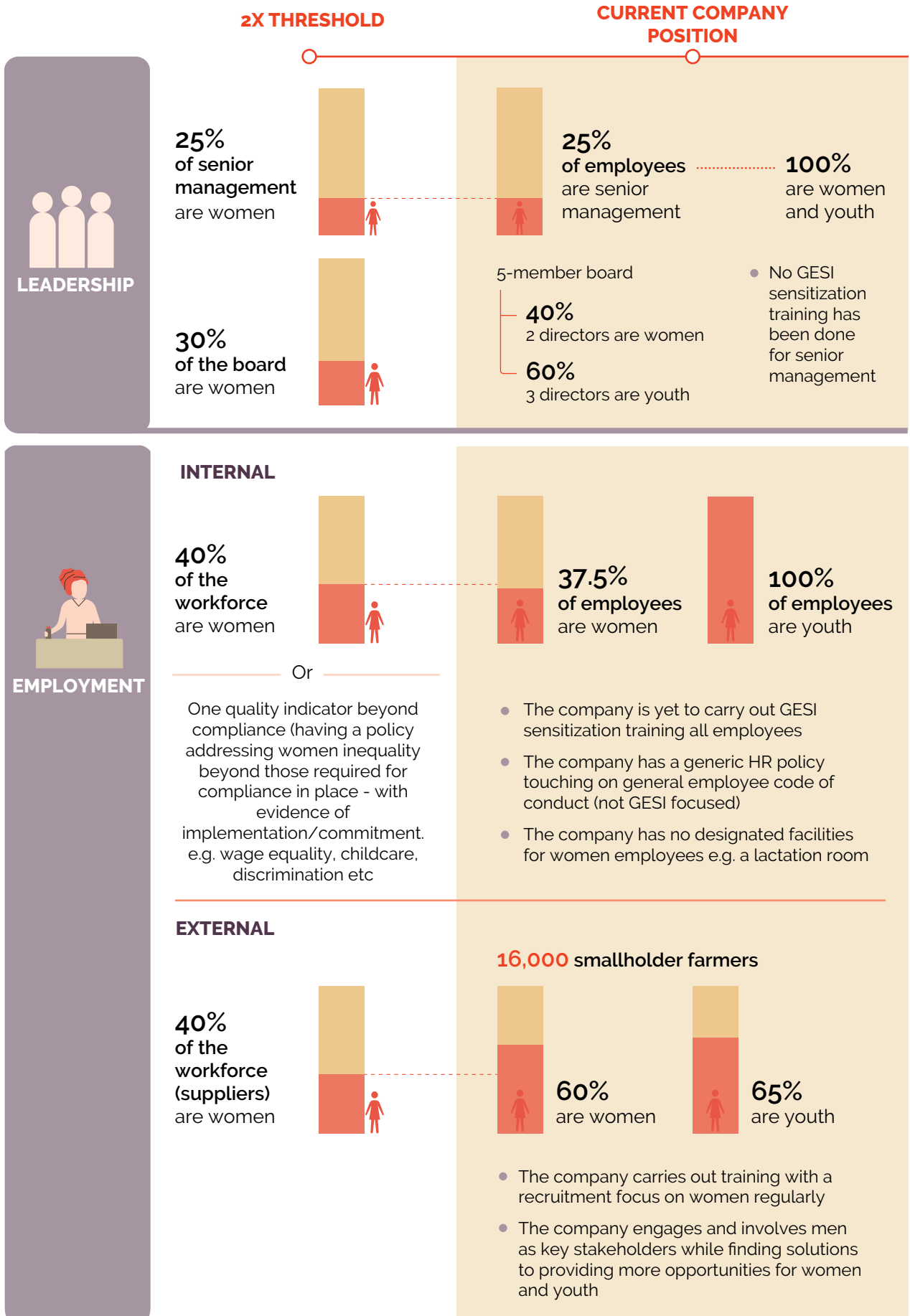
The Gender Equality and Social Inclusion (GESI) technical assistance implementation process was led by The Rallying Cry team in collaboration with Dr. Karen Nortje. The Rallying Cry is an ecosystem initiative working to shift private sector capital at the nexus of gender, climate, and agribusiness. At the same time, Dr. Karen Nortje is a senior researcher and social inclusion subject matter expert. The team supported the Accelerator Partners by equipping them to strengthen the capacity and agency of both the men and women within their agribusiness value chain(s). To achieve this, the team developed a gender action plan for Shamba Records Ltd to help address the barriers to gender inclusivity.

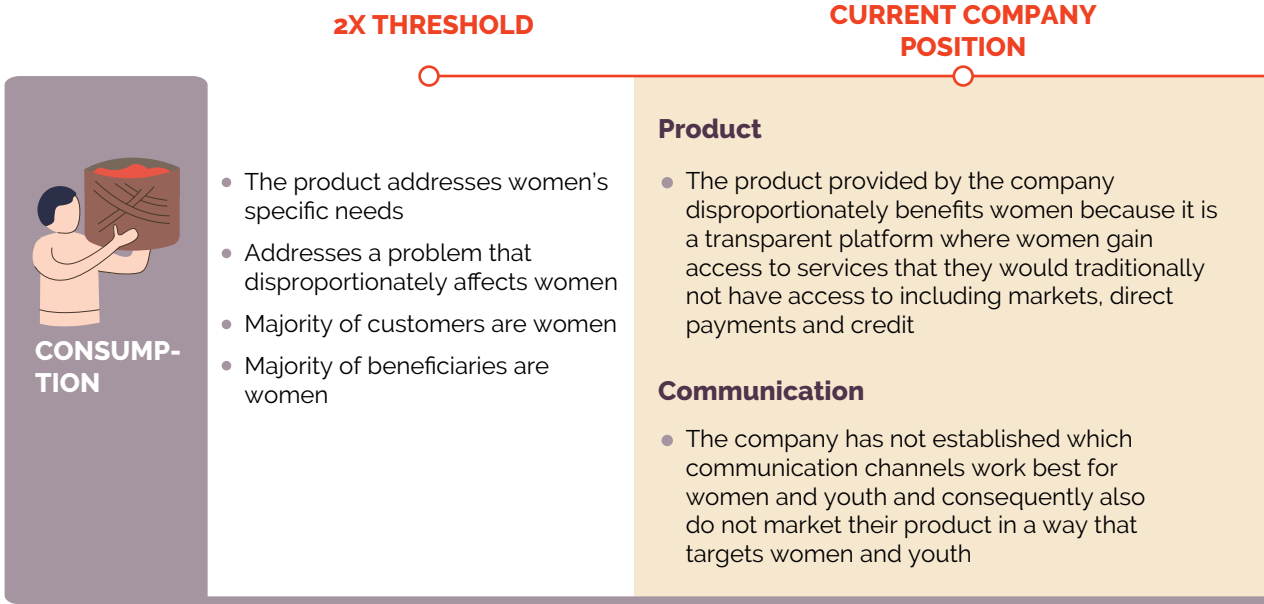
## Company GESI profile and summary of activities

The analysis of the company’s GESI baseline data showed that the company is founded by a youth and has both women and youth represented in their employees, farmers and board. 100% of senior management employees are women and youth and the product provided by the company disproportionately benefits women because it is a transparent platform where women gain access to services that they would traditionally not have access to including markets, direct payments and credit.

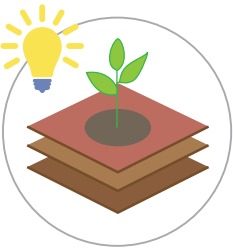
A summary profile is given below:







TheGESI action plan activities focused on the need to organize gender mainstreaming training for management and the rest of the employees as well as adjust the facilities to cater to the unique needs of women. Other activities included using reaching more women; given the nature of the product and its great potential to increase access to equal opportunities for women and youth, they need to establish the most effective communication channels and carry out their marketing in a more targeted manner.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Nathaniel Petersen assisted the company in delivering its innovation. Nate is an agriculture and natural resource economist with a Ph.D. in Decision Theory and Behavioral Economics who has been working in research, agribusiness strategy, and running farms in Kenya for 6 years. Much of his work is focused on understanding how farmers perceive risks and risk mitigation strategies, some of which can be complex and/or confusing, like insurance, drip irrigation, agroforestry, and bundled product/ service modules. As such, he's primarily aligned with the CG's work in Agriculture Risk Management. He is especially good at designing and testing communications and interactions with new products and services and learning from those tests. Especially for farmer-centric digital, financial, and risk-management solutions, he can help the Partners explore how your solution can contribute to increasing farmers' autonomy over their economic role and livelihoods and ultimately make them and their activities more resilient to climate change.



Photography: Ukama Ustawi

## The innovation

With over 20 years of combined experience in agriculture and ICT, Shamba Records is an Agtech company to digitize the sub-Saharan Agricultural sector. The company collects and aggregates farmers' production data in real time to link it to markets. The primary customers are farmers, while the secondary customers are cooperatives and other aggregator organizations that work directly with farmers.

The agricultural industry is considered a risky investment for Microfinance institutions, hence some reluctance to lend money to farmers. This is quite understandable because of market and price risks, climate risks, and crop risks, among others. A failure in rainfall, unseasonal rains, cyclones, hailstorms, high-temperature spells, and pest attacks affect crops adversely and impact all the farmers in a region. Since MFIs work in geographically compact areas, they can be severely affected by the high co-variant risk that crop loan borrowers face. When many borrowers face crop losses due to weather or pest events, the MFI faces a higher risk of loan defaults or delayed repayments. A spike in loan defaults can impact the MFI's liquidity and overall sustainability, affecting its ability to provide financial services to other clients. In addition, market volatility and fluctuations in commodity prices could impact the income generation of farmers, which affects their loan repayments to an MFI, which can harm their reputation and trust among clients.

Seasonality is another risk that MFIs consider a risk when it comes to lending out crop loans to farmers. During the planting season, many farmers are forced to borrow money at nearly the same time to plant, which places peak demand on MFIs they cannot mobilize. Therefore, MFIs evaluate an agricultural cooperative's susceptibility to such risks, which can impact crop harvests and income. MFIs also analyze the sector the company is in and its outlook, as well as the company's projections and historical figures.

Below are potential risks and mitigation strategies that Farm Depot should consider before borrowing money from MFIs. The assessments are built from an adapted Agriculture Risk matrix:

		Impact				
		Very Low (0.05)	Low (0.1)	Moderate (0.2)	High (0.4)	Very High (0.8)
Probability	Very High (0.9)	MODERATE (0.05)	SEVERE (0.09)	SEVERE (0.18)	CRITICAL (0.36)	CRITICAL (0.72)
	High (0.7)	SUSTAINABLE (0.04)	MODERATE (0.07)	SEVERE (0.14)	CRITICAL (0.28)	CRITICAL (0.56)
	Medium (0.5)	SUSTAINABLE (0.03)	MODERATE (0.05)	MODERATE (0.10)	SEVERE (0.20)	CRITICAL (0.40)
	Low (0.3)	SUSTAINABLE (0.02)	SUSTAINABLE (0.03)	MODERATE (0.06)	SEVERE (0.12)	CRITICAL (0.24)
	Very Low (0.1)	SUSTAINABLE (0.01)	SUSTAINABLE (0.01)	SUSTAINABLE (0.02)	MODERATE (0.04)	CRITICAL (0.08)

Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
1. Confirmation bias could arise, where consumers tend to search out evidence consistent with their belief and ignore conflicting data (which could be Shamba Records' real-time data collected). This can make your potential customers less likely to engage with your conflicting data, even if it is the correct data to make accurate decisions.	[1] Medium (0.5)	Moderate (0.2)	Moderate (0.1)	Provide context and offer training on measuring and interpreting the data correctly.	Low (0.3)	Low (0.1)	Sustainable (0.03)
2. Employees may give false information about their data without fact-checking because it may seem too familiar to them; this might question the company's credibility and bring about suboptimal decision-making.	Medium (0.5)	Very High (0.9)	Critical (0.40)	Consistency should be upheld with data reports.  Encourage reporting what is in the data, even if it is unexpected.	Medium (0.5)	Moderate (0.2)	Moderate (0.1)



Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
3. Consent issues: some farmers may be reluctant to Shamba Records collecting their data because of a lack of trust, as the data collected could be sold to third parties (which can disadvantage the farmers) without their consent.	High (0.7)	High (0.4)	Critical (0.28)	Signing of MOUs from the parties involved.	[2] Medium (0.5)	Moderate (0.2)	Moderate (0.1)
4. The desire for agents to create loan-eligible farmers and falsifying data or otherwise gaming collected data. This will both prove to be a challenge with debt providers and may create issues of fairness between clients.	Medium (0.5)	Moderate (0.2)	Moderate (0.1)	Encourage critical thinking.	Low (0.3)	Very Low (0.05)	Sustainable (0.02)



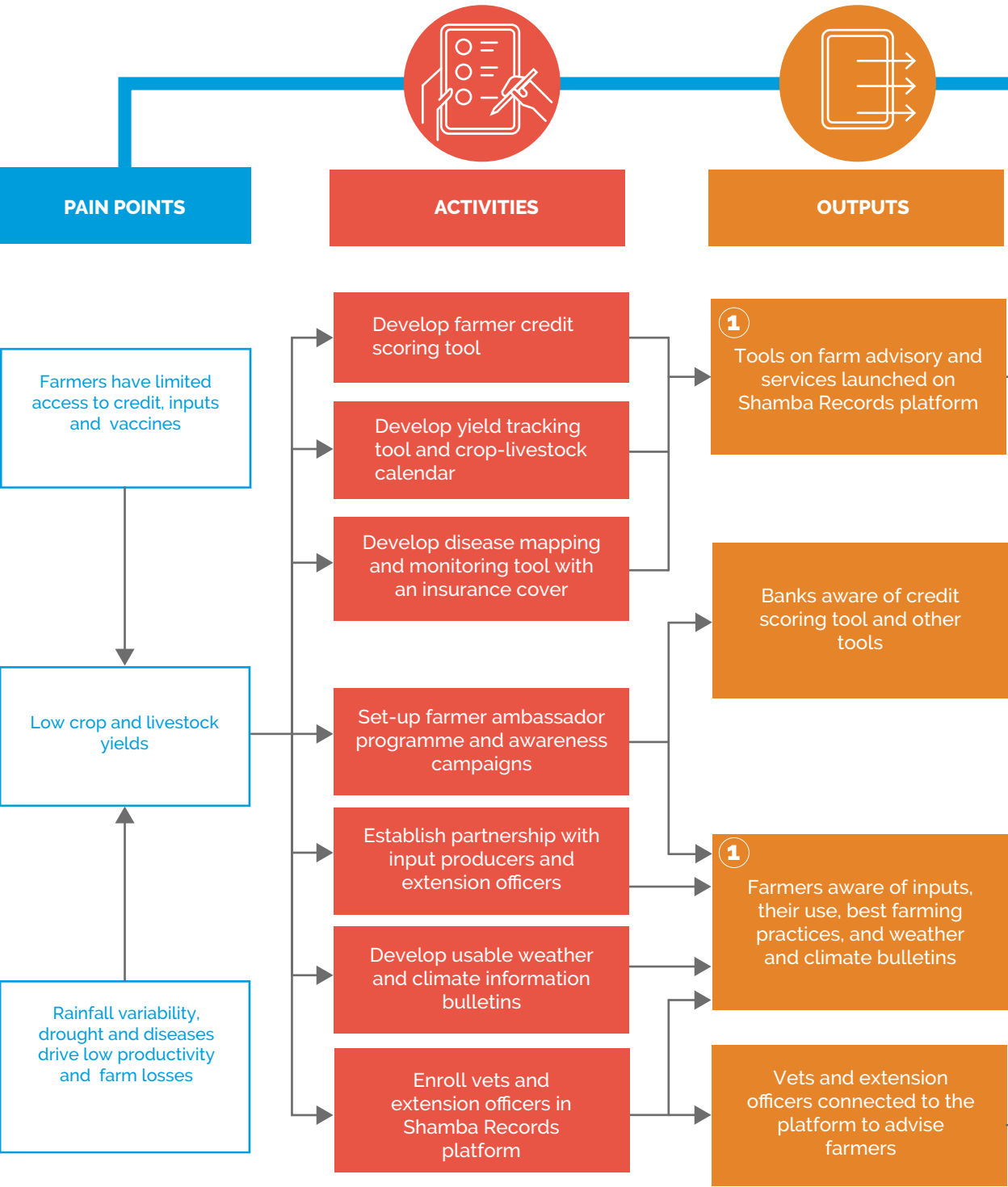
## Impact Measurement and Management

### Lead advisor profile

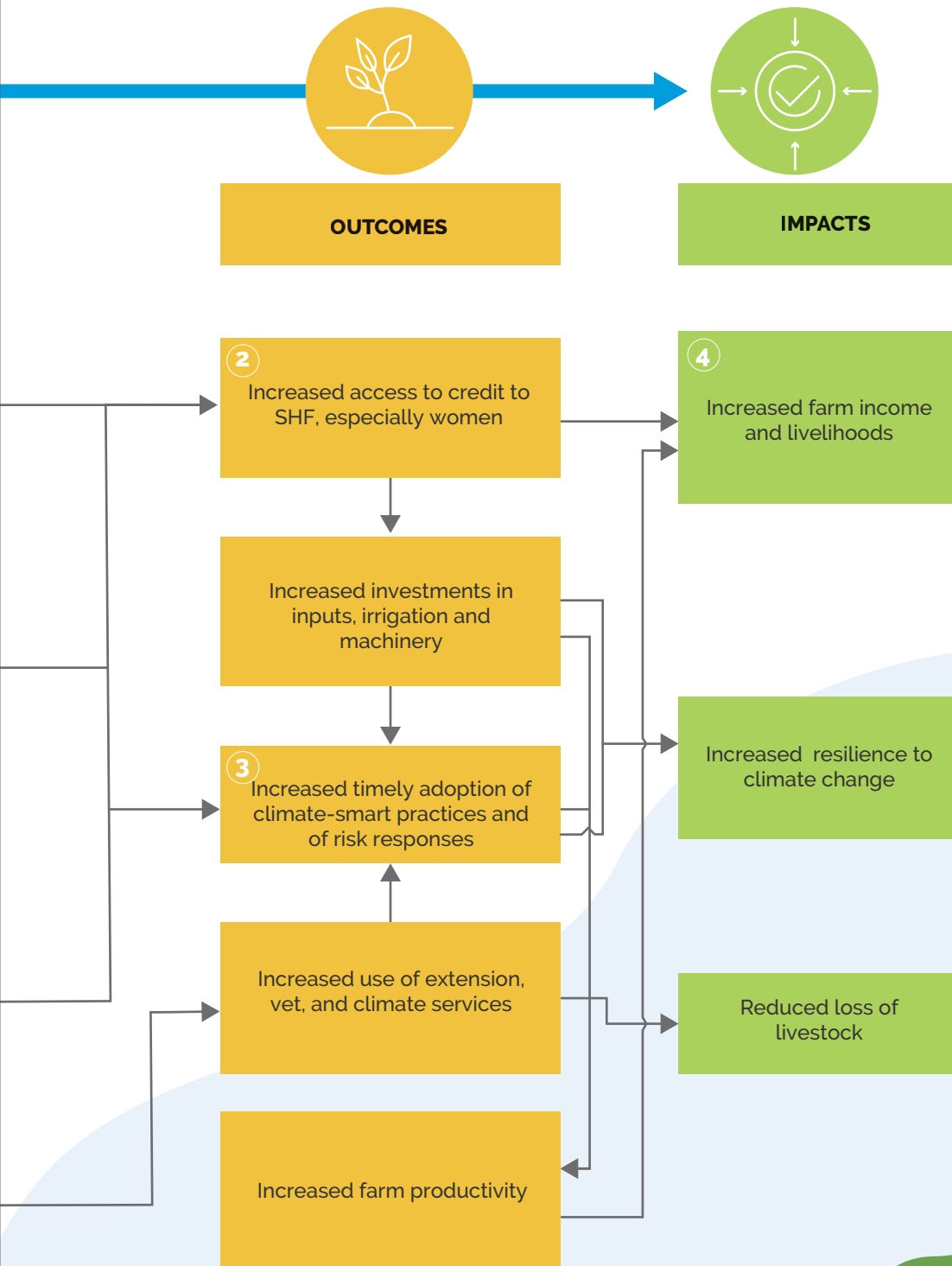
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The impact pathways

Shamba Records facilitates affordable services to smallholder farmers (SHF) in East Africa through bridging the digital divide between SHF, financial and advisory institutions, fostering financial inclusion and leading to increased yields, livelihoods and climate resilience.



Assumptions: 1) Farmers are aware of Shamba Records and can afford its services; 2) Banks are aware of and trust Shamba Records and provide favorable credit to farmers; 3) Farmers use information from Shamba Records to adjust farming practices; 4) Farmers have access to markets to generate income from increases in productivity



# 3.4.

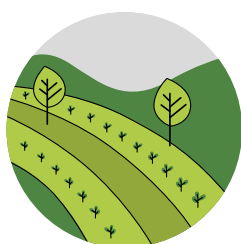
## BATIAN NUTS LTD



Photography: Ukama Ustawi



**B**atian Nuts Ltd., established in 2017 and based in Kenya, is an agro-processing enterprise that gathers and processes edible aflatoxin-free nuts, i.e., macadamia nuts, groundnuts, and cashew nuts produced by smallholder farmers<sup>33, 34</sup> and are exported to countries the United States of America, Europe and Asia<sup>35</sup>, earning foreign exchange. Batian Nuts Ltd. distinguishes itself from other nut buyers and fosters sustainable means through (i) sourcing directly from smallholder farmers, which allows the company to consistently pay a higher farm-gate price per unit weight of nuts, bringing the volume sourced per farmer up over time. With this strategy, Batian Nuts Ltd. brings down the sourcing cost, allowing the company to leverage scale and consistently pay a higher price to farmers than other aggregators<sup>36</sup>. Also, it distinguishes itself through (ii) cash on collecting nuts from farmers, as this is a practice amongst common buyers in the area. Thus, Batian Nuts Ltd. has positioned itself to have working capital and also (iii) facilitate best practices. Partner farmers appreciate the training on good agricultural practices, i.e., high-quality seedlings and seed choices that Batian Nuts Ltd. provides. Batian Nuts Ltd. has expanded its product range to tree tomato, avocado, apple, pomegranate, dragon fruit, mango, and macadamia nut seedlings<sup>37</sup>.



## Sector Spotlight

Kenya's population is mainly rural, divided into pastoral, smallholder agricultural, and large farm areas. Population census has previously estimated that more than 70 percent of Kenya's population lived in smallholder agricultural areas. Poverty is more prevalent in the country's smallholder agricultural areas, but incidences may be higher in some parts. Different poverty estimates in agricultural smallholder areas suggest that about 25% of the smallholder agricultural households were poor enough and unable to afford what is regarded as minimum food requirements<sup>38</sup>. There are still significant constraints in smallholder productivity and commercialization of smallholder farmers in Kenya, i.e., the link between production and marketing, as well as practices that will give them a competitive advantage and improved productivity. The smallholder farming industry of the country requires support to improve its productivity through innovative collective action models that combine the strengths of both the private and public sectors<sup>39</sup>.

Kenya's population  
is mainly rural, divided into



pastoral,



smallholder  
agricultural,



and large  
farm areas.

70%



70 percent of  
Kenya's population  
lived in smallholder  
agricultural areas



## Challenge

### What problems is the company solving?

Access to sustainable and fair markets is a significant hindrance amongst smallholder farmers, which sometimes leads to spoilage of farm produce<sup>40, 41</sup>. Thus, the intervention of Batian Nuts Ltd. has given smallholder farmers the advantage of a direct link to unique markets they would otherwise not traditionally access, thus improving their productivity. In value addition, agricultural commodities are transformed into value-added products and processed, thereby increasing their market value, improving shelf-life, and catering to diverse consumer preferences<sup>42, 43</sup>. Thus, the nut processing innovation by Batian Nuts Ltd is critical to increasing the market value of different nuts produced by smallholder farmers in the region.

### Why is it important?

Batian Nuts Ltd has created a sustainable market through a direct link between production and marketing for smallholder nut farmers in the region, which is important to improve the farmer's livelihoods and increase productivity through improved incomes<sup>44</sup>. The processing innovation by the company is further critical in value addition and improvement of the shelf-life for the nuts. Batian Nuts Ltd. factory has built a capacity to process about 1500 metric tons of raw macadamia Nut Inshell (NIS)<sup>45</sup>.





## Gender Equality and Social Inclusion

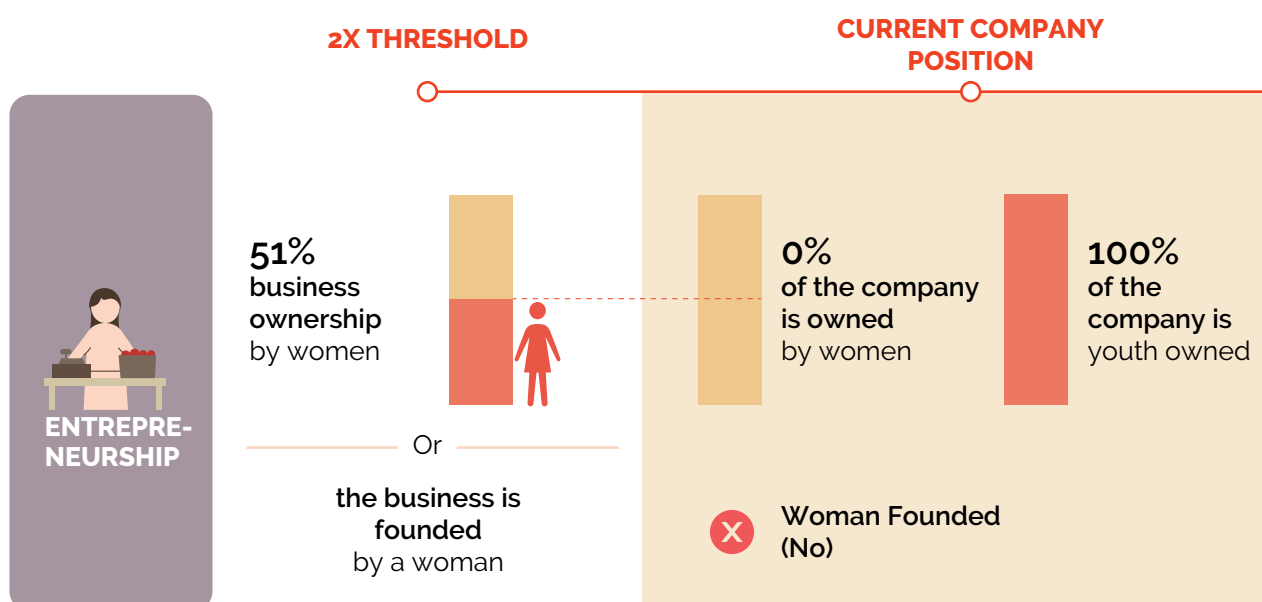
### Lead advisor profile

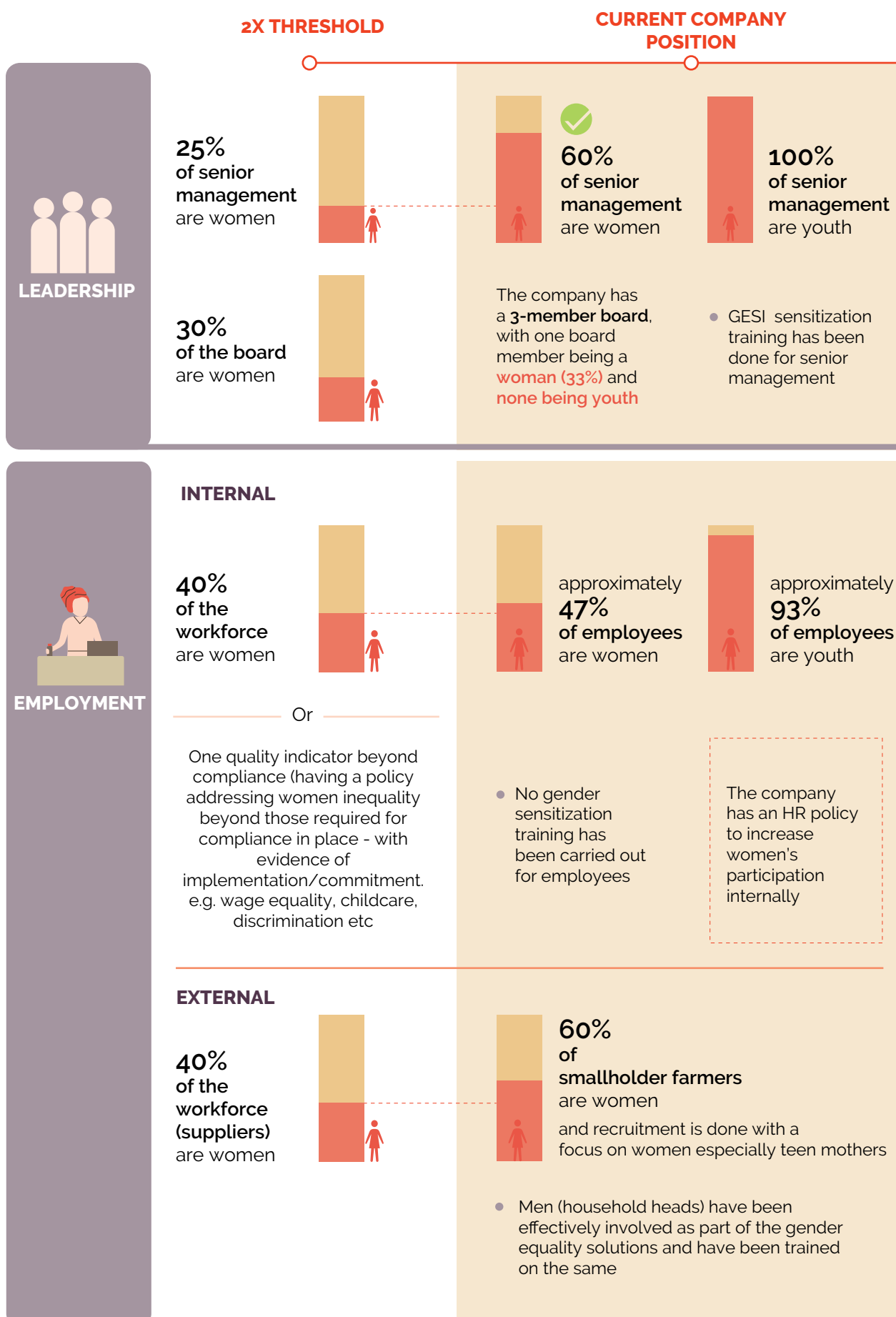
The Gender Equality and Social Inclusion (GESI) technical assistance implementation process was led by The Rallying Cry team in collaboration with Dr. Karen Nortje. The Rallying Cry is an ecosystem initiative working to shift private sector capital at the nexus of gender, climate, and agribusiness. At the same time, Dr. Karen Nortje is a senior researcher and social inclusion subject matter expert. The team supported the Accelerator Partners by equipping them to strengthen the capacity and agency of both the men and women within their agribusiness value chain(s). To achieve this, the team developed a gender action plan for Batian Nuts Ltd Ltd to help address the barriers to gender inclusivity.

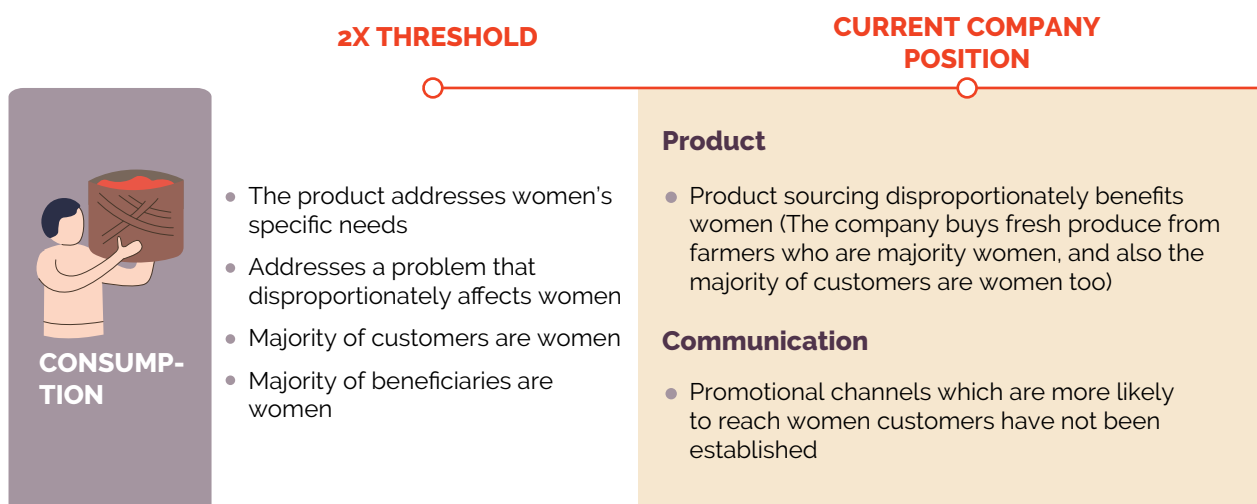
### Company GESI profile and summary of activities

Although the company is not founded or owned by women, it is founded and 100% owned by youth. The company has a board of 3, with 1(33%) being a woman and none being youth. 47% of employees are women, while 60% of senior managers are women. GESI training has been carried out for senior management but not for all employees. However, there is an HR policy in place to increase women's participation internally as employees. Finally, 60% of their smallholder farmers are women, while 80% are youth. Farmer recruitment activities are targeted at women and youth, with the company being keen to onboard teen mothers to offer them training, access to inputs, the market for their produce, and financial literacy training.

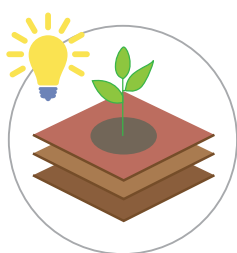
A summary profile is given below:







The GESI action plan was focused on helping the company to maintain these standards while making some adjustments to be more inclusive e.g. establishing which promotional channels are more likely to reach women and youth as well as including youth and women in their inclusion solutioning process.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Eliud Birachi, a Markets Researcher and Agricultural Value Chain Development Specialist at the Alliance of Bioversity and CIAT conducted the technical assistance. As an agribusiness expert, he supported the delivery of technical assistance. He worked with other colleagues in both Eastern and Southern Africa to further support the Accelerator Partners in their respective regions.

## The innovation

One phone discussion and a physical site visit were conducted with Batian Nuts to understand issues affecting the introduction of groundnuts as a second line in the company's portfolio. The new groundnut line will draw on the successful experiences with macadamia nuts.

Groundnut still faces some challenges in the region: it still needs to be well-established among farming households, but it is still a new crop. As the company begins building up seed supplies, a challenge lies in seed losses via the smallholder farmers that may consume the seeds or sell them to other buyers. Therefore, it needs capacity building and training for extension staff and the farmers to implement it effectively. It is also unique that more than 65% of the target producers are women; hence, the crop has a high potential to enhance livelihoods and nutrition. The company targets 2600 out-growers for groundnuts for at least 2000 mt of groundnuts. The methods of preparation and use of groundnuts will be included in the training for the farming households.

A plan of action with Batian was to hold the training sessions during the low season when all staff farmer leaders and extension officers are available to prepare for the next season. A team of 22 field officers (from the company and government extension officers). Thus, the indicated appropriate period for the training sessions was between October and December 2023. The training topics discussed remain relevant for the training sessions; training on nutrition and utilization of the groundnuts will be included. The training materials are being prepared. The training will be face-to-face with PABRA facilitators. The venue for the training will be in Nkubu town, which is near the company.

Training topics for the training include:

- Groundnut agronomy
- Post-harvest handling training
- Side-selling risk management strategy
- Nutrition value and utilization (and processing) of groundnuts

Batian Nuts Ltd intends to add value to groundnuts by processing them into other user-demanded products, such as flour blends and high-value (protein-rich) products. During the meeting, the following strategies were discussed to counter the side selling problem: Market price matching based on demand and supply to reduce incentives to sell elsewhere. Increasing yields from groundnuts would assure farmers of higher incomes while ensuring enough for the market. Side selling happens when there are supply challenges.



*A team of employees sorting the nuts.*



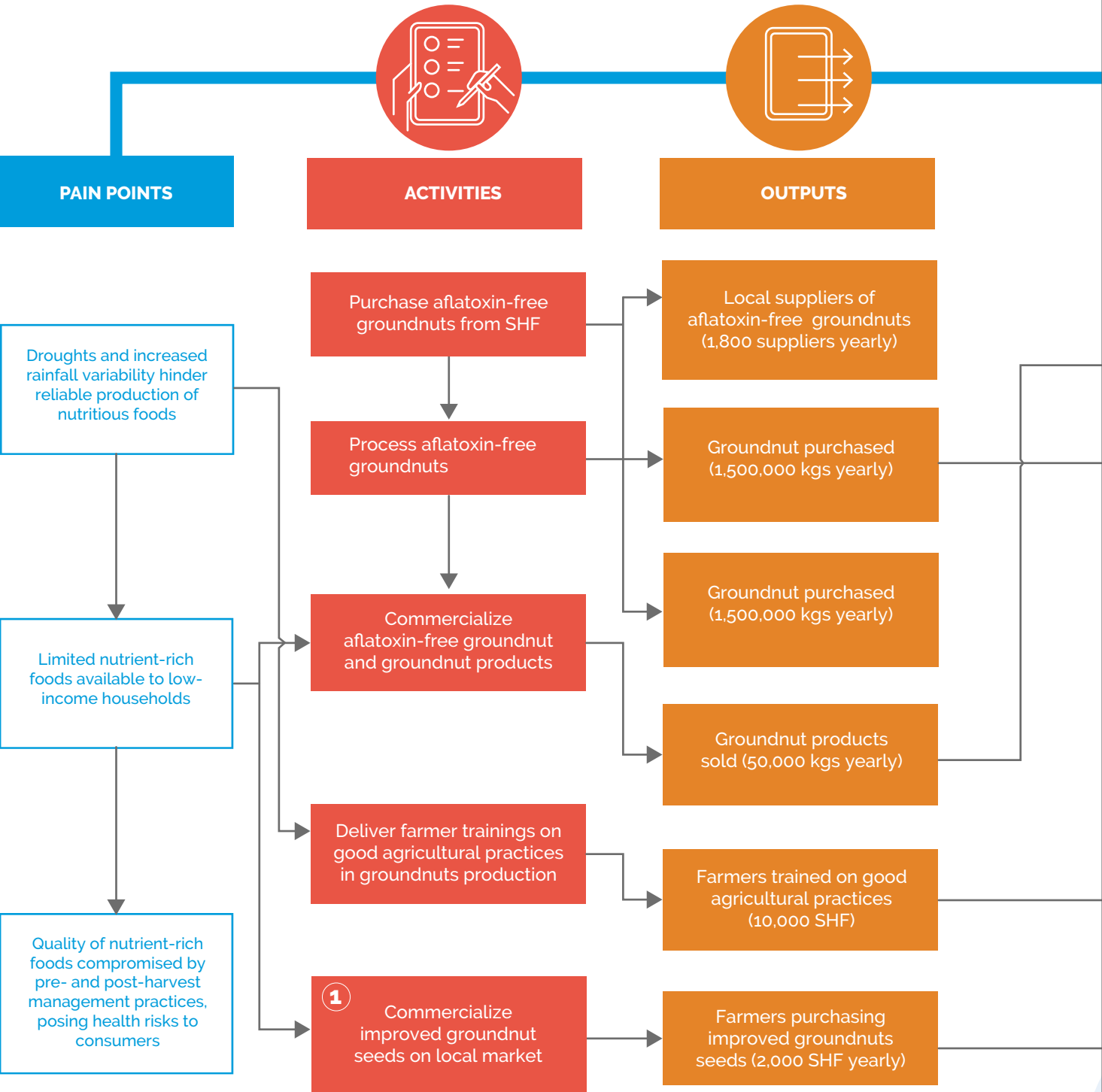
## Impact Measurement and Management

### Lead advisor profile

The impact pathway was delivered by Andreea Nowak, a social science researcher at the Alliance of Bioversity and CIAT, with an interest in how to improve the assessment and reporting on climate adaptation and resilience. Within the FSA, her interests were to assess the current impact measurements and metrics used by the agribusinesses and develop additional indicators for impact measurement reporting, data collection, consolidation, and fundraising. Together with a team of researchers, she has conducted interviews and workshops and co-designed the below-impact pathway with the agribusiness.

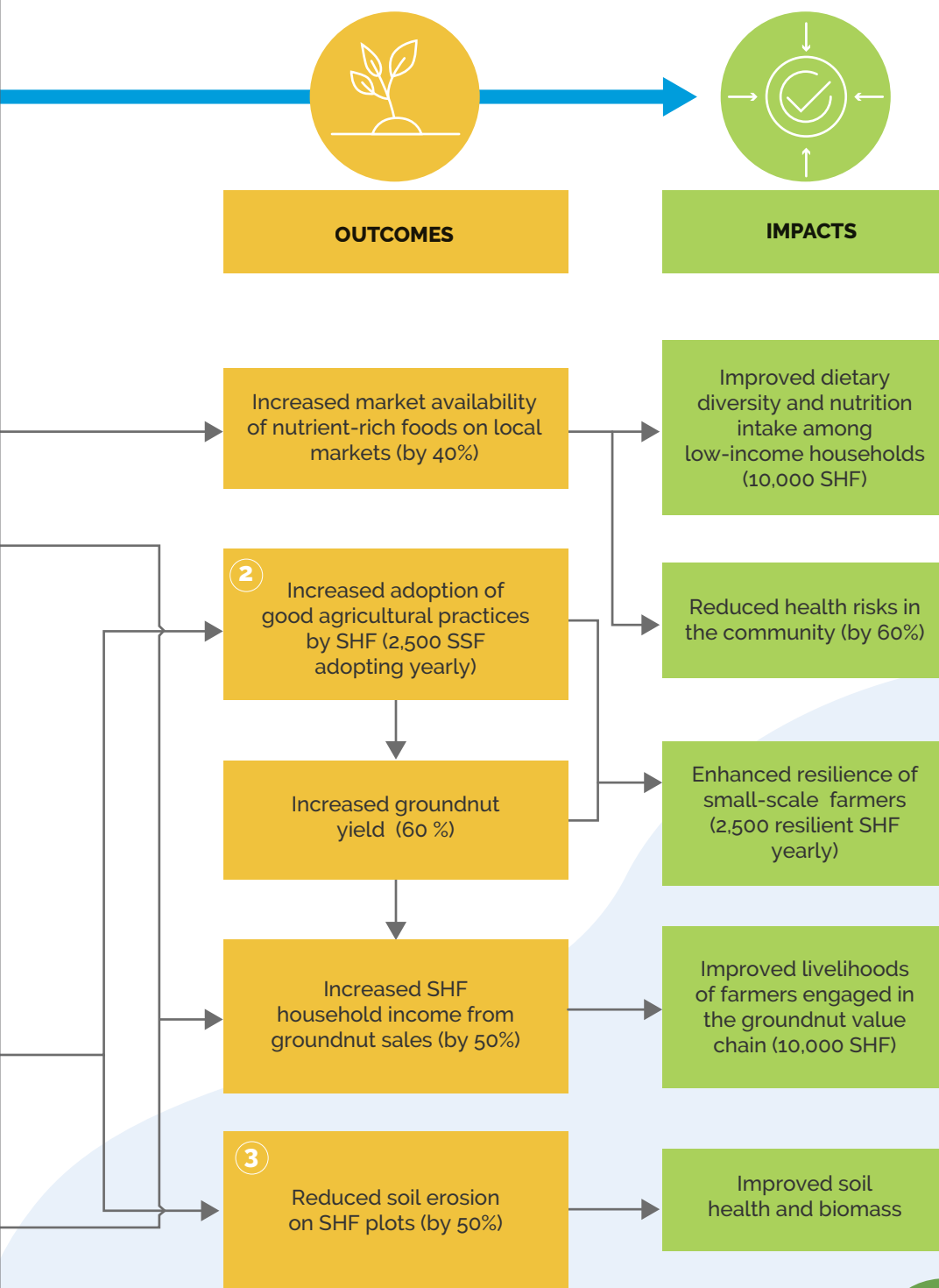
The impact pathways

Batian Nuts specializes in processing and marketing of high-quality, nutrient-dense food products sourced from small-holder farmers (SHF), contributing to their improved livelihoods, food and nutrition, security, while positively impacting the environment.



Assumptions: 1) Improved seeds commercialized by Batian Nuts and purchased by SHF are suitable for local growing conditions, including climate (i.e., resistant to drought/heat stress); 2) Farmer training leads to actual changes in farming practices; 3) There is sufficient market demand for groundnut and groundnut related products to enable income generation for farmers; 4) Farmers consistently engage in groundnut production so that groundnut cover can contribute to reducing soil erosion

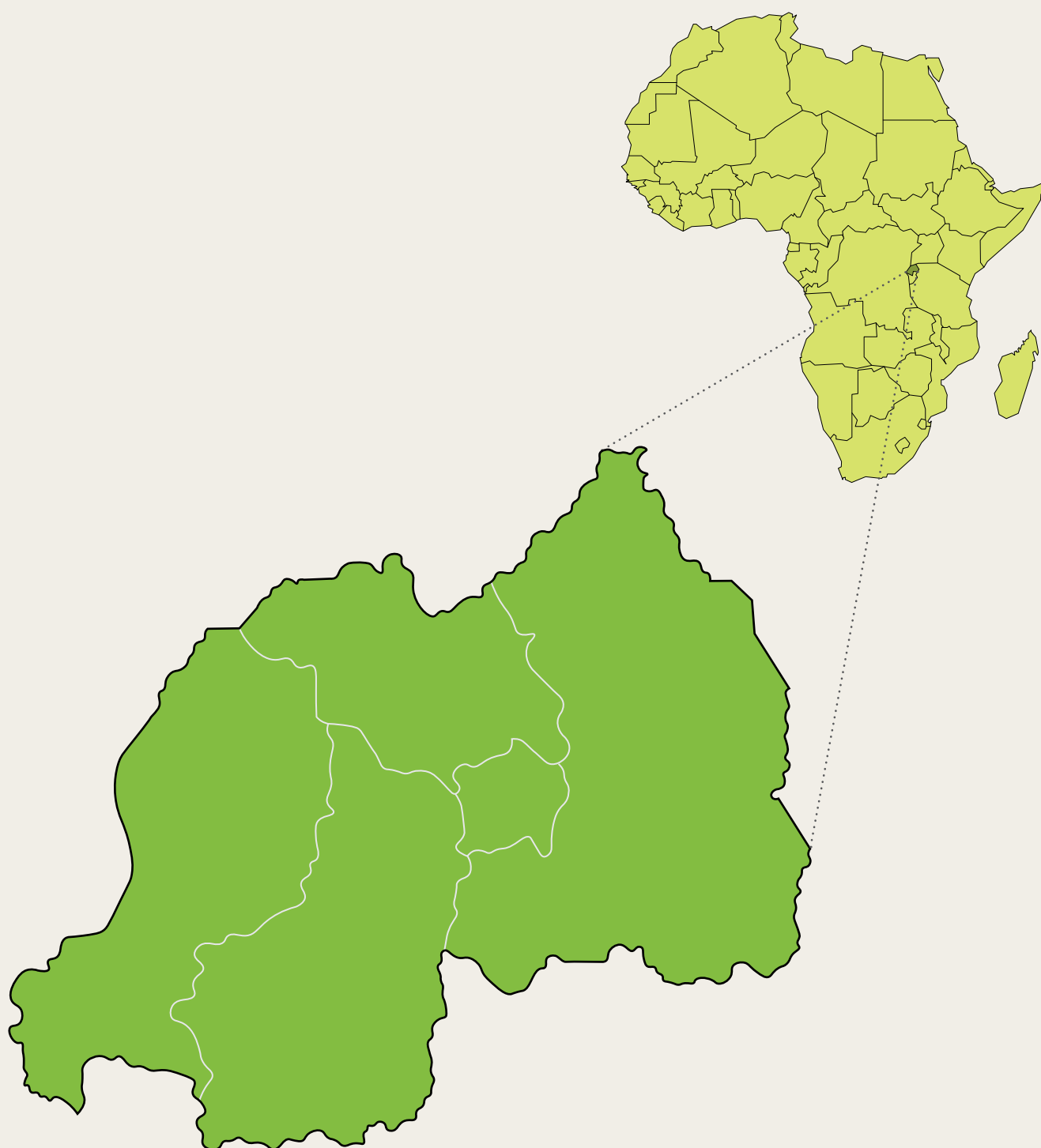






COUNTRY:

RWANDA



**3.5.**

# AFRI-FARMERS MARKET LTD



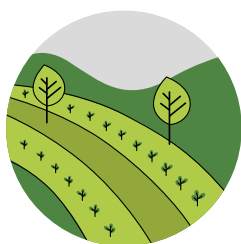
Photography: Ukama Ustawi



**Afri-Farmers Market Ltd.** is an e E-Commerce company based in Rwanda. It was established to assist farmers across Africa in practicing sustainable farming practices while assessing markets at fair prices. Afri-Farmers Market is a pioneering social enterprise revolutionizing the agricultural supply chain in Sub-Saharan Africa. Our innovative e-commerce platform connects smallholder farmers directly with urban consumers, creating a stable market for farmers and ensuring fresh, locally sourced produce for consumers. In addition to our marketplace, we provide comprehensive capacity-building training for sustainable agriculture and offer credit to empower rural smallholders to enhance their yields and productivity.

The company was established to assist farmers across the African continent to practice sustainable farming while assessing markets at fair prices. Afri-Farmers Market Ltd. relies heavily on small-scale farmers to use their e-commerce platforms to access inputs and best agricultural practices. The initiative also offers training to smallholder farmers on sustainable agronomic management practices, i.e., crop rotations, soil conservation, and choices for good quality farming inputs. Afri-Farmers Market has also developed an input package financing mechanism for selected farmers within its network to expand its scope to include all network farmers. Through Afri-Farmers Market Ltd's user-friendly website, farmers can showcase their produce, and buyers can easily place orders. Upon placement of an order by a customer, the platform provides an option for packaging orders for buyers to collect from their stores or door-to-door delivery<sup>46</sup>.

The company operates an online marketplace that links farmers with buyers, including hotels, restaurants, individuals, and supermarkets. Afri-Farmers Market's central stores in Kigali receive farm produce collected by the company from different farmers daily. The information about the produce aggregated from the different farmers daily, i.e., prices and available quantities, is uploaded onto the platform. Buyers, i.e., supermarkets and individuals, can window-shop for produce and place orders through the platform. Logistics, including delivery, ensuring that the produce is transported from the farms to their central store in Kigali and then delivered to the buyers promptly and efficiently, is handled by Afri-Farmers Market. The model employed by Afri-Farmers Market has shown remarkable efficiency and has ensured that buyers receive fresh produce daily. Buyers can collect their orders from the central store in Kigali. The platform charges a commission for door-to-door deliveries of produce buyers, which is crucial to cover their operating expenses.



## Sector Spotlight

The agriculture sector employs about 60% of the Rwandan population, and smallholder farmers comprise most of the workforce<sup>47</sup>. Despite the significant contribution of smallholder farmers to the country's economy, they still suffer numerous challenges. These include but are not limited to post-harvest losses, lack of access to fair markets and prices, and the lack of quality inputs and agronomic support, which leaves them vulnerable to exploitation and poverty. Many Rwandan farmers earn less than \$1.90 per day, and about 56% of these farmers live in abject poverty<sup>48</sup>. About 30% of the country's population is experiencing hunger and malnutrition<sup>49</sup>, and it is amongst the top 20 countries in the world with the highest prevalence of malnourishment<sup>50</sup>.



## Challenge

### What problems is the company solving?

The company was established after identifying the problem that rural farmers require direct access to markets for their farm inputs, produce, and capacity building to uplift their household income and break free from the cycle of poverty. The establishment of the Afri-Farmers Market was also necessitated by the identification of one of the significant challenges faced by rural farmers is the lack of necessary resources to improve their farming practices, which had a domino effect on the quality and quantity of their produce, hence the businesses aimed to bridge the gap between farmers and the consumers.

### Why is it important?

Afri-Farmers is a social entrepreneurship company that leverages technologies for smallholder farmers to access inputs and best agricultural practices. It gives farmers market-oriented skills and credit and further engages farmers by providing market access. It strives to foster food security nationwide and works with over 7,000 farms in Rwanda. The company is looking to expand to include an additional 5,000 farmers. It has been in operation for three years now. The product range: Horticulture—fruits (watermelon, etc.) and vegetables (spinach, carrots, etc.). It offers around 100 food crops and fruits online through a one-stop center. Afri-Farmers Market is important because it creates a stable market, fair prices, access to quality inputs, and extension services, reducing post-harvest losses and improving farmers' incomes and food security<sup>51</sup>.



60%



The agriculture sector employs about 60% of the Rwandan population and smallholder farmers comprise most of the workforce



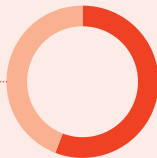
Challenges faced by smallholder farmers include,

- Post-harvest losses
- Lack of access to fair markets and prices
- Lack of quality inputs and agronomic support

USD 1.90 per day

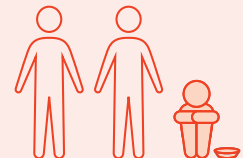


56%



Many Rwandan farmers earn less than \$1.90 per day, and about 56% of these farmers live in abject poverty

30%



About 30% of the country's population is experiencing hunger and malnutrition

Afri-Farmers Market has supported

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## Highlights of the Entrepreneur

Afri-Farmers Market has supported 5,780 farmers to access stable and fair prices for their produce in Rwanda since its inception in 2020. The platform reaches over 4000 households and, as a result, has facilitated the sale of over 22,000 tonnes of fresh produce. Through Afri-Farmers Market's initiatives and efforts, the platform has helped farmers increase their incomes, improve food security, and contribute to developing a sustainable and inclusive value chain in Rwanda<sup>52</sup>.



Photography: Ukama Ustawi



## Gender Equality and Social Inclusion

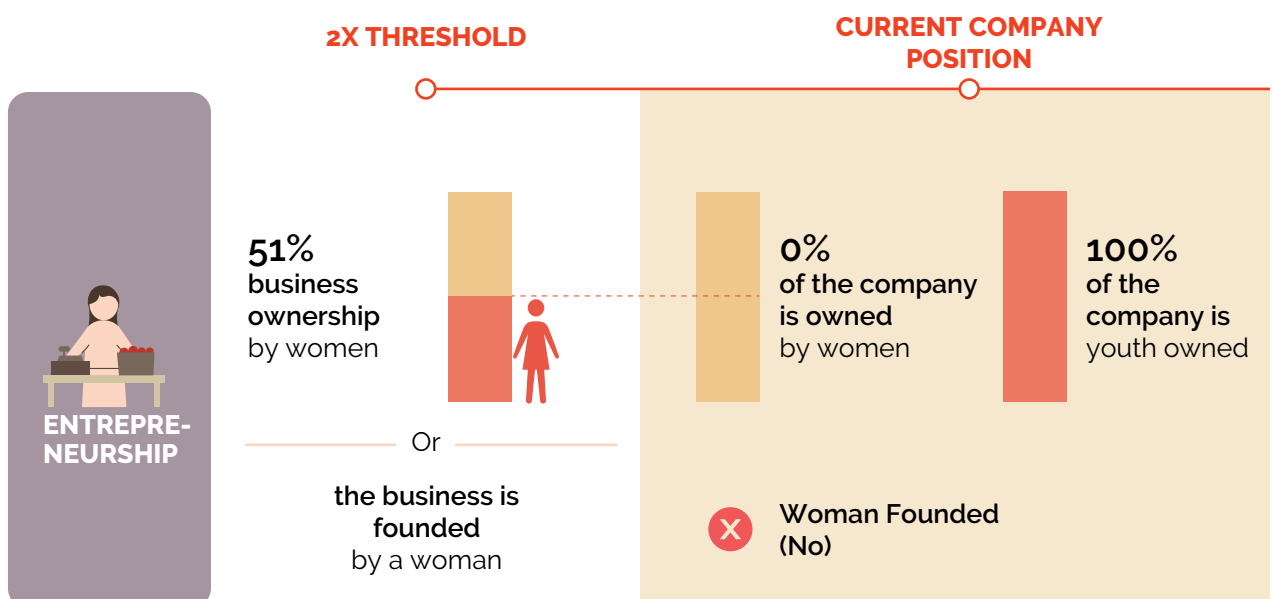
### Lead advisor profile

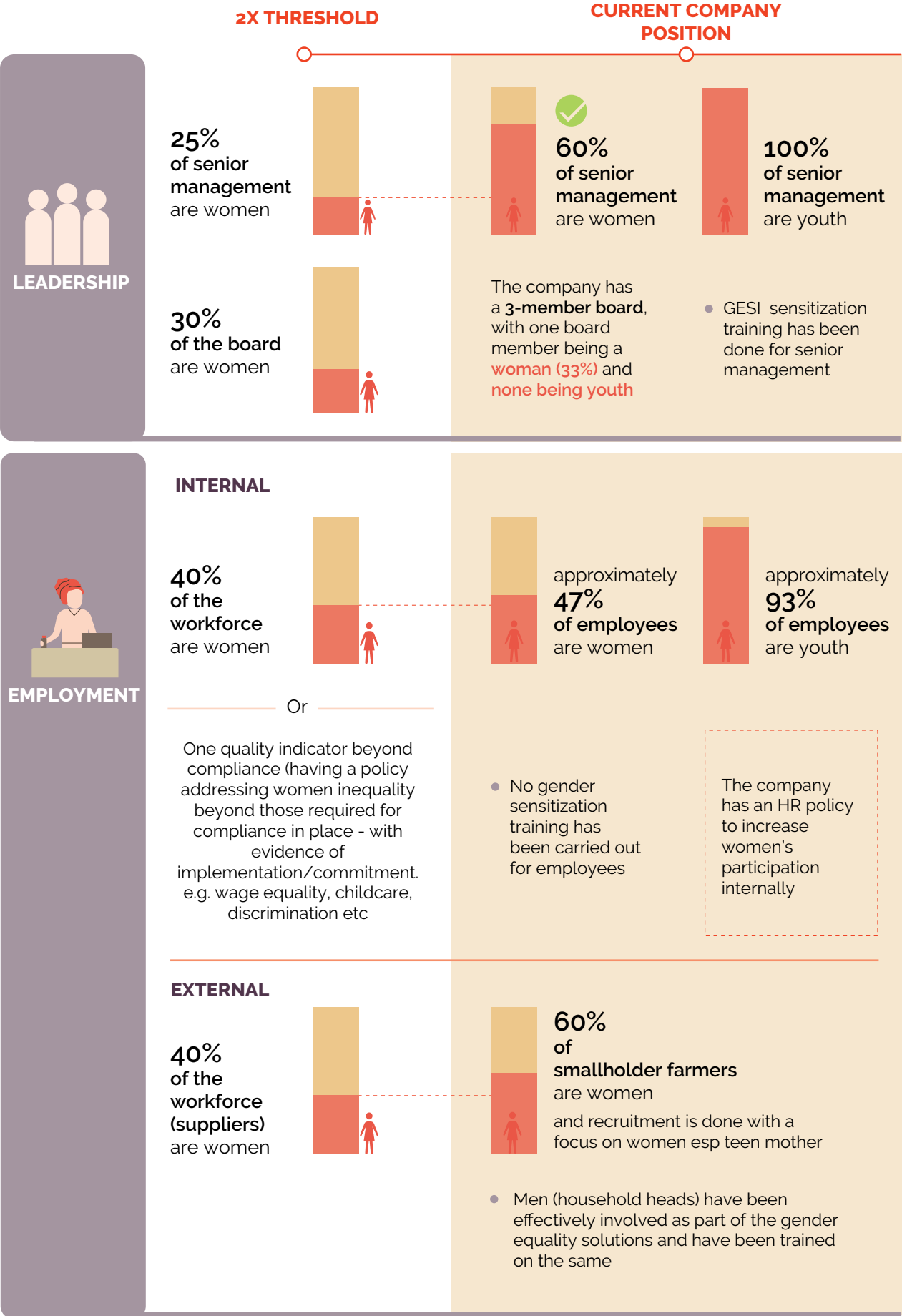
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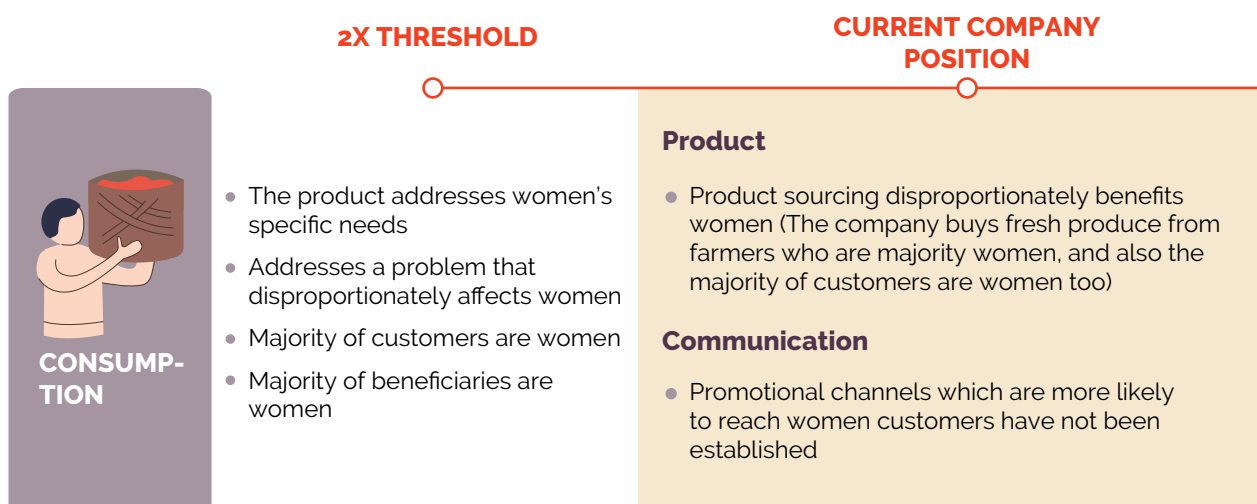
### Company GESI profile and summary of activities

Although the company is not founded or owned by women, it is founded and 100% owned by youth. The company has a board of 3, with 1(33%) being a woman and none being youth. 47% of employees are women, while 60% of senior managers are women. GESI training has been carried out for senior management, but not all employees. However, there is an HR policy in place to increase women's participation internally as employees. Finally, 60% of their smallholder farmers are women; while 80% are youth. Farmer recruitment activities are targeted at women and youth, with the company being keen to onboard teen mothers to offer them training, access to inputs, the market for their produce, and financial literacy training.

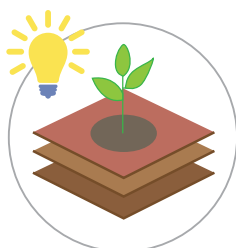
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The GESI action plan was focused on helping the company to maintain these standards while making some adjustments to be more inclusive, e.g., establishing which promotional channels are more likely to reach women and youth as well as including youth and women in their inclusion solution process.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Nathaniel Petersen assisted the company to deliver its innovation. Nate is an agriculture and natural resource economist with a Ph.D. in Decision Theory and Behavioral Economics who has been working in research, agribusiness strategy, and running farms in Kenya for 6 years. Much of his work is focused on understanding how farmers perceive risks and risk mitigation strategies, some of which can be complex and/or confusing, like insurance, drip irrigation, agroforestry, and bundled product/service modules. As such, he's primarily aligned with the CG's work in Agriculture Risk Management. He is especially good at designing and testing communications and interactions with new products and services and learning from those tests. Especially for farmer-centric digital, financial, and risk-management solutions, he can help the Partners explore how your solution can contribute to increasing farmers' autonomy over their economic role and livelihoods and ultimately make them and their activities more resilient to climate change.

## The innovation

Leveraging technology and the power of e-commerce, Afri-Farmers Market aims to help farmers across Africa practice sustainable farming while accessing markets at fair prices. The agricultural sector is considered a risky investment for microfinance institutions because of risks such as market and price risks, climate risks, and other crop risks such as pests. A failure in rainfall, unseasonal rains, cyclones, hailstorms, high-temperature spells, and pests affect crops adversely and have the capacity to impact all the farmers in a single region. Since MFIs work in geographically compact areas, they can be severely affected by the high co-variant risk that crop-input borrowers face. When many borrowers face crop losses due to weather or pest events, the MFI faces a higher risk of loan defaults or delayed repayments. A spike in loan defaults can impact the MFI's liquidity and overall sustainability, affecting its ability to provide financial services to other clients. In addition, the market volatility and fluctuations in commodity prices could impact the income generation of farmers, which affects their loan repayments to an MFI, which can harm their reputation and trust among clients.

Seasonality is another risk that MFIs consider when it comes to lending out crop loans to farmers. During the planting season, many farmers are forced to borrow money nearly simultaneously, which places peak demand on MFIs that they cannot mobilize. Therefore, MFIs evaluate an agricultural cooperative's susceptibility to such risks, which can impact crop harvests and income. MFIs also analyze the company's sector and its outlook, as well as its projections and historical figures.

Below are potential risks and mitigation strategies that Farm Depot should consider before borrowing money from MFIs. The assessments are built from an adapted Agriculture Risk matrix:

		Impact				
		Very Low (0.05)	Low (0.1)	Moderate (0.2)	High (0.4)	Very High (0.8)
Probability	Very High (0.9)	MODERATE (0.05)	SEVERE (0.09)	SEVERE (0.18)	CRITICAL (0.36)	CRITICAL (0.72)
	High (0.7)	SUSTAINABLE (0.04)	MODERATE (0.07)	SEVERE (0.14)	CRITICAL (0.28)	CRITICAL (0.56)
	Medium (0.5)	SUSTAINABLE (0.03)	MODERATE (0.05)	MODERATE (0.10)	SEVERE (0.20)	CRITICAL (0.40)
	Low (0.3)	SUSTAINABLE (0.02)	SUSTAINABLE (0.03)	MODERATE (0.06)	SEVERE (0.12)	CRITICAL (0.24)
	Very Low (0.1)	SUSTAINABLE (0.01)	SUSTAINABLE (0.01)	SUSTAINABLE (0.02)	MODERATE (0.04)	CRITICAL (0.08)



Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
<p>1. The Afri-Farmers Market has only been a known entity in the market for three years. This is likely to be perceived by banks and MFIs, who could provide debt as an untested model or a handful of good ideas that can scale first before they invest. It's very possible to have financiers interested and even believe in the model, but for them to take a 'wait and see' approach to providing access to debt.</p> <p>Banks are often highly risk averse and even attempt to make partnerships with startups only after another one has, accepting competition instead of taking on the entire risk.</p>	High (0.7)	High (0.4)	Critical (0.28)	<p>There is a two-pronged approach that can be recommended to reduce this risk.</p> <p>The first is communicating a highly precise and 'set' model to potential debt providers. To accommodate them, startups often communicate a highly flexible arrangement and try to fit any level of funding. However, this conveys ambiguity and uncertainty to the investor, suggesting they want whatever they can get and don't have true financial dependencies.</p> <p>The second is to pursue a line of debt from an international development partner or program, even if the amount needs to be increased, to prove to the debt provider that you can pass diligence. Of course, having books in order helps this as well.</p>	Medium (0.5)	Low (0.1)	Moderate (0.05)

Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
2. Presence of cognitive dissonance within the management. While is Afri-Farmers Market's mission to create a better future for farmers and consumers by making food more accessible and affordable to everyone, an ethical dilemma can arise. Specifically, you may be tempted to squeeze margins from farmers and customers to meet debt obligations or show potential for profitability. This short-term extraction from customers can break long-term trust. In addition to pricing changes, they can be incentivized to reduce costs by selling lower-quality inputs. These mechanisms can reduce trust, but that can be a hard case to make to investors and debt providers.	Medium (0.5)	High (0.4)	Severe (0.20)	<p>Strong management team with capable leaders who will influence the whole organization to be guided by their mission and vision, not short-term profits.</p> <p>Targeting investors with 'patient capital' who understand the long-term nature of the model.</p>	Low (0.3)	Low (0.1)	Sustainable (0.03)

Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
<p>3. Asymmetric information, in which a farmer will sell produce to an Afri-Farmers Market without disclosing information like using different seeds or intermixing the provided seed with lower quality seed.</p> <p>Similarly, farmers can use high-quality inputs on other unregistered land. Instead, they use low-cost inputs and claim low productivity to be released from input loan obligations. [1] [2]</p>	Medium (0.5)	Very High (0.8)	Critical (0.40)	<p>Vigilance during planting, growing, and spot-checks with communities can help mitigate this risk.</p> <p>Other companies have leveraged extension service visits to monitor farmers.</p> <p>While less appealing, incentivizing farmer groups to anonymously report on manipulative planting or selling behavior is also possible.</p> <p>Similarly, farmers with good behavior can be rewarded with input discounts. These financial incentives can be provided efficiently, like school fee payments and rewards like greater credit access.</p>	Low (0.3)	Low (0.1)	Sustainable (0.03)
<p>4. Lack of investment capital for supply chain infrastructure such as vehicles and temperature-controlled storage facilities can be a significant barrier to increasing local sales. These are perishable goods and can bring losses if not handled properly.</p>	Medium (0.5)	Moderate (0.3)	Moderate (0.10)	<p>Access to funding/ investment in solid infrastructure by attracting capital for supply chain infrastructure separately from farm-facing debt as it's much lower risk.</p> <p>It may also be possible to qualify for super low-interest debt with sufficiently large purchase agreements, the way that energy companies are financed (power purchase agreements).</p>	[3] [4] Low (0.3)	Low (0.1)	Sustainable (0.03)

Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
5. Stiff competition with other retail and larger cooperatives dealers.	High (0.7)	Very High (0.9)	Critical (0.56)	Create a strong name for your brand by regularly tweaking your business model to meet the specific needs of your customers because the market is always changing.[5]	Low (0.3)	Low (0.1)	Sustainable (0.03)
6. Financial exclusion among women - considerations should be taken that as much as it is male farmers who have brought their agricultural produce to the Afri-Farmers Market, the payment should be made to the rightful owner (the women might be at home doing house chores or farming yet that produce is all their efforts). Many women are excluded financially because of discrimination against their gender, reducing the chances of poverty alleviation among women.	Very High (0.9)	High (0.4)	Critical (0.36)	Partnering with financial providers to offer basic financial education to the community for the women specifically to feel empowered, have a sense of belonging, and stand for themselves against bullies.[6]	Low (0.3)	Very Low (0.05)	Sustainable (0.02)



Photography: Ukama Ustawi

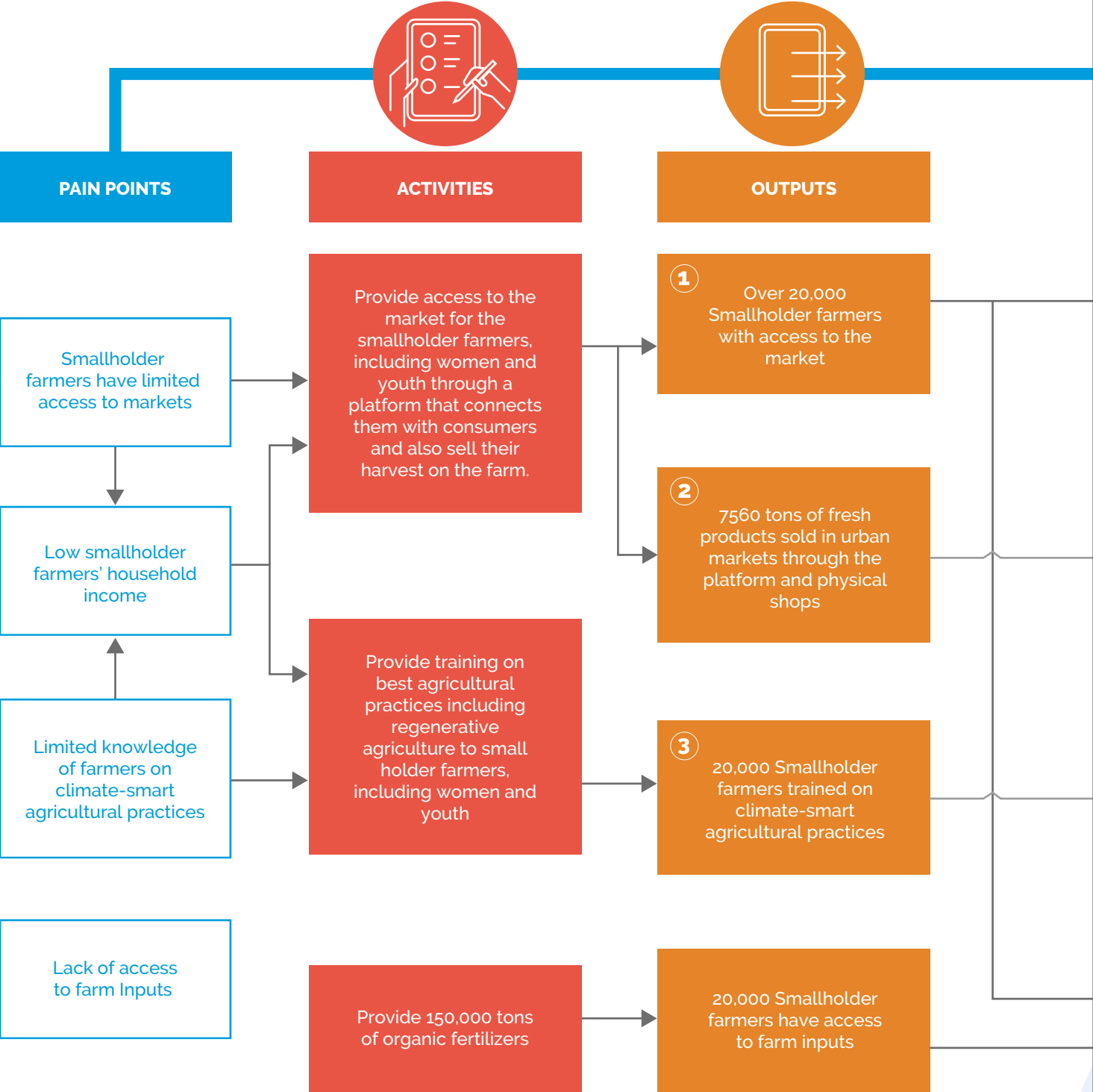


## Impact Measurement and Management

### Lead advisor profile

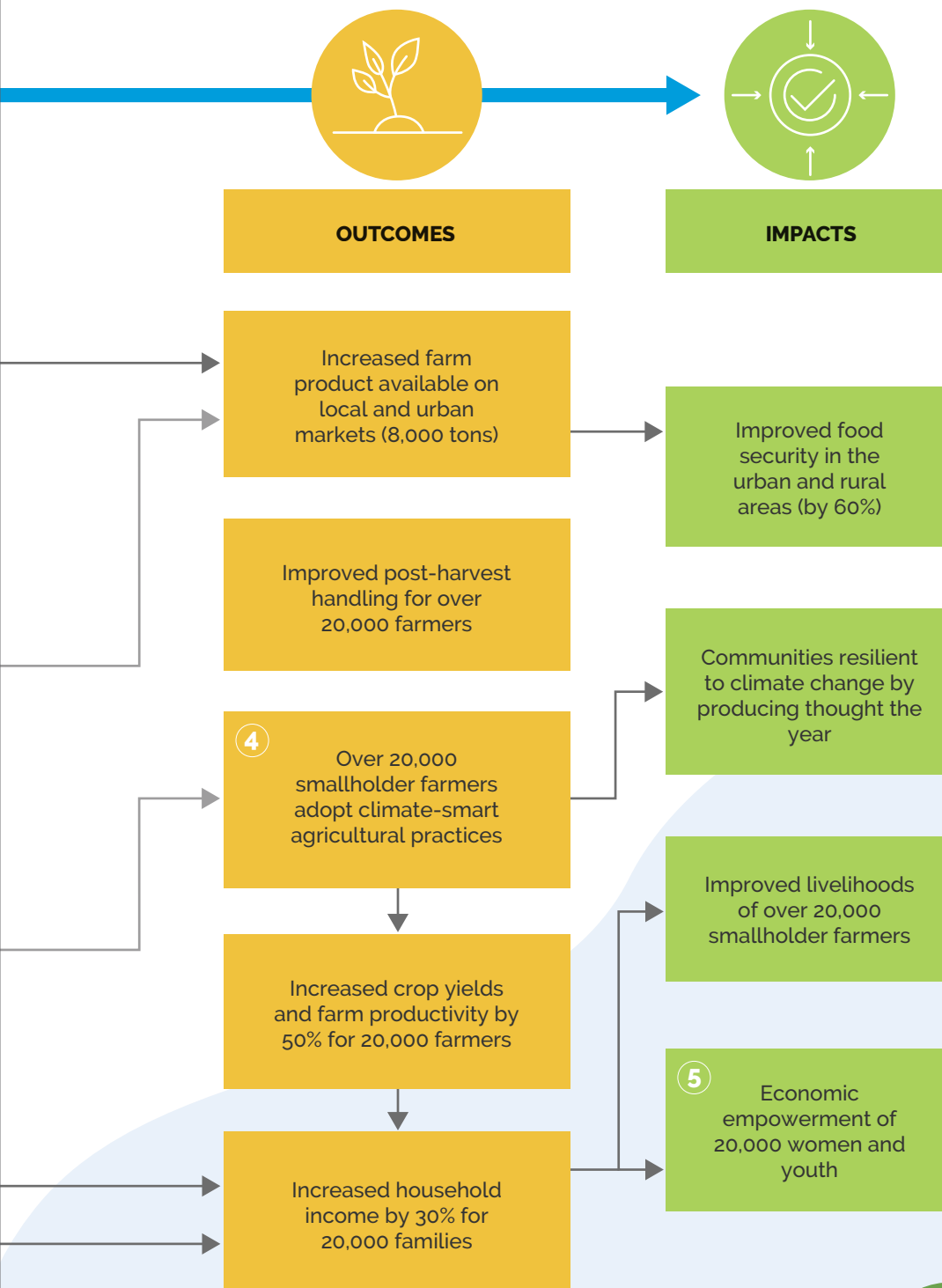
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The impact pathways



Assumptions: 1) Smallholder farmers know about the platform and can access it to sell products; 2) There is demand and a market for products commercialized through the platform; 3) Agricultural practices are sustainable, adapted to local conditions and lead to increase in yields.; 4) Farmers, including women and youth, implement recommendations shared during training; 5) Women can participate in decision-making on resource allocation in their household;





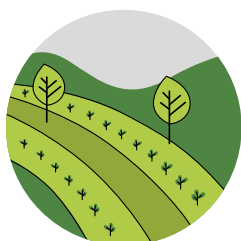
# 3.6.

## AGGREGATOR TRUST LTD



Photography: Ukama Ustawi

**A**ggregator Trust Rwanda Ltd is a Rwandese-based company committed to providing relevant research information to inform the development of season-resilient farming systems<sup>53</sup>. The social enterprise produces iron-rich beans on its land and outsources part of the production to smallholder farmers. Aggregator Trust Rwanda Ltd also connects independent smallholder farmers with local markets, i.e., public schools, thus playing a significant role in school nutrition programs. The company further offers contract farming agreements to smallholder farmers, thus improving their farm productivity through credit-based inputs<sup>54</sup>. Improved farm productivity of smallholder farmers not only reduces the price of staple foods but has a direct influence on improving rural poverty and food security through better incomes<sup>55</sup>.



## Sector Spotlight

The agriculture sector employs about 60% of the Rwandan population, and smallholder farmers comprise most of the workforce<sup>56</sup>. Despite the significant contribution of smallholder farmers to the country's economy, they still suffer numerous challenges. These include but are not limited to post-harvest losses, lack of access to fair markets and prices, and the lack of quality inputs and agronomic support, which leaves them vulnerable to exploitation and poverty. Many Rwandan smallholder farmers earn less than \$1.90 daily, and about 56% live in abject poverty<sup>57</sup>. About 30% of the country's population is experiencing hunger and malnutrition<sup>58</sup>, and it is amongst the top 20 countries in the world with the highest prevalence of malnourishment<sup>59</sup>.

60%



The agriculture sector employs about 60% of the Rwandan population and smallholder farmers comprise most of the workforce



Challenges faced by smallholder farmers include,

- Post-harvest losses
- Lack of access to fair markets and prices
- Lack of quality inputs and agronomic support

USD 1.90 per day

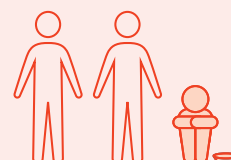


56%



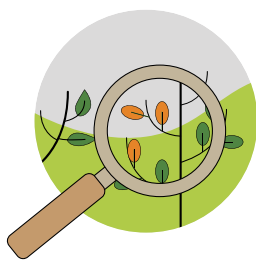
Many Rwandan farmers earn less than \$1.90 per day, and about 56% of these farmers live in abject poverty

30%



About 30% of the country's population is experiencing hunger and malnutrition





## Challenge

### What problems is the company solving?

The availability of farm inputs and access to finance is a major hindrance to farm productivity among resource-poor smallholder farmers in some African countries<sup>60</sup>. Thus, Aggregator Trust Rwanda Ltd identified the problem and offered a solution of a need-specific input credit system to improve smallholder productivity and their livelihoods and improve rural poverty<sup>61</sup>. Also, a national survey in Rwanda showed that iron deficiency anemia is prevalent among young children, ranging between 3%-88%<sup>62, 63, 64, 65</sup>. In intervention, Aggregator Trust Rwanda Ltd utilized its land and that of contracted smallholder farmers to supply iron-rich beans to the market, i.e., local public schools, thus contributing to the efforts to curb iron deficiency anemia amongst small children.

### Why is it important?

The initiatives and innovations offered by Aggregator Trust Rwanda Ltd are crucial in providing iron-rich beans that fight malnourishment among school kids. But the company also promotes sustainable agricultural practices, improving the productivity of smallholder farmers through credit-based inputs, thus improving their livelihoods and well-being and rural poverty<sup>66</sup>.

### Highlights of the Entrepreneur

In the company's land and through contracted smallholder farmers, Aggregator Trust Rwanda Ltd. has managed to produce and supply iron-rich black beans, chickpeas, pinto beans, navy beans, white beans, and kidney beans to the market all year round and offers deliveries with free shipping on orders above \$200<sup>67</sup>.



# Gender Equality and Social Inclusion

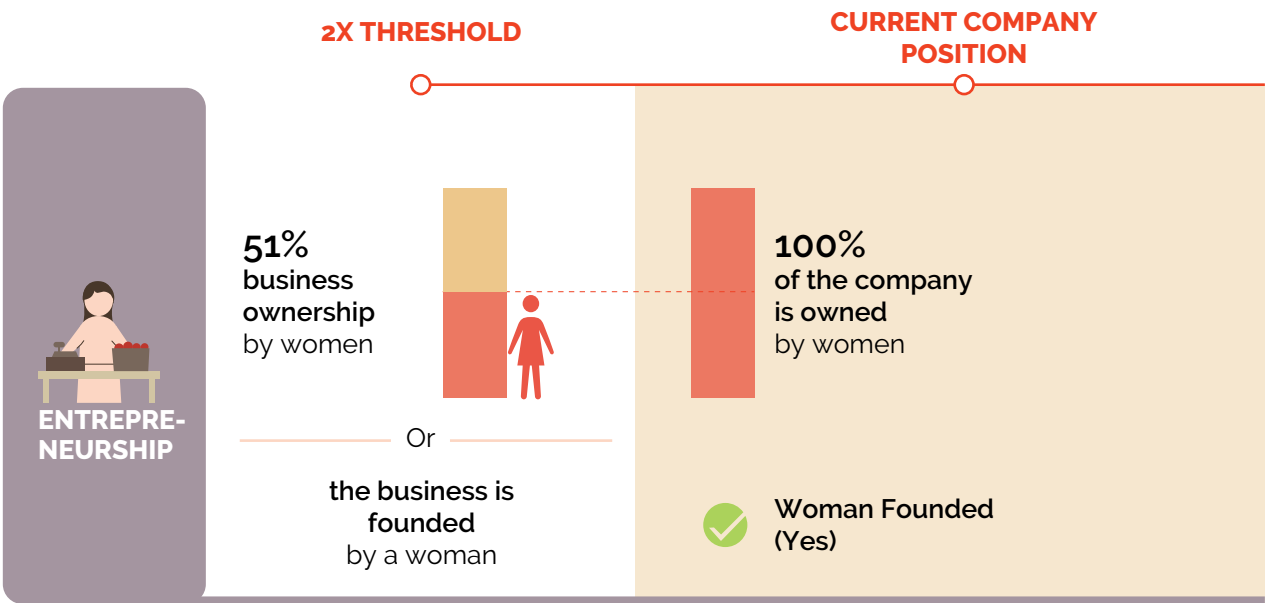
## Lead advisor profile

The Gender Equality and Social Inclusion (GESI) technical assistance implementation process was led by The Rallying Cry team in collaboration with Dr. Karen Nortje. The Rallying Cry is an ecosystem initiative working to shift private sector capital at the nexus of gender, climate, and agribusiness. At the same time, Dr. Karen Nortje is a senior researcher and social inclusion subject matter expert. The team supported the Accelerator Partners by equipping them to strengthen the capacity and agency of both the men and women within their agribusiness value chain(s). To achieve this, the team developed a gender action plan for Aggregator Trust Rwanda Ltd to help address the barriers to gender inclusivity.

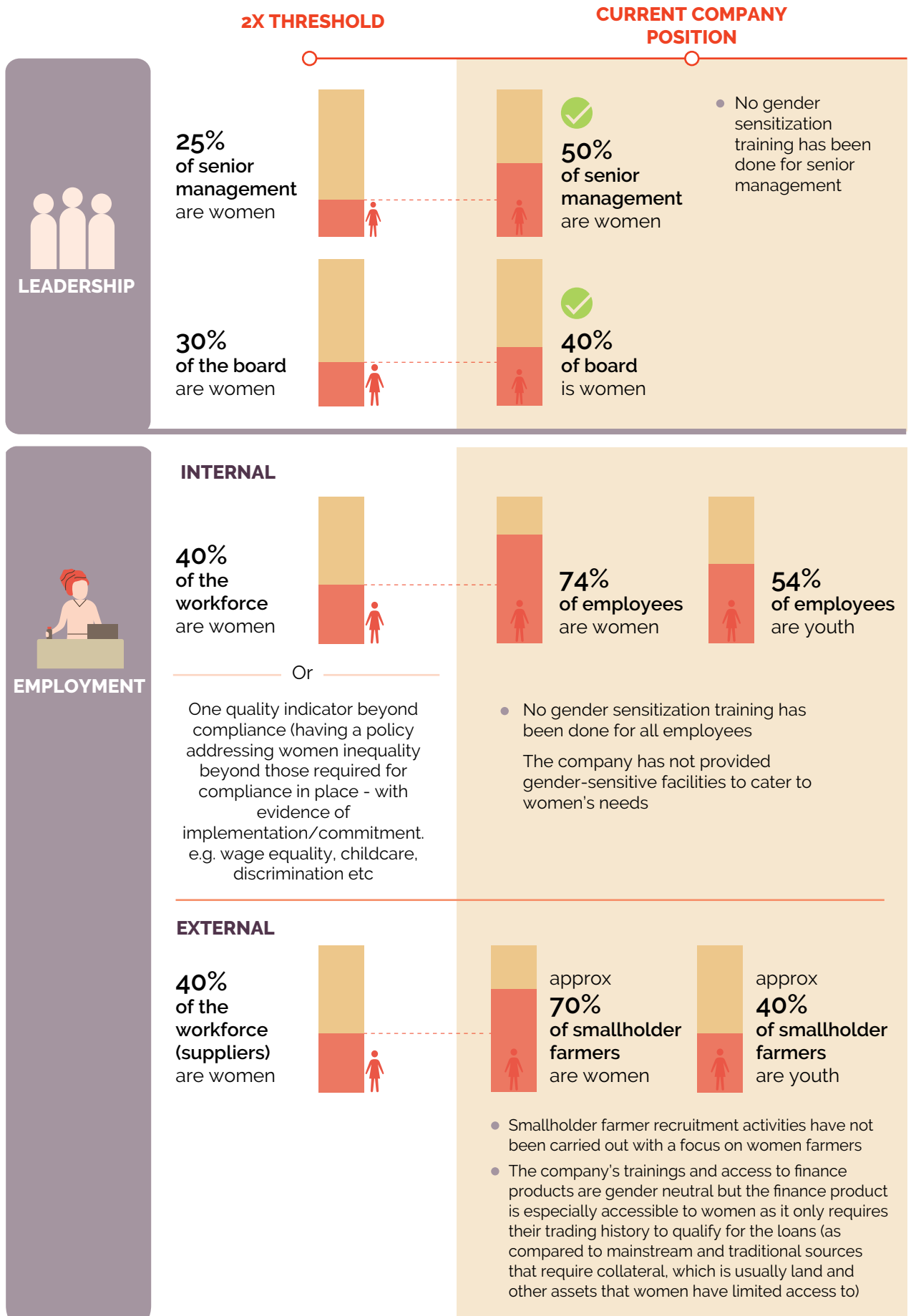
## Company GESI profile and summary of activities

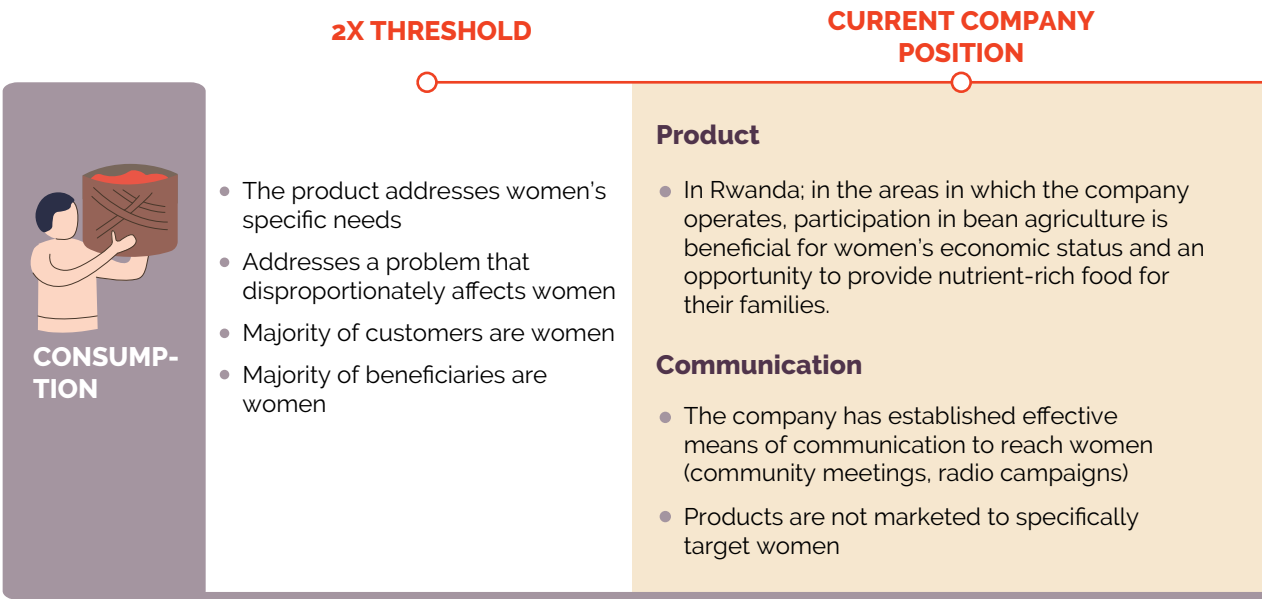
The analysis of the company’s GESI baseline data showed that the company is woman-founded, owned (100%), and led (50% of senior management are women; 25% are youth). The company has a board of 5 members, 40% of whom are women, and 40% are youth. 70% of employees are women, and 54% are youth, while 70% of their smallholder farmers are women, and 54% - youth.

A summary profile is given below:

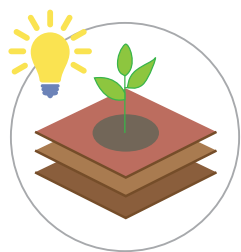








The GESI action plan was focused on helping the company to maintain these standards while making some adjustments to be more inclusive by providing gender needs sensitive facilities (e.g., changing and lactation rooms), conducting gender sensitization training, implementing smallholder farmer recruitment activities targeting women and youth, and marketing strategies focusing specifically on women.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Eliud Birachi, a Markets Researcher and Agricultural Value Chain Development Specialist at the Alliance of Bioversity and CIAT, conducted the technical assistance. As an agribusiness expert, he supported the delivery of technical assistance. He worked with other colleagues in both Eastern and Southern Africa to further support the Accelerator Partners in their respective regions.

### Seed Supply Risk Management Strategy

Two on-site visits were conducted to Aggregator Trust in the field and warehouses. The visits and engagements focused on critical issues to enable the supply chain to operate optimally. Specifically, options for reducing seed supply during the season were explored and implemented. Some options explored included contracting seed companies to buy their seeds and using them to contract producers. This option had

a couple of seed companies that Trust explored with. Aggregator Trust entered a contract to supply 5 tons of seeds from one. This contract, however, only matured after the national research institution demanded to procure all seeds from the course for its use. The second option involved contracting seed multipliers (individual farmers that multiplied seeds. About tons of seeds were supplied; however, they needed more. Aggregator Trust engaged other individual seed multipliers to reduce the seed supply gap. Further visits and discussions with the company opened discussions with a large-scale seed enterprise (One Acre Fund) to use its experience to supply seeds. While these efforts attempt to close the seed supply chain shortfalls, they must be more sustainable for Aggregator Trust to meet its grain market demand and growth plans. The company will thus attempt to integrate upstream to secure seed supplies by establishing a seed production and supplies unit to guarantee the seeds for the farmers. This approach aimed to assist contract farmers in multiplying seeds using early-generation seeds to the company's required quantities to meet seed and grain demand. The company secured EGS from research and other seed suppliers and multiplied internally. The company, however, did not trade in seeds but kept to its line of business: grain production and trade. The self-multiplication of seeds served several goals: to guarantee seed supply in terms of quantity and quality and to manage the costs of seeds that go into production by farmers. The company required financing from banks and other financial institutions to offtake and bulk grain from farmers—this is a critical part of its business. The model was tested from the planting season beginning September 2023. The company has currently contracted 28,000 farmers to produce grain. Beans are used to rotate with maize.

Works with cooperatives that have mechanization; cooperatives have groups of farmers. Demand is rising via schools for school feeding. There is a shift to high-iron beans, which is increasing demand. Prisons are also one other market for beans. Adoption of varieties is higher. Assured market to farmers plays a vital role. The target is farmers with 1 hectare at least. Currently testing with smaller farmers with 0.5 ha who usually need more capacity to pay for the credit or buy seeds. Farmers were provided with credit to graduate to enhance commercialization. The demand is higher for NUA59, short duration maturity, preferred by schools and government institutions. Employ more than 100 women to sort and grade bean grains. There are 34, 75% are women field staff for agronomy support and farmer outreach. Does up to 3000MT of beans, the average is 1500Mt per year. The varieties aggregated depend on the market—e.g., for school feeding prisons, and these need different bean grades, e.g., mixed beans, pure types, or high iron. Aggregator Trust has already started supplying the clients with grain.

MOU with OAF APA to multiply seeds. They could be better, but they were assisted in adopting 15 MT of NUA59. Total grains: 27 met—50 tons to be processed by OAF. Price speculations and RAB's price settings affect the cost of seed production. Losing much money on seeds has increased the cost of grain production. 2200 and supplied 1500 to farmers since the contracts had been signed with farmers and had to subsidize 700 to farmers, loss due to price setting behavior by RAB.

Has negotiated land with 25 ha from the government and another 9 ha from a cooperative for seed multiplication. The varieties to be focused on will be 2: RWR 3194 and 2245. Other varieties could be more exciting. The large white beans are also in high demand from marketers beyond Rwanda, for example, Burundi. Bujumbura prefers white beans for use with rice. Consumers use other ingredients to use with the beans, e.g., spices. Most schools prefer NUA to 3194 due to the red source color they need for the meals.

The self-production of seed and grain targets future investment in value-added processing, so these upstream activities ensure sustaining raw materials from farmers. The strategy is intended to overcome current challenges, such as delays and late distribution of seed supplies, climate hazards, smallholders consuming some seeds before planting, and some families consuming crops while on the field. RICA will be involved in quality assurance.

The national strategic reserves also have a demand for grain and have requested Aggregator Trust to supply them as well. They need 150MT of beans. Payment for supplied grain on time is vital for the sustainable operation of the business – to farmers and the company.



*Farmers delivering grain to collection centers of Aggregator Trust*



*Sample of high iron bean grains (RWR 2245 variety) and crop in the field (NUA variety)*

### **Field training manual/guidelines**

Field engagement on the training needs was conducted through face-to-face discussions with the company. The action points included agronomy training for field agronomists to be conducted. This is planned for October—as a form of refresher training: Two field staff benefitted from the initial training conducted for extensionists. Support for seed quality will be provided by the Rwanda Inspection and Certification Agency (RICA), even though the seeds are not for sale but for internal use.

### **Seed varieties and fertilizer guidelines**

Variety catalogue showing suitability and yields and market preferences; fertilizer recommendations supplied. The company is focusing on two varieties: NUA59 and RWR 2245. These have been well described in the available variety catalogue. Fertilizer recommendations have been provided as part of the good agricultural practices training that has been extended to the extension staff of the company. Fertilizer recommendations accompanied some fertilizer bought and distributed to farmers for planting beans (5 tons of fertilizer) for the season starting September 2023 as fertilizer credit to farmers.



*Aggregator Trust personnel sorting and grading bean grains at their warehouse.*

## **Digitization strategy**

Discussions on digitalization focused on the digital registration of producers and digital payment of producers. Aggregator Trust has digitally registered close to 28,000 farmers. However, the process must be refined for easier registry updating without revisiting all the farmers each season or year. The company is exploring improvements with some digital service providers to achieve it. It has one member of staff supporting the digital-linked activities. However, payments are digitally made by mobile money payments linked to the bank. A comprehensive digital ecosystem is still required to improve efficiency in operations. Such would include being able to communicate with farmers and extension support digitally. Extension services are still largely face-to-face, which is more costly for the company's 34 extension field staff across different districts. These options for digitally connecting producers with the off-taker must be introduced and piloted.

## **Value-added products for the future**

Aggregator Trust is interested in developing various bean-based products, among them bean composite flours, that can be used for nutrient-rich products for children, women, and school children. These products would contain 25 to 30% high-iron and zinc beans in combination with cereals. In schools, the bean composite porridge will be a substitute for the pure cereal-based porridge that is more prevalent. Similarly, families can replace maize and other cereal porridges with this product. They will also be used in hospitals as food-based recommendations to address malnutrition. A product variant, bean flour, will be used in the bakery industry and soup. For the bakery industry, the product will enhance the nutritional value of the cereal flour for bakery products such as bread biscuits, among others. The planned development of these products is tied to the planned improvement in the supply chain for the raw materials. The strategic value of the value-added products is to increase markets for the producers but also contribute to the stability of the markets through prices that are relatively more stable for the producers.





Photography: Ukama Ustawi



## Impact Measurement and Management

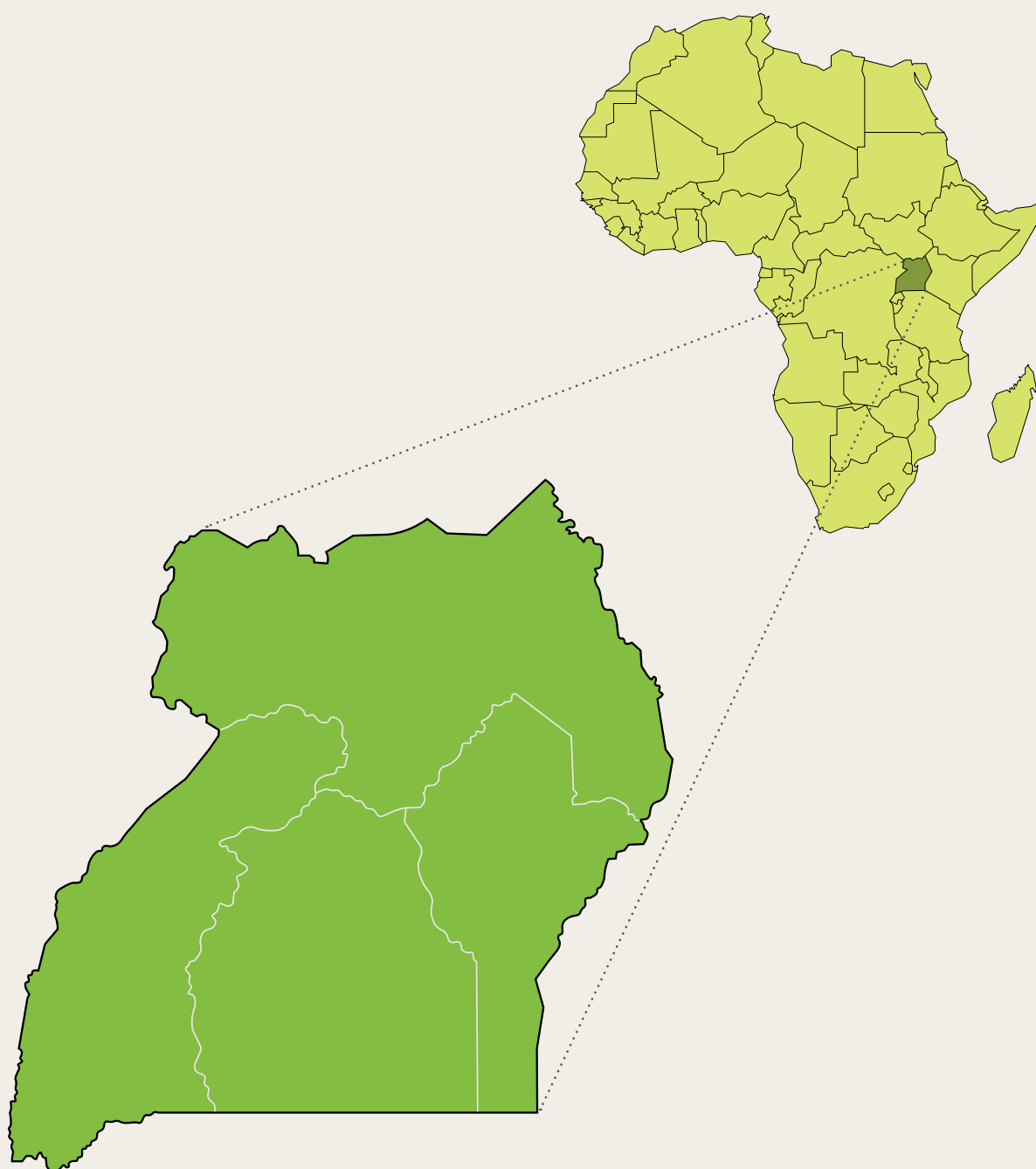
### Lead advisor role

The impact pathway was delivered by Andreea Nowak, a social science researcher at the Alliance of Bioversity and CIAT, with an interest in how to improve the assessment and reporting on climate adaptation and resilience. Within the FSA, her interests were to assess the current impact measurements and metrics used by the agribusinesses and develop additional indicators for impact measurement reporting, data collection, consolidation, and fundraising. Together with a team of researchers, she has conducted interviews and workshops and co-designed the below-impact pathway with the agribusiness.



COUNTRY:

UGANDA





**3.7.**

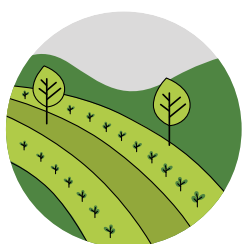
# EASTERN AGRICULTURAL DEVELOPMENT COMPANY LTD



Photography: Ukama Ustawi



Incorporated in June 2016 and based in Uganda, **Eastern Agricultural Development Company Ltd. (EADC)** is an agri-business social enterprise that trades in and processes super-rich bio-fortified foods, i.e., vitamin A-rich orange-fleshed sweet potatoes (OFSP) and high Iron (HIB) and Zinc-rich beans<sup>68</sup>. On top of the financial benefit, the business model of the company has social and development aspects, which aim to address Uganda's Vitamin A, Iron, and Zinc malnutrition deficiencies while at the same time increasing farmers' incomes<sup>69</sup>. EADC Ltd. works with local resellers and exporters of the OFSP and HIB, and the OFSP flour is sold locally<sup>70</sup>. The company provides partner smallholder farmers with clean, disease-free seeds and then buys back the farmer's produce at a market value and further offers ICT extension services<sup>71</sup>. EADC Ltd is digitizing its supply chain and evolving to cashless payment systems, which include the MasterCard farmers network (MFN)-ICTpayment-based solutions, which de-risks smallholder systems<sup>72</sup>.



## Sector Spotlight

Uganda ranks amongst the countries in East Africa with a malnutrition challenge, with about 29% of children under five years stunted, while about 3.5% of all children under this age face body stunting<sup>73</sup>. In Uganda, access to agricultural credit by rural communities, where above 80% are smallholder farmers, has remained very low and stagnated between 10-20% in the past 10 years<sup>74</sup>. The lack of finance is mainly attributed to supply and demand factors, and the supply factors include weak institutional framework, policy inconsistencies on agricultural financing, high-interest rates, and limited financial literacy. On the other hand, the demand factors include lack of collateral, bankable projects, and high-risk agricultural credit to farmers<sup>75</sup>. Between 2002 and 2022, Uganda lost about 75 kha of humid primary forests, making up to 7.5% of its total tree cover in the same period. Around the same time, Uganda's total area of humid primary forest decreased by 15%<sup>76</sup>.



Uganda ranks amongst the countries in East Africa with a **malnutrition challenge**

29%



3.5%



About 29% of children under five years stunted, while about 3.5% of all children under this age face body stunting



**Access to agricultural credit by rural communities**, where above 80% are smallholder farmers, has remained very low and stagnated between 10-20% in the past 10 years

Between 2002 and 2022



Uganda lost about **75 kha** of humid primary forests, making up to **7.5%** of its total tree cover in the same period

Around the same time, Uganda's total area of humid primary forest decreased by **15%**







## Challenge

### What problems is the company solving?

Malnutrition linked to Vitamin A, Zinc, and Iron deficiencies affects 38% of children and 36% of women of reproductive age in Uganda. About 54% of children in company-targeted communities have stunted growth, and their families live in poverty, which has a domino effect on their productivity capabilities<sup>77</sup>. About 80% of rural smallholder farmers need access to formal financial services, although farming is a capital-intensive venture<sup>78</sup>. The major hindrance is usually linked to the unavailability of their transactional history, hampers increased acreage under production, and rural smallholder farming communities still need to be in poverty<sup>79</sup>. Against the previous context, EADC Ltd identified the problems and developed the innovation of trading and processing Vitamin A-rich OFSP and HIB and Zinc-rich beans and partnered with local smallholder farmers to address their malnutrition challenge while improving the rural economy amongst smallholder farmers through access to finance and improved extension services<sup>80</sup>. Also, about 95% of Ugandan households use firewood to prepare beans for consumption, even though the country is losing about 7.5% of its forest cover per annum due to human settlements and tree-cutting for firewood<sup>81, 82</sup>.

### Why is it important?

The company's innovation of producing and processing Vitamin-A-rich OFSP, HIB, and Zinc-rich beans has not only improved the livelihoods and income of partner smallholder farmers in Uganda. However, it has also improved and contributed towards addressing the malnutrition deficiency challenge in the country<sup>83</sup>. Processing and pre-cooking the beans further partially addresses the tree-cutting problem as the rural communities will require less firewood to prepare the beans for a meal<sup>84</sup>.

### Highlights of the Entrepreneur

EADC Ltd boasts a network of 3000 farmers in three regions, Teso, Karamoja, and Bugisu, who feed into their production supply chain and have 3567 smallholder farmers registered on their platform<sup>85, 86</sup>. The company also employs six agents (2 women) with smartphones to enable farmer digital registrations. Of the EADC Ltd's farmer network, 200 have active bank accounts, and the company has managed to pay 160 farmers digitally. The company has also drafted an MOU with equity banks to avail input credit to farmers<sup>87</sup>.



## Enabling Environment

### Lead advisor profile

Dr. Idil Ires is a political economist-consultant specializing in agrarian change, trade, and industrialization in East Africa. She will assist the Accelerator Partners by conceptualizing an Agribusiness Enabling Environment (AEE) focusing on targeted technical assistance, mapping, and policy advocacy. This aided in tackling significant operational barriers, prioritization of the agribusiness partner's needs, providing relevant industry associations, and establishing policy harmonization.

### The enabling environment

Eastern Africa Development Company (EADC) pointed out market insecurity and emphasized the need for improved market access and expansion in Uganda. In areas bordering Kenya and South Sudan, foreign traders often offer higher prices than EADC and incentivize their farmers to sell their crops to them by breaching contracts. This poses a supply-side uncertainty and ultimately affects the enterprise's ability to ensure stock. Because they deal in fortified staple food, these enterprises are encouraged to pursue partnerships with institutional buyers. One opportunity identified is their participation in the school feeding programs of FAO, UNICEF, and WFP, which will be able to ensure market security, stabilize income despite the periodic price drops in the market, and thus enable them to pay relatively higher prices to their farmers and compete with foreign traders.

Moreover, these enterprises reported that poor extension services by the government compromise the quality of crops supplied by farmers. They indicated a need for collaborators to support them in disseminating knowledge of good agricultural practices. So, in addition to the UN organizations, additional connections have been established with NGOs—Kilimo Trust, Sasakawa Africa Association, the Uganda Grain Council, Food for Thought, and Harvest Solutions—for comprehensive support in addressing supply, market, and extension services-related challenges. A partnership with the Uganda Network of Businesses is established to capacitate the enterprises through lobbying and provide guidance for questions related to tax incentives and the regulatory environment.



## Gender Equality and Social Inclusion

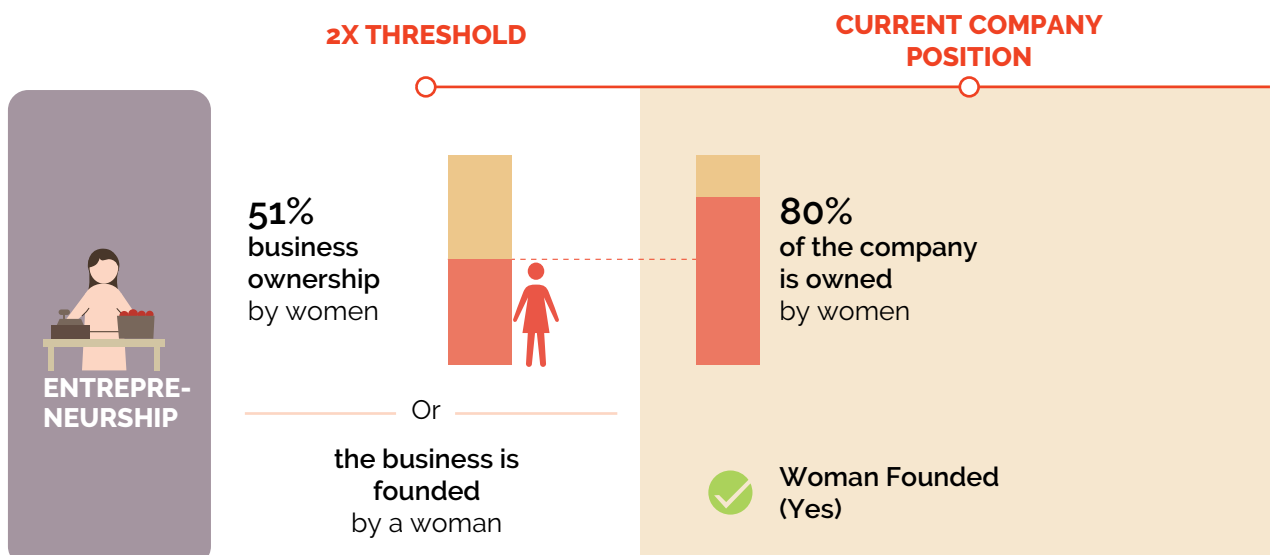
### Lead advisor profile

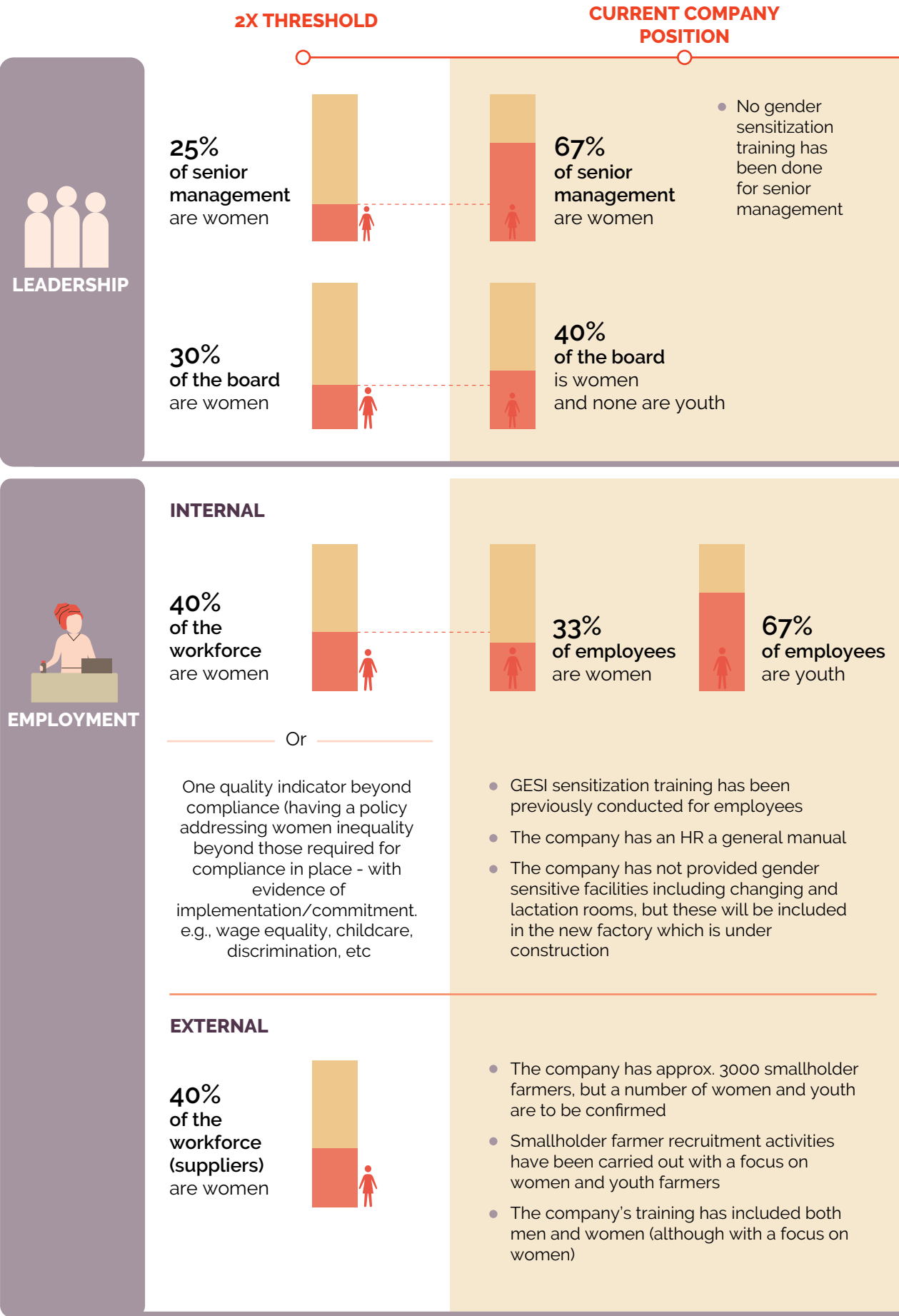
The Gender Equality and Social Inclusion (GESI) technical assistance implementation process was led by The Rallying Cry team in collaboration with Dr. Karen Nortje. The Rallying Cry is an ecosystem initiative working to shift private sector capital at the nexus of gender, climate, and agribusiness. At the same time, Dr. Karen Nortje is a senior researcher and social inclusion subject matter expert. The team supported the Accelerator Partners by equipping them to strengthen the capacity and agency of both the men and women within their agribusiness value chain(s). To achieve this, the team developed a gender action plan for EADC Ltd to help address the barriers to gender inclusivity.

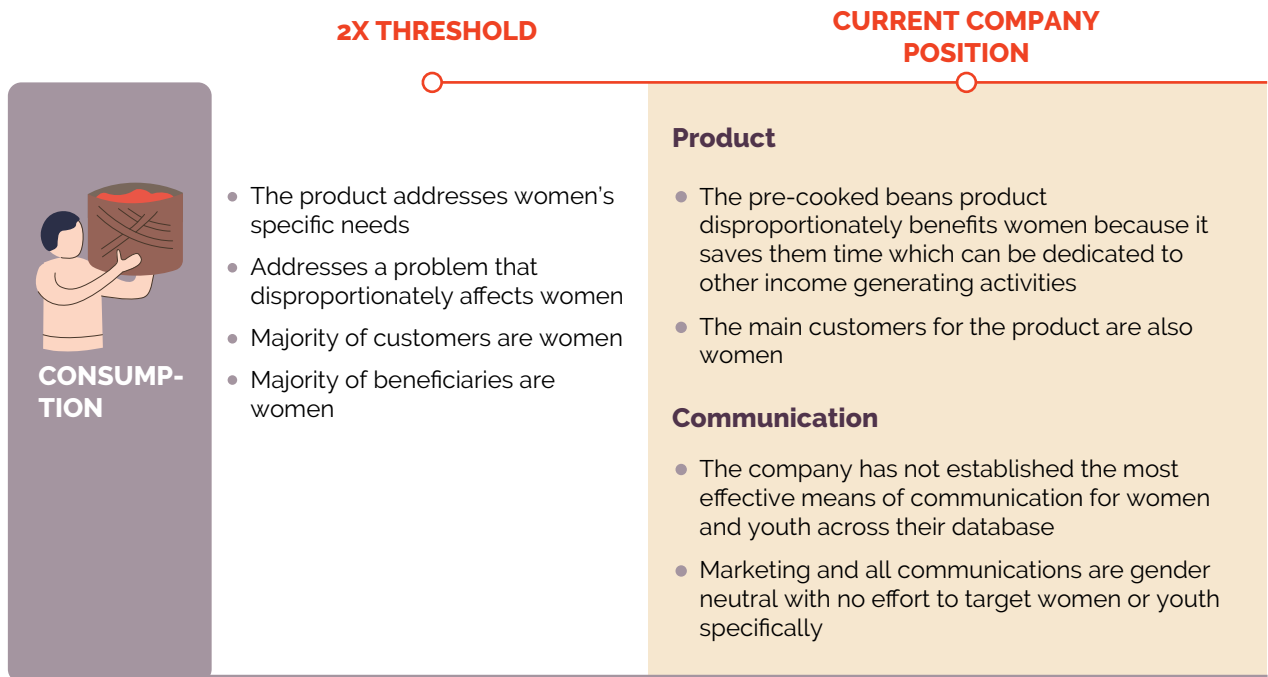
### Company GESI profile and summary of activities

The company is woman-founded, owned (80%), and led (67% of senior management are women). 67% of employees are youth, and the company has made deliberate efforts to support women and youth since its inception through its farmer meetings and training. The company's product of pre-cooked beans disproportionately benefits women by saving them time to dedicate to other income-generating activities. Finally, the company is constructing its new premises and has made provisions for gender-segregated facilities, including changing and lactation rooms.

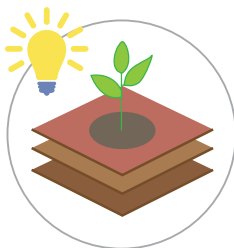
A summary profile is given below:







The data analysis established that only 33% of employees are women, which is below the recommended threshold. The plan focused on activities that would help the company close these gaps, e.g., carrying out skills audits, enhancing women's and youth's skills through training, and establishing which promotional channels are more likely to reach women and youth as well as including youth and women in their inclusion solution process.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Eliud Birachi, a Markets Researcher and Agricultural Value Chain Development Specialist at the Alliance of Bioversity and CIAT, conducted the technical assistance. As an agribusiness expert, he supported the delivery of technical assistance. He worked with other colleagues in both Eastern and Southern Africa to further support the Accelerator Partners in their respective regions.

## **Farmer and seed quality management strategy**

The company has continued maize and bean production, critical materials used in pre-cooked bean products, and composite flour production when the processing plant is completed. In the meantime, the company is trading in these grains and streamlining the supply chain. The company recently traded 100 tons of grains, including maize and beans. The company is focusing on collaborating with producer cooperatives for the supplies. The company has recently purchased complete cleaning line equipment. This will be key for ensuring the quality of grain for processing purposes. The company has also invested in a truck to assist in moving produce from farmers to the processing plant and other transport services to enhance the efficiency of operations.

## **Potential new market-facing products**

EADC has identified two significant products: precooked beans, dehydrated pre-cooked beans, and bean composite flours (combined with maize). The company is constructing facilities for handling both processing and grain or materials. The factory has reached the roofing stage. In the meantime, the company is focusing on ramping up production of maize and beans and using the opportunity to overcome supply chain constraints, such as table supplies, sufficient quantities, and the right bean types to be planted by farmers. Testing of the precooked beans continues to be implemented, though slower, as the company anticipates investment in larger capacity equipment when it moves to the new processing plant. In the meantime, there are some procurement issues that the company is engaged with, such as sourcing of appropriate equipment and packaging materials. In the meantime, It still needs to complete the roofing of its factory building. The company intends to enhance its capacity by hiring a professional operational manager but also needs to raise more capital to complete the large processing plant under construction.



*On-going construction of a building to house grain and value-added products processing by EADC in Soroti*





Photography: Ukama Ustawi

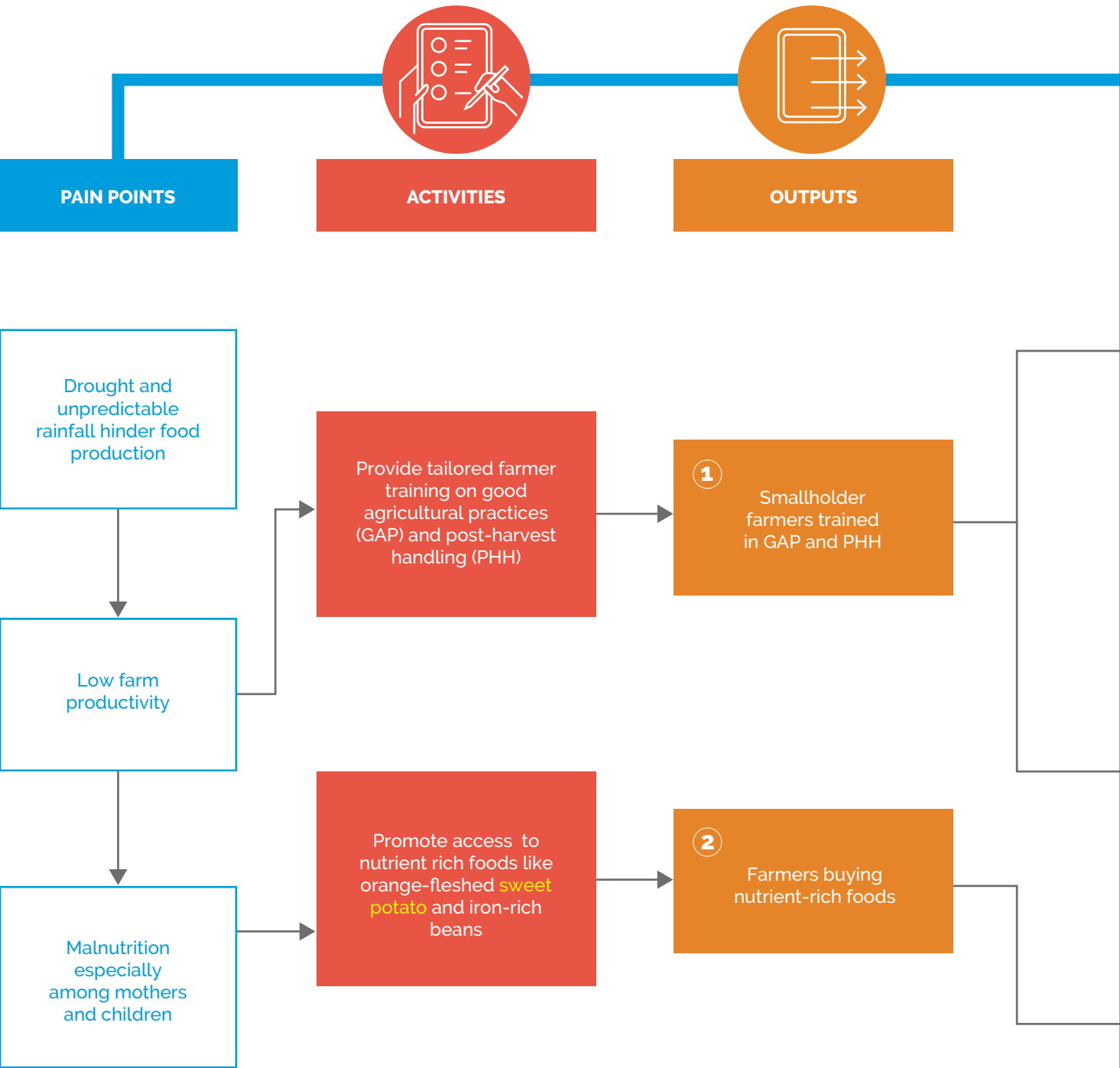


## Impact Measurement and Management

### Lead advisor profile

The impact pathway was delivered by Andreea Nowak, a social science researcher at the Alliance of Bioversity and CIAT, with an interest in how to improve the assessment and reporting on climate adaptation and resilience. Within the FSA, her interests were to assess the current impact measurements and metrics used by the agribusinesses and develop additional indicators for impact measurement reporting, data collection, consolidation, and fundraising. Together with a team of researchers, she has conducted interviews and workshops and co-designed the below-impact pathway with the agribusiness.

The impact pathways



Assumptions: 1) Farmers, especially women, have access to the land and resources they need to grow nutrient-rich foods; 2) Iron-rich beans and orange-fleshed sweet potatoes are culturally accepted and liked by the local population; 3) Training is effective and leads to changes in farming practices and business management; 4) Increases in income from selling Iron-rich beans can be reinvested in farming or other economic activities and hence leads to improved livelihoods; 5) Women are able to benefit from increased yields, income, and access to nutritious foods, having decision-making role in the household and the community.





**3.8.**

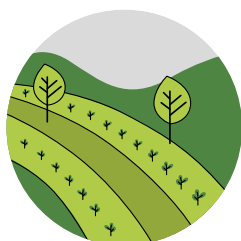
# YELLOW STAR PRODUCE AND PROCESSORS (U) LTD



Photography: Ukama Ustawi

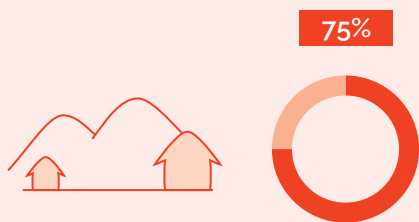


**Yellow Star Produce and Food Processors (U) Ltd.** is a Ugandan-based company established in 1997 that produces nutritious organic foods, including flour, peanut butter, ground paste, baby products, and honey<sup>88, 89</sup>. The company partners with rural women agribusinesses mentored to provide and supply high-quality raw materials for the products<sup>90</sup>. Before onboarding and partnerships are formalized, the group of women who are part of the agribusinesses is trained with varying skills, including financial literacy and agribusiness skills. The financial literacy skills training includes means to form, manage, and maintain village savings and credit societies, through which they can unlock financial support to improve their productivity. On the other hand, the agribusiness skills training includes business-to-business mentorship, where the part farmers are trained in practical agronomic practices, organizational development, and strategic planning<sup>91</sup>. The company's sensitization program is actively helping part smallholder farmers with postharvest grain handling skills<sup>92</sup>, which helps preserve quality. Yellow Star Produce and Processors have empowered women previously internally displaced by war to diversify their income into soap and herbal toothpaste production<sup>93</sup>. Income from diversified products is instrumental in improving women's family livelihoods and plays a role in poverty reduction and the payment of medical care<sup>94</sup>. Yellow Star Produce and Food Processors' Ltd's business model guarantees a strong supply of good quality grain for processing, and smallholder farmers have an assured market for their produce. The company's products are available in over 20 major supermarkets in Uganda, and it has contracted two product distributors, Healthy Entrepreneurs and Catholic Woman Association Gulu Vicariate, who distribute to other regions of Uganda<sup>95</sup>.

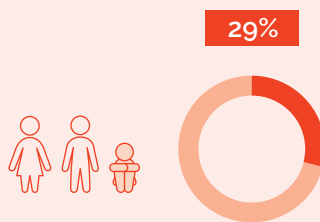


## Sector Spotlight

About 75% of Uganda's population lives in rural areas<sup>96</sup>, and most rural dwellers from low-income groups with limited access to nutritious foods<sup>97</sup>. Uganda ranks amongst the countries in East Africa with a malnutrition challenge, with about 29% of children under five years stunted, while about 3.5% of all children under this age face body wasting<sup>98</sup>. In Uganda, access to agricultural credit by rural communities, where above 80% are smallholder farmers, has remained very low and stagnated between 10-20% in the past ten years<sup>99</sup>. The lack of finance is mainly attributed to supply and demand factors, and the supply factors include weak institutional framework, policy inconsistencies on agricultural financing, high-interest rates, and limited financial literacy. On the other hand, the demand factors include a lack of collateral, bankable projects, and high-risk agricultural credit to farmers<sup>100</sup>. Between 2002 and 2022, Uganda lost about 75 kha of humid primary forests, making up to 7.5% of its total tree cover in the same period. Around the same time, Uganda's total area of humid primary forest decreased by 15%<sup>101</sup>.



About 75% of Uganda's population lives in rural areas



About 29% of children under five years stunted, while about 3.5% of all children under this age face body wasting



**Access to agricultural credit by rural communities**, where above 80% are smallholder farmers, has remained very low and stagnated between 10-20% in the past ten years

Between 2002 and 2022



Uganda lost about **75 kha** of humid primary forests, making up to **7.5%** of its total tree cover in the same period

Around the same time, Uganda's total area of humid primary forest decreased by **15%**

Yellow Star Produce and Food Processors Ltd. currently produces

**297 tonnes of products**

Of these,

**123 tonnes**

are sold in low-income markets, impacting the lives of

**over 13,300**

low-income area dwellers.

signed supplier contracts with

**13** farmer groups

working with **2897** smallholder farmers



Of which,

**2030**

are women



Currently, the company has a production capacity of 215 500 kg per annum and plans to increase production to 1 460 000 kg per annum.





## Challenge

### What problems is the company solving?

In most rural areas, rural poverty is associated with a lack of access to nutritious foods that reduce the intensity of malnutrition<sup>102, 103</sup>. Thus, the innovation by Yellow Star Produce and Food Processors Ltd. of partnering with rural women agripreneurs who supply grain and the company processes it into highly nutritious food to curb malnutrition and reduce poverty in rural households<sup>104</sup>. Further, rural smallholder farmers usually need a guaranteed market for their produce, which stagnates their quest to reduce their poverty levels and increase the rural economy<sup>105</sup>. Thus, the company's innovation further bridges this gap by providing a guaranteed grain market for women-led smallholder farmers in Uganda.

### Why is it important?

The company's innovation of producing a variety of highly nutritious foods<sup>106</sup> is important in curbing malnutrition among Uganda's rural population<sup>107</sup>. The company's grain supply partnership with rural women-led smallholder farmers guarantees income for the farmers<sup>108</sup>, improves their livelihoods, and increases the rural economy.

### Highlights of the Entrepreneur

Yellow Star Produce and Food Processors Ltd. currently produces 297 tonnes of products. Of these, 123 tonnes are sold in low-income markets, impacting the lives of over 13,300 low-income area dwellers<sup>109, 110</sup>. The company has so far signed supplier contracts with 13 farmer groups working with 2897 smallholder farmers, of which 2030 are women. Currently, the company has a production capacity of 215 500 kg per annum and plans to increase production to 1 460 000 kg per annum<sup>111</sup>.



## Enabling Environment

### Lead advisor profile

Dr. Idil Ires is a political economist-consultant specializing in agrarian change, trade, and industrialization in East Africa. She will assist the Accelerator Partners by conceptualizing an Agribusiness Enabling Environment (AEE) focusing on targeted technical assistance, mapping, and policy advocacy. This aided in tackling significant operational barriers, prioritization of the agribusiness partner's needs, providing relevant industry associations, and establishing policy harmonization.

### The enabling environment

Yellow Star Produce and Food Processing Ltd pointed out market insecurity and emphasized the need for improved market access and expansion in Uganda. In areas bordering Kenya and South Sudan, foreign traders often offer higher prices than EADC and incentivize their farmers to sell their crops to them by breaching contracts. This poses a supply-side uncertainty and ultimately affects the enterprise's ability to ensure stock. Because they deal in fortified staple food, these enterprises are encouraged to pursue partnerships with institutional buyers. One opportunity identified is their participation in the school feeding programs of FAO, UNICEF, and WFP, which will be able to ensure market security, stabilize income despite the periodic price drops in the market, and thus enable them to pay relatively higher prices to their farmers and compete with foreign traders. Moreover, these enterprises reported that poor extension services by the government compromise the quality of crops supplied by farmers. They indicated a need for collaborators to support them in disseminating knowledge of good agricultural practices. So in addition to the UN organizations, additional connections have been established with NGOs—Kilimo Trust, Sasakawa Africa Association, the Uganda Grain Council, Food for Thought, and Harvest Solutions—for comprehensive support in addressing supply, market, and extension services-related challenges. A partnership with the Uganda Network of Businesses is established to capacitate the enterprises through lobbying and provide guidance for questions related to tax incentives and the regulatory environment.



## Gender Equality and Social Inclusion

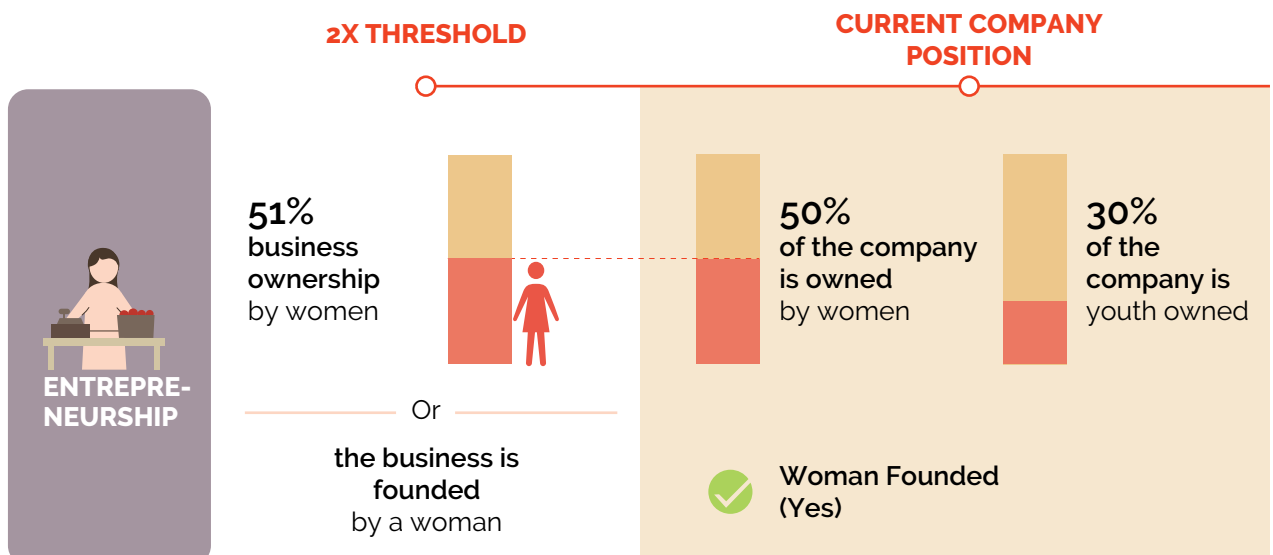
### Lead advisor profile

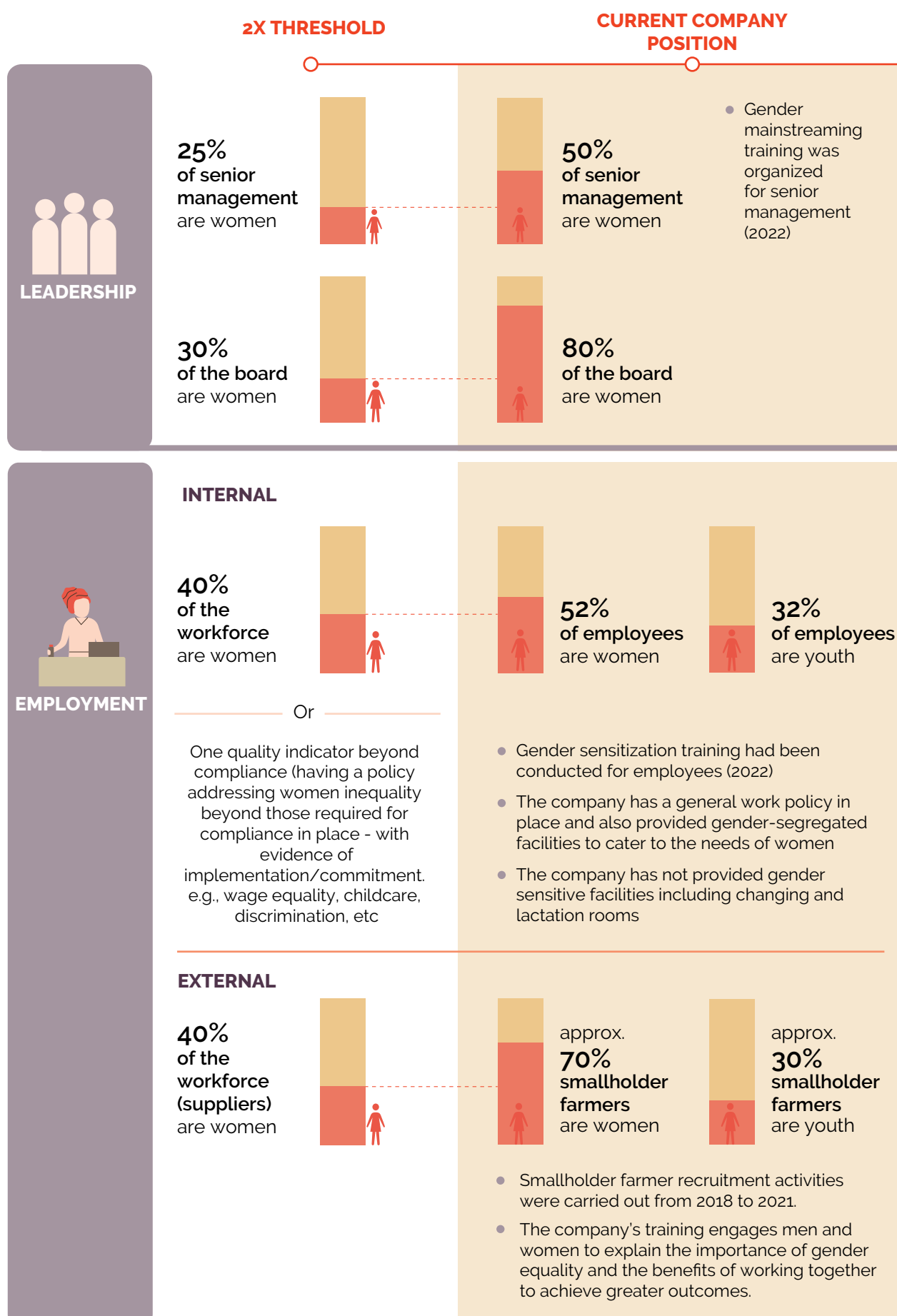
The Gender Equality and Social Inclusion (GESI) technical assistance implementation process was led by The Rallying Cry team in collaboration with Dr. Karen Nortje. The Rallying Cry is an ecosystem initiative working to shift private sector capital at the nexus of gender, climate, and agribusiness. At the same time, Dr. Karen Nortje is a senior researcher and social inclusion subject matter expert. The team supported the Accelerator Partners by equipping them to strengthen the capacity and agency of both the men and women within their agribusiness value chain(s). To achieve this, the team developed a gender action plan for YELLOW STAR PRODUCE AND PROCESSORS (U) LTD to help address the barriers to gender inclusivity.

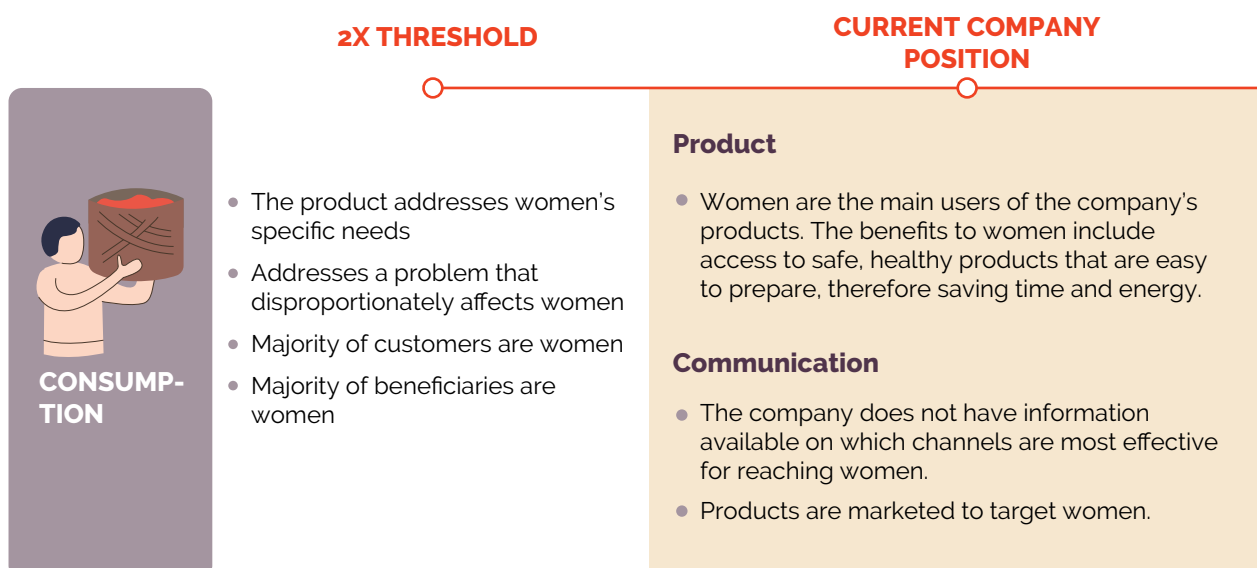
### Company GESI profile and summary of activities

The company is woman-founded, owned (50%), and partly led (50% of senior management are women; 25% - youth). The company has established a board of directors, 80% of whom are women and 40% - youth. 52% of employees are women and 32% - youth, while 70% of their smallholder farmers are women and 30% - youth. Additionally, the company makes deliberate efforts to support women to fully participate in their value chain activities by targeting women in recruitment strategies and providing business-focused training. The company also trained men to explain the importance of gender equality and emphasized the benefit of men and women working together.

A summary profile is below:







The company scored highly across all criteria and needs to maintain these standards while making some adjustments to be more inclusive, such as identifying the most effective communication channels to reach women. The activities suggested in the GESI Action plan were focused on this.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Eliud Birachi, a Markets Researcher and Agricultural Value Chain Development Specialist at the Alliance of Bioversity and CIAT, conducted the technical assistance. As an agribusiness expert, he supported the delivery of technical assistance. He worked with other colleagues in both Eastern and Southern Africa to further support the Accelerator Partners in their respective regions.

### Introduction

Yellow Star Company is into nutrient-dense product processing targeting babies, children, and women made from cereals. These aim to address malnutrition through nutrient-rich products. The products are porridge and maize meal—interactions with Yellow Star will continue in October 2023. The company started operating in 1997. Mrs. Florence Okot is the managing director of the company. She ran the company part-time until 2018, when she quit her job and focused on running Yellow Star company. The products the company processed include soy blends, millet blends, honey, and groundnut pastes. The current market or clients include schools, hospitals, supermarkets, and other retail outlets. Other clients/markets are in Kenya and Burundi.





*Yellow Star MD explaining the company's products.*

### Finance and capitalization

The company has relied on loans from banks (current loan @12%) for about UGX 600 million (about USD 160,000) from UDB (Uganda Development Bank) and, subsequently, Centenary Bank. These funds were invested in electrical installations, some machines, and physical structures. The company is still short of funds to achieve the following: improve the processing facilities for peanut lines and flour lines. The company would also like to upgrade from manual to automated processing systems such as packaging. The funds are also needed for working capital since payments are made after one month or 2 for products delivered to most buyers. The funds are also needed to secure raw materials from producers. The challenges in financing have forced the company to assess more affordable credit and other investors/financiers.

### New product line

Technical assistance discussions also explored the potential for an additional product line that the company wanted to add, a bean composite flour line, and put it through an optimization process. The optimization will help achieve a product that is safe and high quality but also affordable for the targeted markets. This would target current clientele as well as new buyers. The bean flour would be used for porridge and other products such as bean soup. A plan to initiate the development and testing of the new products was completed and slated for October 2023. The testing will be based on identifying which bean varieties are most suitable for bean flour processing. The plans also include Yellow Star's exposure visits to SMEs that have advanced in bean flour processing in the region. Additional funds will be required for this product line, which could replace one slow-moving product line (cassava flour). Part of the current equipment will be used for the new product.



*Technical assistance team at Yellow Star premises*

### Supply chain issues

The company has faced supply chain issues with respect to raw materials. This problem is not unique to the company; other companies working downstream of value chains are facing sustainability of supplies of raw materials from farmers. The volume remains low, but side selling is quite rampant. Models for cost recovery based on input credit systems do not appear to be working well. Monitoring is very costly. Thus, the company stopped this input credit model in preference for market assurance models and targeted cooperative and selected farmers to produce and supply the raw produce. However, it keeps working with the farmers without providing credit; instead, farmers are supported to link with credit and other service providers while the company guarantees a market for the farmers' quality produce. The company works with six farmer groups that can be expanded based on product demand. The company has also established that beans also do well among the current farmers, especially in the North of the country where it is focused on for supplies. This will be useful for the anticipated bean composite flour line. In this regard, after testing current bean varieties for suitability for bean flour as part of the technical assistance, the ABC will provide an initial seed of such varieties to test with farmers. The company will then continue with offtake from farmers.

Finally, the company would also like to enhance staff skills in different areas such as production quality management and market development.





Photography: Ukama Ustawi

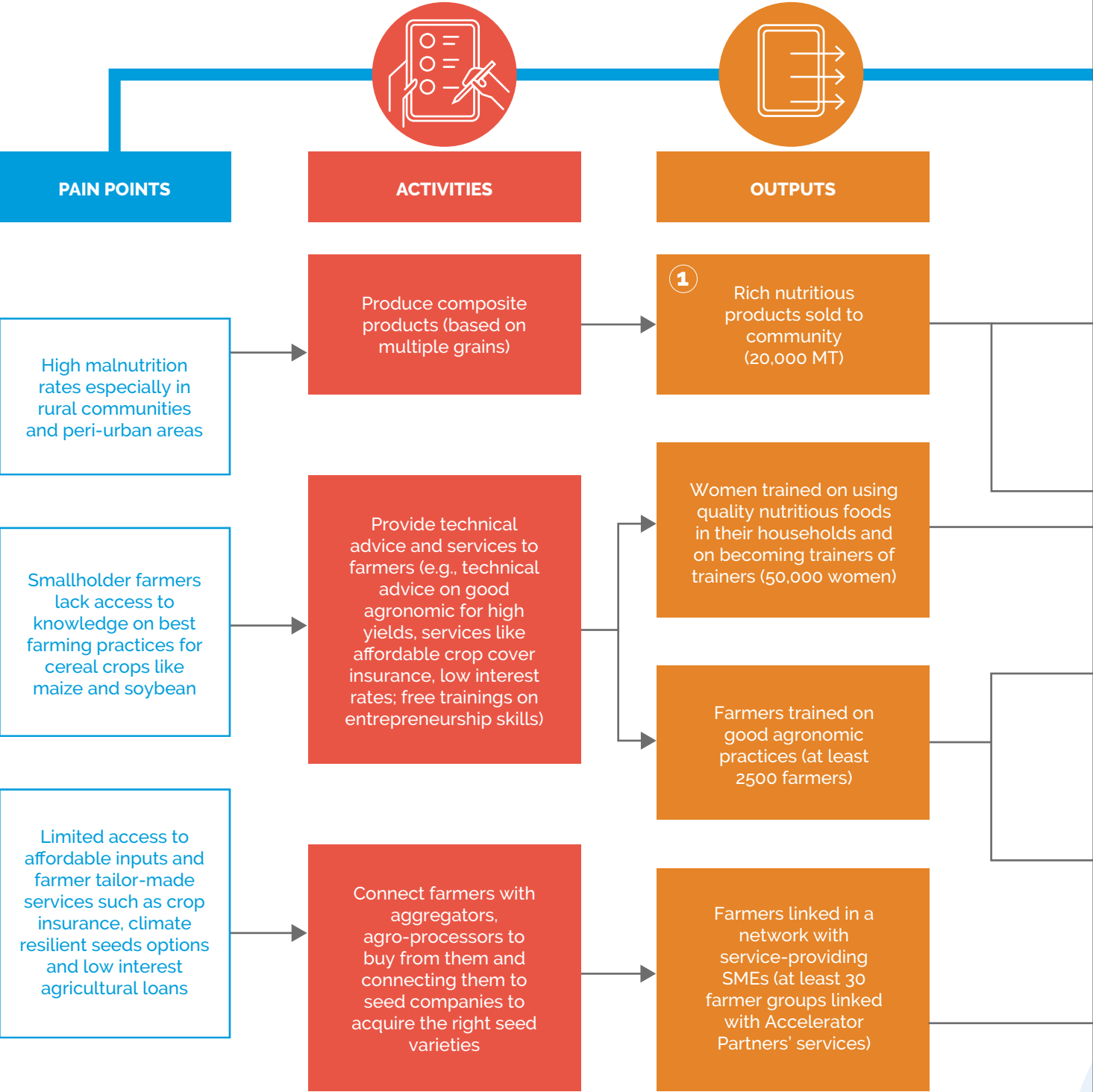


## Impact Measurement and Management

### Lead advisor profile

The impact pathway was delivered by Andreea Nowak, a social science researcher at the Alliance of Bioversity and CIAT, with an interest in how to improve the assessment and reporting on climate adaptation and resilience. Within the FSA, her interests were to assess the current impact measurements and metrics used by the agribusinesses and develop additional indicators for impact measurement reporting, data collection, consolidation, and fundraising. Together with a team of researchers, she has conducted interviews and workshops and co-designed the below-impact pathway with the agribusiness.

The impact pathways



Assumptions: 1) Community members can afford and are able to buy improved foods; 2) Farmers implement recommendations provided in training, 3) Use of improved nutrient-rich products leads to reduction in diseases; 4) Reduction in cooking time reduces time spent in household chores and leads to women empowerment; 5) Farmers are able to invest income from increased yields to improve livelihoods.

Yellow Star Food Processors produces nutritious food grain products to increase healthy and well-balanced nutritional food consumption to all individuals while incorporating small holder farmers in sustainable agricultural ingenuities, leading to reduced malnutrition and improved standards of living.

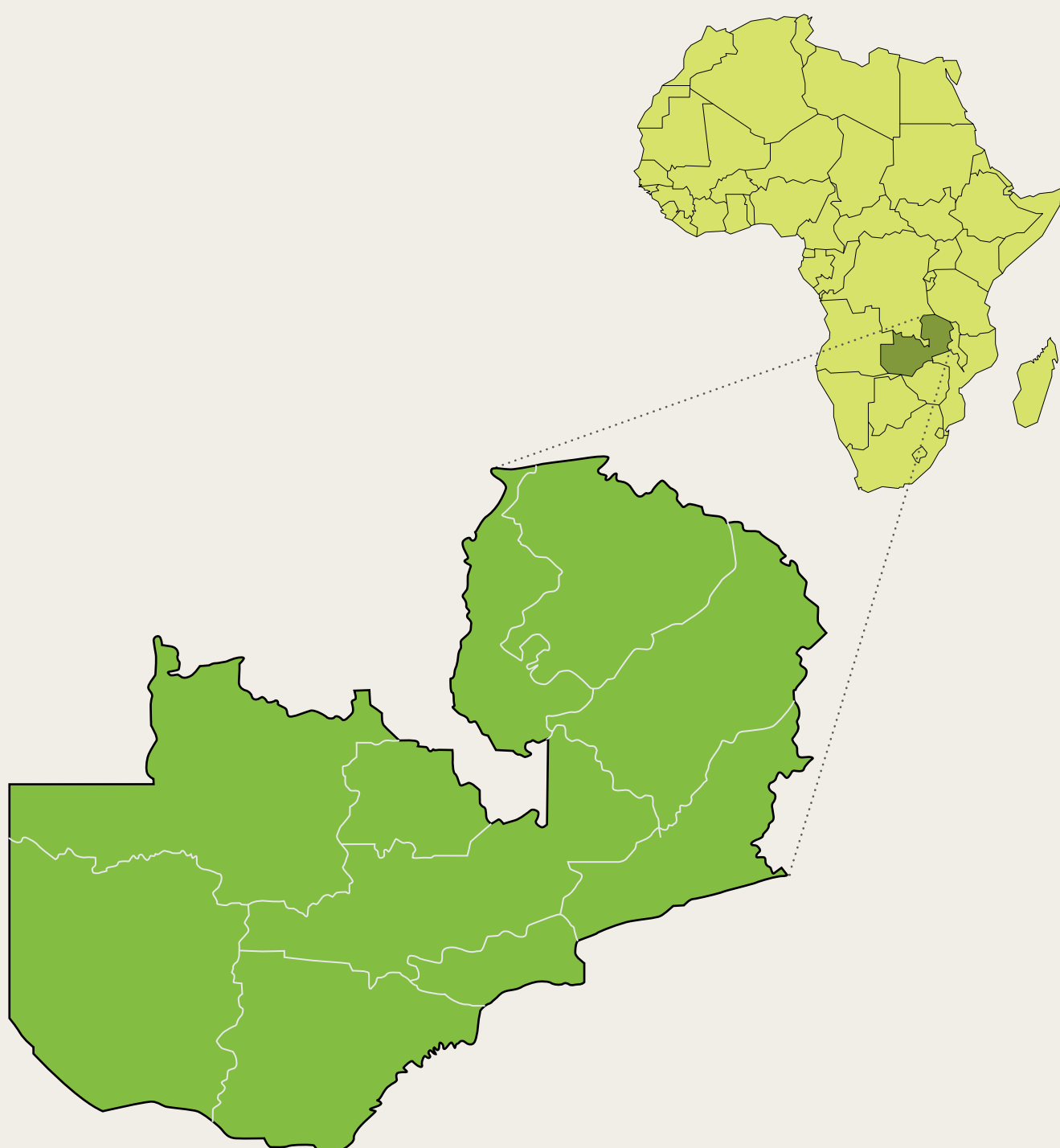






COUNTRY:

ZAMBIA



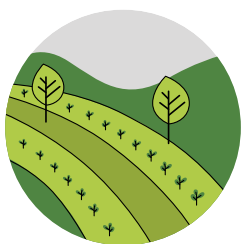
**3.9.**

## FARM DEPOT CO. LTD



Photography: Ukama Ustawi

**Farm Depot Co.Ltd**, based in Zambia, strives to provide high-quality inputs for profitable crop and animal farming to the country's smallholder farmers. The company's innovation was based on the understanding that rural smallholder farmers lack access to relevant farming information and inputs within their location to improve and sustain their productivity and, in turn, their livelihoods through increased rural income<sup>112</sup>. Farm Depot Co. Ltd offers a wide range of products for livestock (cattle, pigs, game, fish, and veterinary products), crops (seeds, chemicals, fertilizers, and implements), and pets (food, accessories, and veterinary products)<sup>113</sup>.



## Sector Spotlight

The Statistical Office in 2015 reported that 54.4% of the Zambian population lives below the poverty line of about USD1.09 per day, and about 40.8% of this population is classified as living in extreme poverty. The country's rural poverty is estimated at 76.5% compared to 23.4% in urban areas, and female-headed households are generally poorer than male-headed households<sup>114</sup>.



## Challenge

### What problems is the company solving?

Numerous Zambia farmers find themselves in a predicament where they need more credible agricultural information and good-quality inputs in their locality<sup>115</sup> to improve and sustain their livelihoods while improving the rural economy.

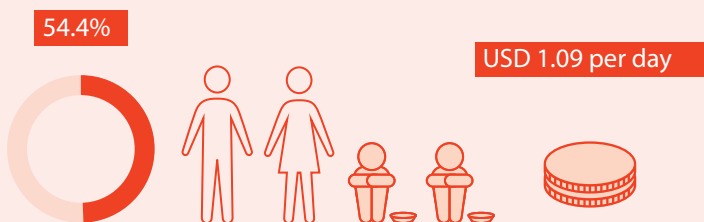
### Why is it important?

Lack of access to credible farming information and good inputs is a major hindrance to improved productivity amongst smallholder rural farmers<sup>116, 117</sup>. Thus, Farm Depot Co. Limited saw the gap with rural smallholder farmers of Zambia and developed agri shops in the farming communities nationwide that offer a wide range of inputs and agricultural information.

### Highlights of the Entrepreneur

Farm Depot Co. Ltd boasts 23 stores across key farming rural areas of Zambia, offering expert advice and good quality agricultural inputs to smallholder farmers<sup>118</sup>.

In 2015



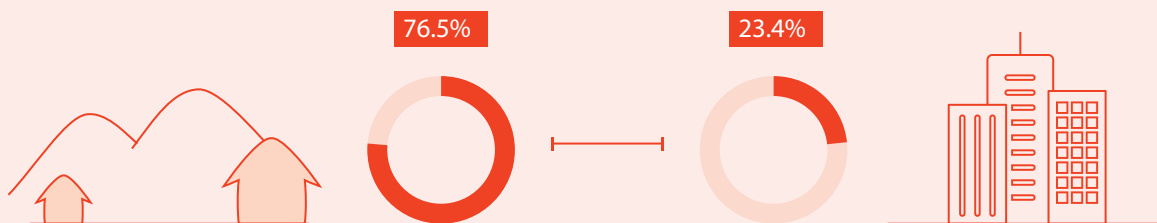
54.4% of the Zambian population lives below the poverty line of about USD1.09 per day

40.8%



40.8% of this population is classified as living in extreme poverty

In 2015



The country's rural poverty is estimated at 76.5% compared to 23.4% in urban areas

Farm Depot Co. Ltd boasts

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## Enabling Environment

### Lead advisor profile

Dr. Idil Ires is a political economist-consultant specializing in agrarian change, trade, and industrialization in East Africa. She will assist the Accelerator Partners by conceptualizing an Agribusiness Enabling Environment (AEE) focusing on targeted technical assistance, mapping, and policy advocacy. This aided in tackling significant operational barriers, prioritization of the agribusiness partner's needs, providing relevant industry associations, and establishing policy harmonization.

### The enabling environment

Farm Depot's operations have been restricted by the Zambian government's Farmer Input Supply Program (FSIP): government-supplied fertilizers re-enter the open market at significantly reduced prices, limiting Farm Depot to compete. In 2020, the enterprise obtained a loan to purchase a large fertilizer stock but could not pay off the loan because the stock could not be sold. Moreover, vested interests and collusion with large fertilizer companies and the Ministry of Agriculture officials impair the FSIP implementation. Also, payments with delays of up to three years have been another challenge to the agro-dealer under the e-voucher program. To deal with these issues through effective planning, Farm Depot is provided with information on the government's FSIP plans. The government plans a flexible FSIP program, from which Farm Depot could benefit by expanding its business into provinces and districts designated for it. This strategic move will allow the company to leverage the advantages of these reforms, which are integral to the IMF debt restructuring program. Moreover, during discussions with Farm Depot, a significant gap was identified in the level of interaction between the company and crucial Ministry of Agriculture sub-national staff, including Provincial Agriculture Officers (PACOs), Provincial Fisheries and Livestock Coordinating Officers (PLFCOs), District Agriculture Officers (DACOs), District Fisheries and Livestock Coordinating Officers (DLFCOs), and others which play a vital role enabling agribusinesses to navigate policy challenges and provide vital support and databases for its business expansion. To help with this, government officials on different administrative levels have been contacted, and a list is presented to Farm Depot to connect.

# Gender Equality and Social Inclusion

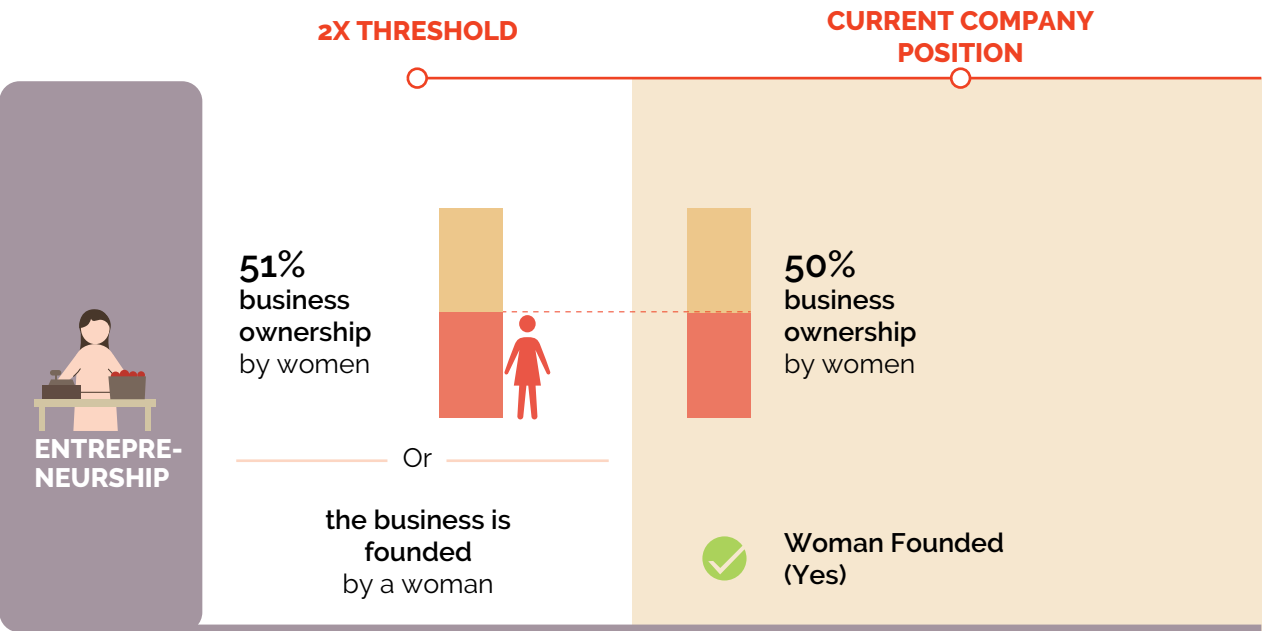
## Lead advisor profile

The Gender Equality and Social Inclusion (GESI) technical assistance implementation process was led by The Rallying Cry team in collaboration with Dr. Karen Nortje. The Rallying Cry is an ecosystem initiative working to shift private sector capital at the nexus of gender, climate, and agribusiness. At the same time, Dr. Karen Nortje is a senior researcher and social inclusion subject matter expert. The team supported the Accelerator Partners by equipping them to strengthen the capacity and agency of both the men and women within their agribusiness value chain(s). To achieve this, the team developed a gender action plan for Farm Depot Co. Ltd to help address the barriers to gender inclusivity.

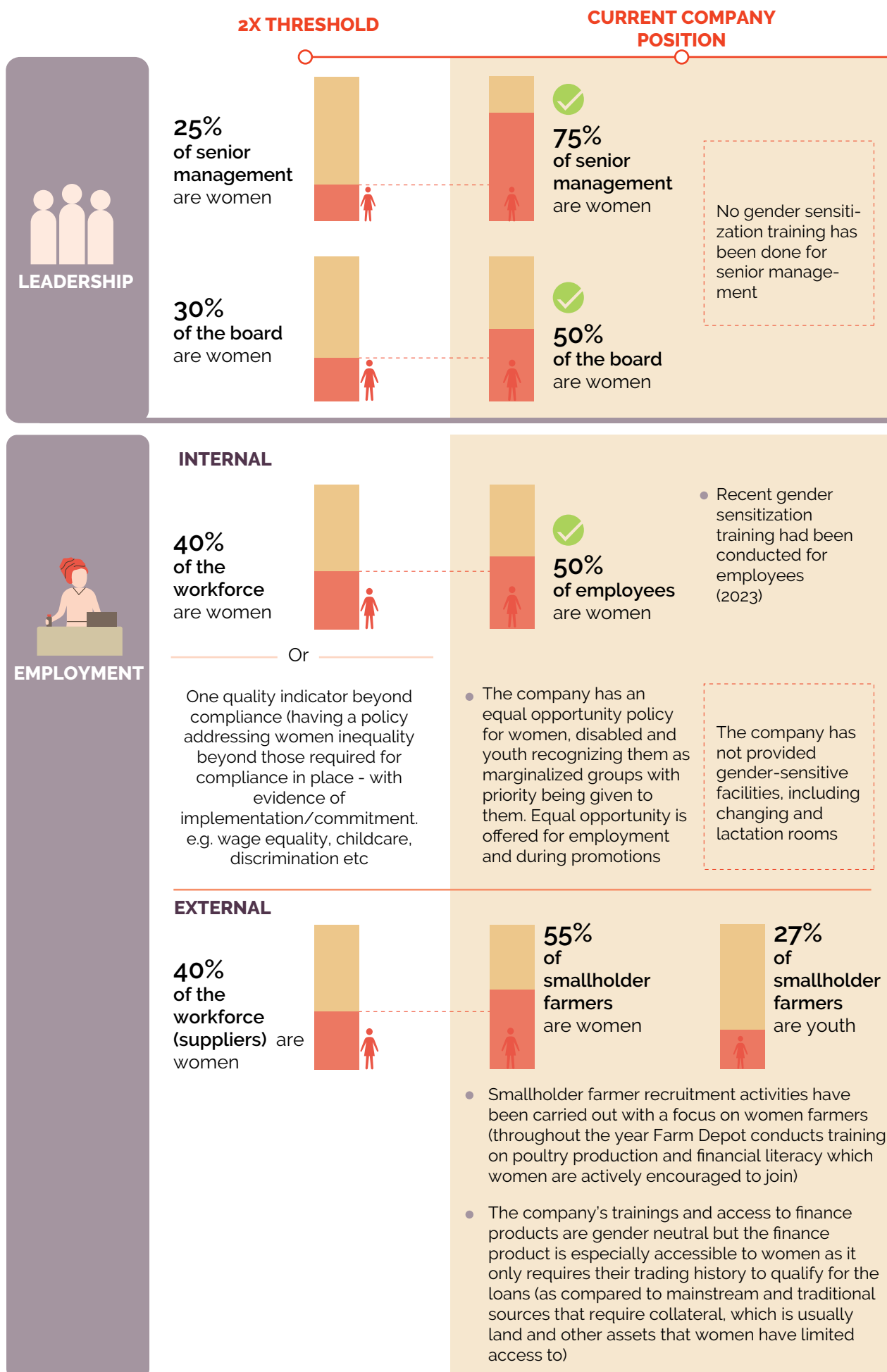
## Company GESI profile and summary of activities

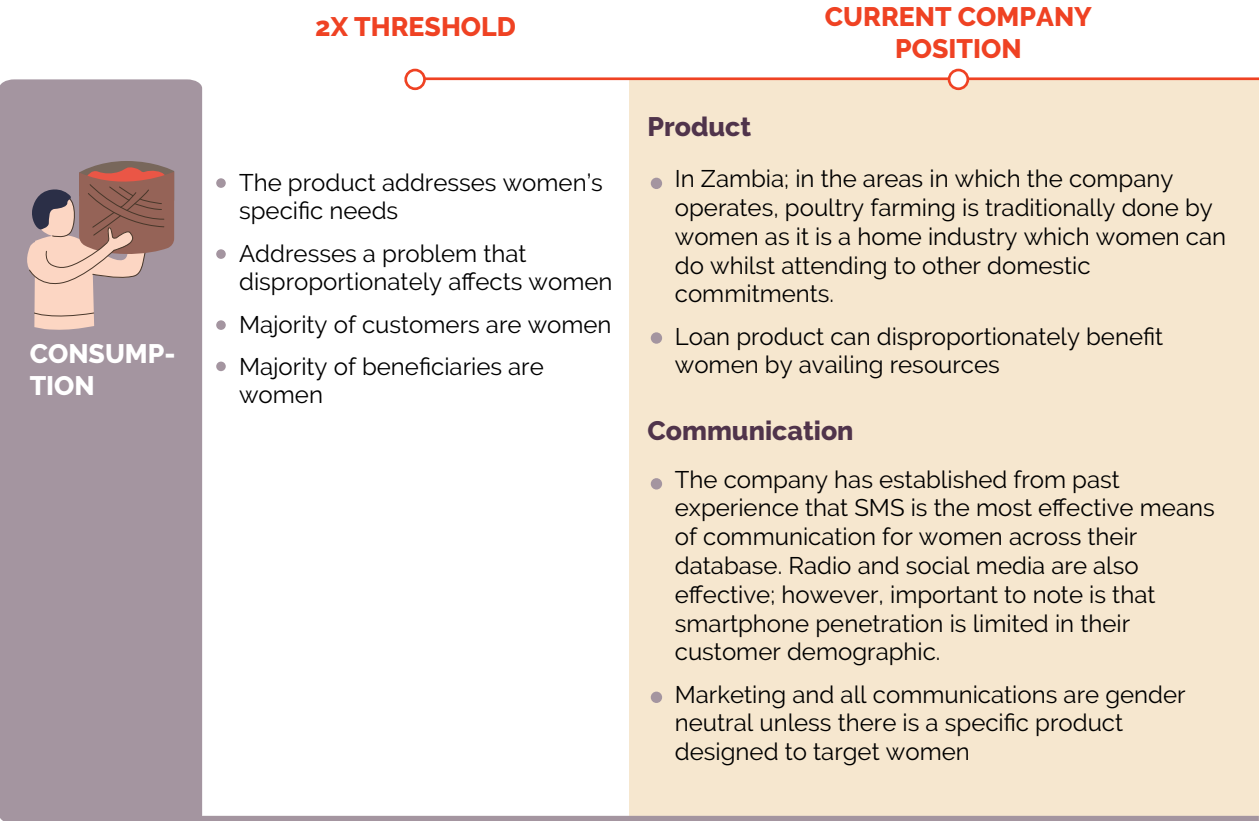
The company is woman-founded, owned (50%) and led (75% of senior management are women). 63% of employees are youth, while 27% of their smallholder farmers are youth. Additionally, the company makes deliberate efforts to support women and youth to fully participate in their value chain activities by providing access to loans.

A summary profile is given below:

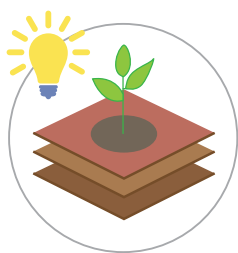








Although the company scored highly on the assessment generally, there is a need to maintain these standards while making some adjustments to be more inclusive, including providing gender needs sensitive facilities (e.g., changing and lactation rooms) and regular gender sensitization training, especially for senior managers. The GESI Action Plan focused on the same.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Nathaniel Petersen assisted the company in delivering its innovation. Nate is an agriculture and natural resource economist with a Ph.D. in Decision Theory and Behavioral Economics who has been working in research, agribusiness strategy, and running farms in Kenya for 6 years. Much of his work is focused on understanding how farmers perceive risks and risk mitigation strategies, some of which can be complex and/or confusing, like insurance, drip irrigation, agroforestry, and bundled product/service modules. As such, he's primarily aligned with the CG's work in Agriculture Risk Management. He is especially good at designing and testing communications and interactions with new products and services and learning from those tests. Especially for farmer-centric digital, financial, and risk-management solutions, he can help the Partners explore how your solution can contribute to increasing farmers' autonomy over their economic role and livelihoods and ultimately make them and their activities more resilient to climate change.

### The innovation

Recognizing that Zambian rural farmers lack access to relevant information and inputs for profitable farming. With locations close to the farmers, Farm Depot strives to provide high-quality inputs for crops and livestock and advice on production. The agricultural sector is considered a risky investment for microfinance institutions because of market and price risks, climate risks, and other crop risks such as pests. A failure in rainfall, unseasonal rains, cyclones, hailstorms, high-temperature spells, and pests affect crops adversely and have the capacity to impact all the farmers in a single region. Since MFIs work in geographically compact areas, they can be severely affected by the high co-variant risk crop-input borrowers face.

When many borrowers face crop losses due to weather or pest events, the MFI faces a higher risk of loan defaults or delayed repayments. A spike in loan defaults can impact the MFI's liquidity and overall sustainability, affecting its ability to provide financial services to other clients. In addition, market volatility and fluctuations in commodity prices could impact the income generation of farmers, which affects their loan repayments to an MFI, which can harm their reputation and trust among clients.

Seasonality is another risk that MFIs consider when it comes to lending out crop loans to farmers. During the planting season, many farmers are forced to borrow money nearly simultaneously, which places peak demand on MFIs that they cannot mobilize. Therefore, MFIs evaluate an agricultural cooperative's susceptibility to such risks, which can impact crop harvests and income. MFIs also analyze the company's sector and its outlook, as well as its projections and historical figures.

Below are potential risks and mitigation strategies that Farm Depot should consider before borrowing money from MFIs. The assessments are built from an adapted Agriculture Risk matrix:

		Impact				
		Very Low (0.05)	Low (0.1)	Moderate (0.2)	High (0.4)	Very High (0.8)
Probability	Very High (0.9)	MODERATE (0.05)	SEVERE (0.09)	SEVERE (0.18)	CRITICAL (0.36)	CRITICAL (0.72)
	High (0.7)	SUSTAINABLE (0.04)	MODERATE (0.07)	SEVERE (0.14)	CRITICAL (0.28)	CRITICAL (0.56)
	Medium (0.5)	SUSTAINABLE (0.03)	MODERATE (0.05)	MODERATE (0.10)	SEVERE (0.20)	CRITICAL (0.40)
	Low (0.3)	SUSTAINABLE (0.02)	SUSTAINABLE (0.03)	MODERATE (0.06)	SEVERE (0.12)	CRITICAL (0.24)
	Very Low (0.1)	SUSTAINABLE (0.01)	SUSTAINABLE (0.01)	SUSTAINABLE (0.02)	MODERATE (0.04)	CRITICAL (0.08)

Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
1. Behavioral risk from farmers where they are resistant to change and want to continue with their ancestors' traditional agricultural practices. Farmers can be risk averse where they prefer certain outcomes to uncertain outcomes (using the inputs Farm Depot is providing even if they have better results)	High (0.7)	High (0.4)	Severe (0.28)	Drive traffic to the products you are offering through advertisements on radio and local TV stations.  Providing well-organized and trustworthy extension services to the farmers who would educate and advise them.	Medium (0.5)	Moderate (0.2)	Moderate (0.10)

Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
2. It is possible for Farm Depot to have an inflated sense of their abilities, overlooking the fact that they can be wrong. Overconfidence in agriculture support recommendations, including their products, can harm the business.	High (0.7)	Moderate (0.8)	Severe (0.14)	Research and find out what the farmers need then you can tailor your input recommendations to meet their specific needs, thus increasing the chances of your products being adopted by them.	Low (0.3)	Low (0.1)	Sustainable (0.03)
3. Similarly, sales and onboarding processes often create strong sales methods from agents that can convey an artificially high sense of certainty in the model, a degree of overpromising often detected by the most senior and experienced farmers, sometimes breaking community trust.	Medium (0.5)	Moderate (0.10)	Moderate (0.05)	Be sure to mention risks and probabilities to encourage (especially) the most ambitious agents to tone down promises of improved yields, market access, and prices.	Low (0.3)	Low (0.1)	Sustainable (0.03)
4. Non-compliance of extension agents due to conflicting interests, politics, and social compliance (e.g. not wanting to contradict elders).	Very High (0.9)	High (0.4)	Critical (0.36)	Building incentive schemes for extension agents based on their productivity improvement will act as a source of motivation for them to deliver the best services to both the farmers and the Farm Depot.  Assignment team leaders in smaller groups of extension officers, and then you conduct supervision and feedback sessions.	Low (0.3)	Very Low (0.05)	Sustainable (0.02)

Risk description	Probability	Impact	Risk rating	Control(s)	Residual probability	Residual impact	Residual risk rating
<p>5. Farmers have a certainty effect where they give more weight to outcomes that are considered certain, even if this directs them towards less long-term profits than outcomes that are just possibilities. Prioritizing short-term profits over long-term sustainability and profits.[1]</p> <p>Risk-mitigating products, like a drought-resilient seed, quickly lose their appeal when a farm has paid a premium to acquire them and the rains arrive on time.</p>	High (0.7)	High (0.8)	Critical (0.56)	Create awareness through extension services to demonstrate that probabilistic outcomes are worthwhile to invest in over the long term. Many become positive ROI if they prevent massive losses in just one of five years.	Medium (0.5)	Moderate (0.1)	Moderate (0.10)
<p>6. Stiff competition with other dealers in the retail business: it may be difficult for Farm Depot to compete with other input providers who exist in the market, even if they don't provide services like off-taking, because they have relationships with traditional market leaders and politicians.</p>	High (0.7)	Very High (0.8)	Critical (0.56)	<p>Create a high degree of trust and reliability, especially in terms of consistency of services. Often, in the interest of 'fail-fast' methods used by startups, farmer clients can become confused or find agriculture platforms unreliable when they constantly change models, prices, and even crops.</p> <p>Concerning political risks, customize a collaboration plan that works for both parties and accept that you may need to allow certain politicians to take credit for your improved service delivery.</p>	Medium (0.5)	Low (0.1)	Moderate (0.05)





Photography: Ukama Ustawi

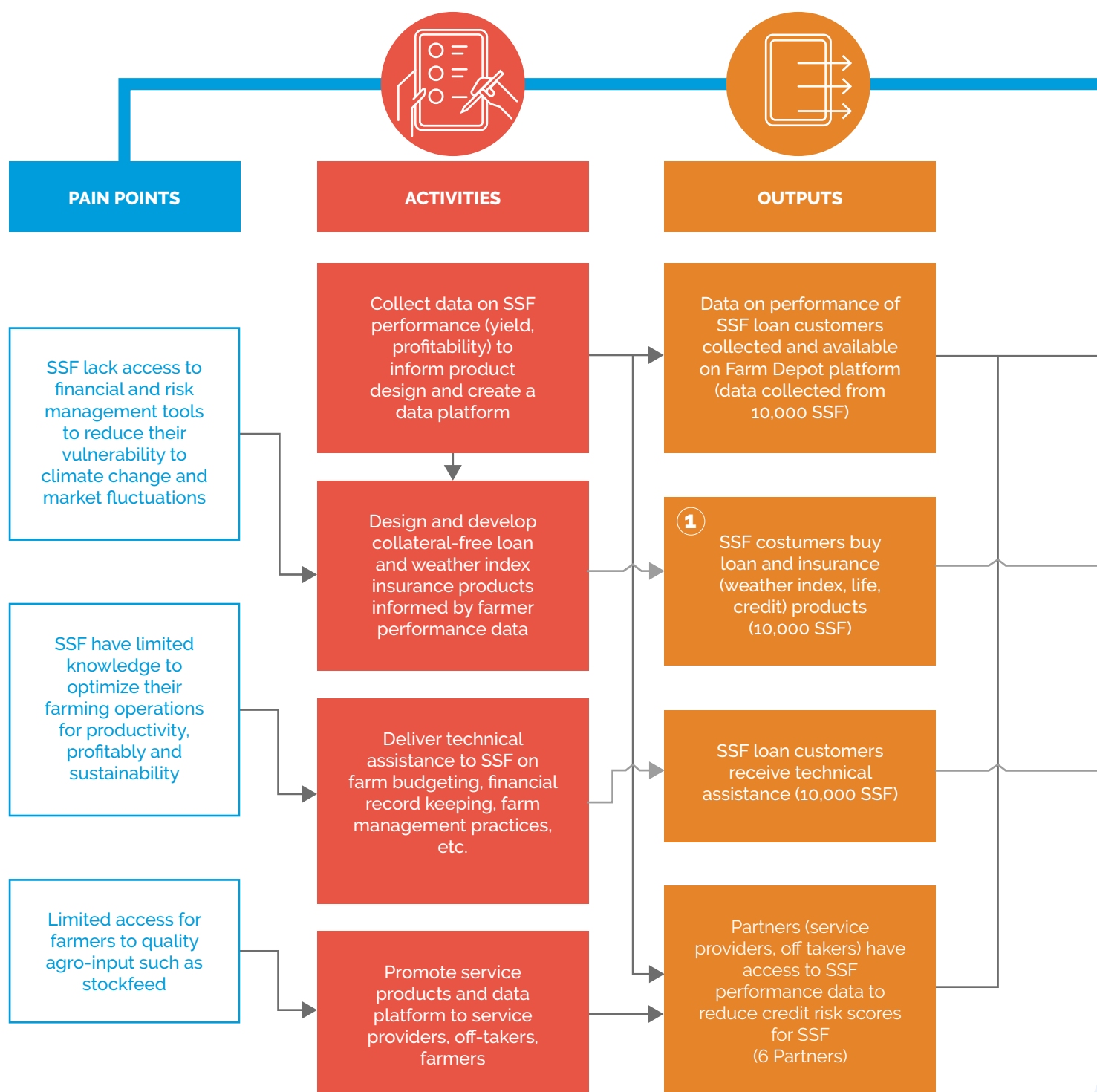


## Impact Measurement and Management

### Lead advisor profile

The impact pathway was delivered by Andreea Nowak, a social science researcher at the Alliance of Bioversity and CIAT, with an interest in how to improve the assessment and reporting on climate adaptation and resilience. Within the FSA, her interests were to assess the current impact measurements and metrics used by the agribusinesses and develop additional indicators for impact measurement reporting, data collection, consolidation, and fundraising. Together with a team of researchers, she has conducted interviews and workshops and co-designed the below-impact pathway with the agribusiness.

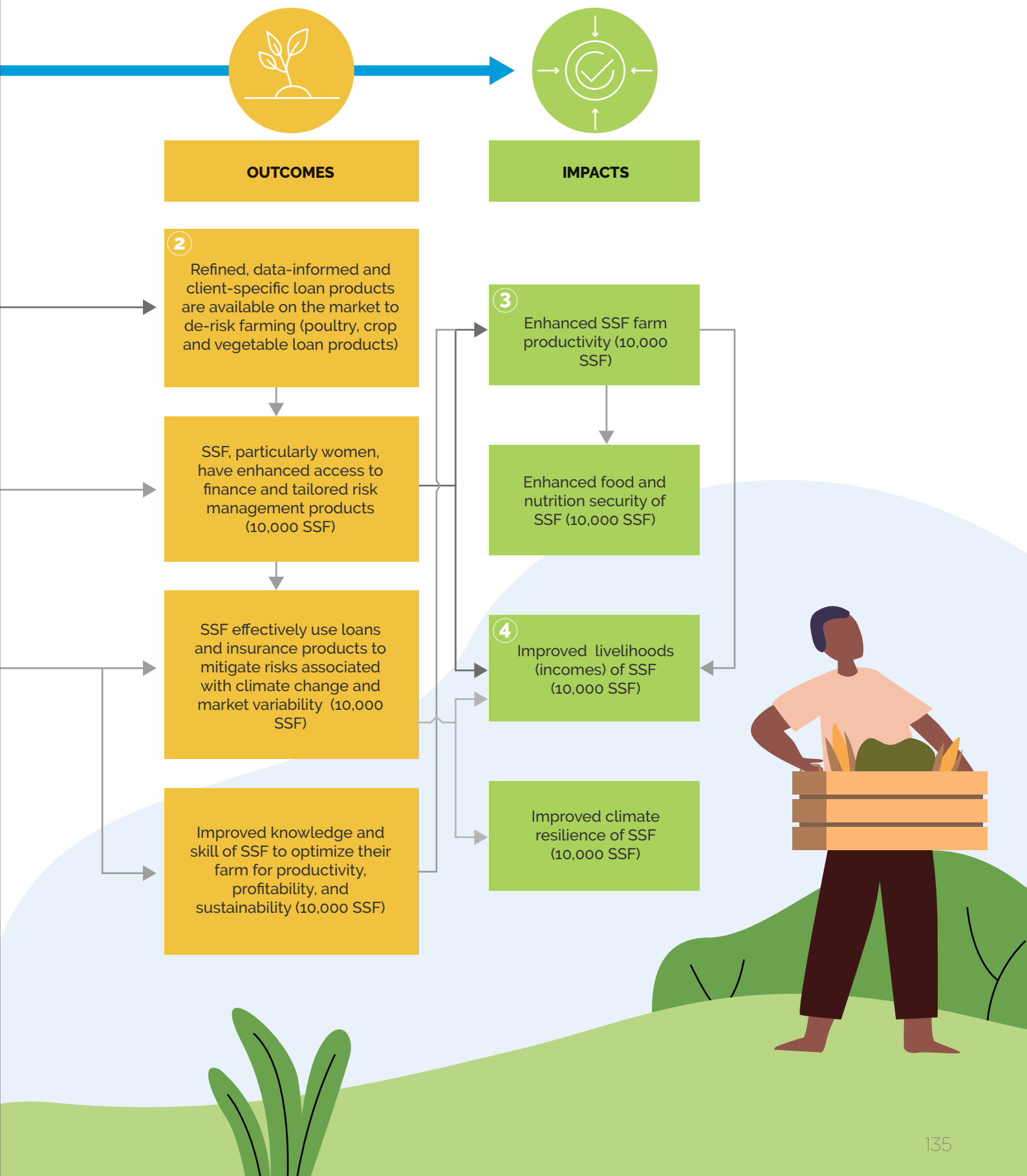
## The impact pathways



All targets expressed for 2 years timeline

Assumptions: 1) SSF are willing and able to participate in the insurance and loan programs tailored to SSF's needs; 2) service providers and off-takers use the platform's data and to improve their services; 3) Access to loans, markets, and improved knowledge and skills of SSF leads to increase in farm productivity, income and to repayment of loans; 4) Increases in income derived from farm productivity can be reinvested in farming or other economic activities and hence leads to improved livelihoods

Farm Depot equips Zambia's small-scale farmers (SSF) with tailored finance, insurance, and knowledge solutions, promoting financial inclusivity, notably among women often overlooked by traditional finance. This drives enhanced farm productivity, bolstered food security and livelihoods, and enhanced climate resilience for SSF.





**3.10.**

# FOREST AFRICA ZAMBIA LTD

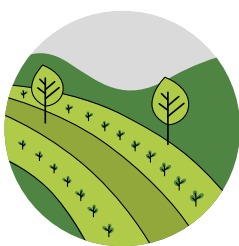


Photography: Ukama Ustawi



**F**orest Africa Zambia Ltd is an entrepreneurial initiative established in 2017 and based in Zambia, focusing on Non-Timber Forest Products (NTFP), including organic and healthy indigenous wild fruits, i.e., Mabuyu (Baobab), Monkey Bread, and Ngai (False Medlar). The company gathers and processes these organic wild fruits into nutritious fruit juices while upholding the zero-waste principle. Forest Africa Zambia Ltd employs a business model centered around rural community empowerment and commerce to address rural poverty and pressing environmental issues, i.e., deforestation, of the 21st century. The company works closely with over 200 rural households to source wild fruits for juice processing. The fruit powder is processed at the factory into a nutritional organic juice, and seeds are pressed to extract oils for skin and hair products. The baobab fruit's fibrous funicles are also used for making antioxidant-rich tea, while the shells are processed into charcoal briquettes that provide an energy source for the factory.

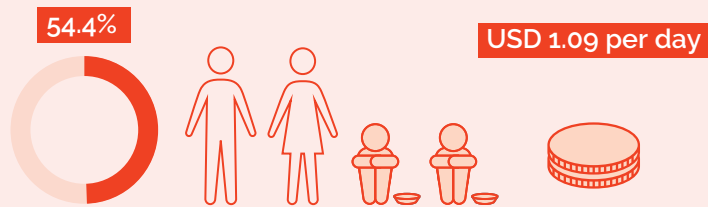
Further, a portion of the fruit seeds is set aside for reforestation purposes<sup>119</sup>. Forest Africa Ltd's indigenous fruit processing model ensures the produce's circularity and that the zero waste principles are upheld. Forest Africa Zambia Ltd. is further collaborating with scientists from the International Institute of Tropical Agriculture (IITA) to continuously improve the shelf life of its juice products and further develop other products, including milk from the baobab fruits. The scientists from IITA have further assisted Forest Africa Zambia Ltd. in developing improved standard operating procedures and manuals for raw material handling and processing and new product development (i.e., yogurt from baobab milk). The collective efforts from external scientists have indirectly improved rural income and alleviated poverty of the communities supplying the fruits through the increased company's income and earnings<sup>120</sup>.



## Sector Spotlight

The Statistical Office 2015 reported that 54.4% of the Zambian population lives below the poverty line of about USD1.09 per day, and about 40.8% of this population is classified as living in extreme poverty. The country's rural poverty is estimated at 76.5% compared to 23.4% in urban areas, and female-headed households are generally poorer than male-headed households<sup>121</sup>.

In 2015

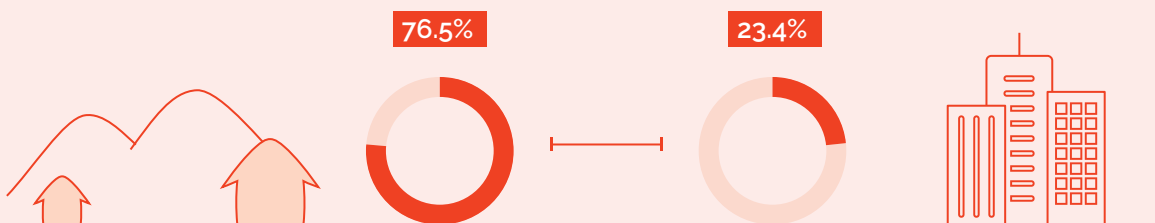


54.4% of the Zambian population lives below the poverty line of about USD1.09 per day



40.8% of this population is classified as living in extreme poverty

In 2015

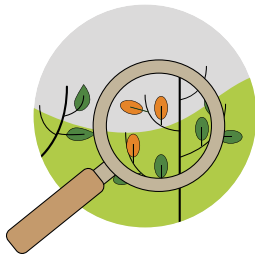


The country's rural poverty is estimated at 76.5% compared to 23.4% in urban areas



Forest Africa Zambia Ltd has successfully established a business model that has enabled it to **produce about 15,000 liters of juice per month** and supply its products to **over 200 retail outlets**





## Challenge

### What problems is the company solving?

Zambia is endowed with several indigenously growing organic wild fruits<sup>122</sup>. However, the country faces alarming deforestation rates, resulting in forest cover loss of about 300,000 hectares yearly<sup>123</sup>. The alarming deforestation is a climate change response to flood and drought-driven climate affecting agricultural outputs amongst the rural communities. In response to climate change-induced flooding and drought, rural communities often resort to tree-cutting for charcoal production as an alternative source of income. The overreliance on charcoal production has dire environmental consequences, including habitat degradation and deforestation. On top of the deforestation and degradation problem, rural communities often utilize conventional methods of wild fruit harvesting and processing, resulting in waste and unrealized benefits of the potential value chain of wild organic fruits. Furthermore, rural communities cannot trigger fruit demand and require strong market linkages to enhance rural commerce<sup>124</sup>, which may enhance the quality of livelihoods and improve rural poverty.

### Why is it important?

Against the previous context, Forest Africa Zambia Ltd was inspired by the need to explore sustainable alternatives to address the challenges while promoting economic development, potentially reducing rural poverty, and encouraging and supporting healthier consumption choices<sup>125</sup>. Forest Africa Zambia Ltd has successfully established a business model that has enabled it to produce about 15,000 liters of juice per month and supply its products to over 200 retail outlets in and around Lusaka, Southern, and Copperbelt Provinces<sup>126</sup>.



## Enabling Environment

### Lead advisor profile

Dr. Idil Ires is a political economist-consultant specializing in agrarian change, trade, and industrialization in East Africa. She will assist the Accelerator Partners by conceptualizing an Agribusiness Enabling Environment (AEE) focusing on targeted technical assistance, mapping, and policy advocacy. This aided in tackling significant operational barriers, prioritization of the agribusiness partner's needs, providing relevant industry associations, and establishing policy harmonization.

### The enabling environment

Forest Africa Zambia has faced hurdles in securing short and long-term financing due to high-interest rates, often up to 33 percent. Such rates have significantly impeded the company's potential to secure working capital to grow its business. Also, its operations are encumbered by an excessive number of mandatory licenses, presenting operational obstacles and inhibiting business growth. Lastly, Forest Africa and other local Zambian SMEs face a lack of monetary or fiscal incentives from the government that are tailored to support them. Current incentives predominantly favor incoming foreign investors and companies, placing local businesses, like Forest Africa, at a disadvantage. In addressing these challenges, the TA team reached out to the Zambia Development Agency (ZDA). It provided key contacts to Forest Africa for the enterprise to access the Zambia Credit Guarantee Scheme, which can negotiate with financial institutions to secure flexible loan terms and significantly mitigate financial risks associated with loan applications. Moreover, the enterprise is linked with the Ministry of Green Economy and Environment to explore concessional green finance options and investigate funding opportunities from the Citizens Economic Empowerment Fund. Moreover, a comprehensible summary of the Investment, Trade, and Business Development Act of 2022 has been provided for the enterprise to understand the investment incentives, and it recommended that it contact ZMD to explore concrete opportunities.



## Gender Equality and Social Inclusion

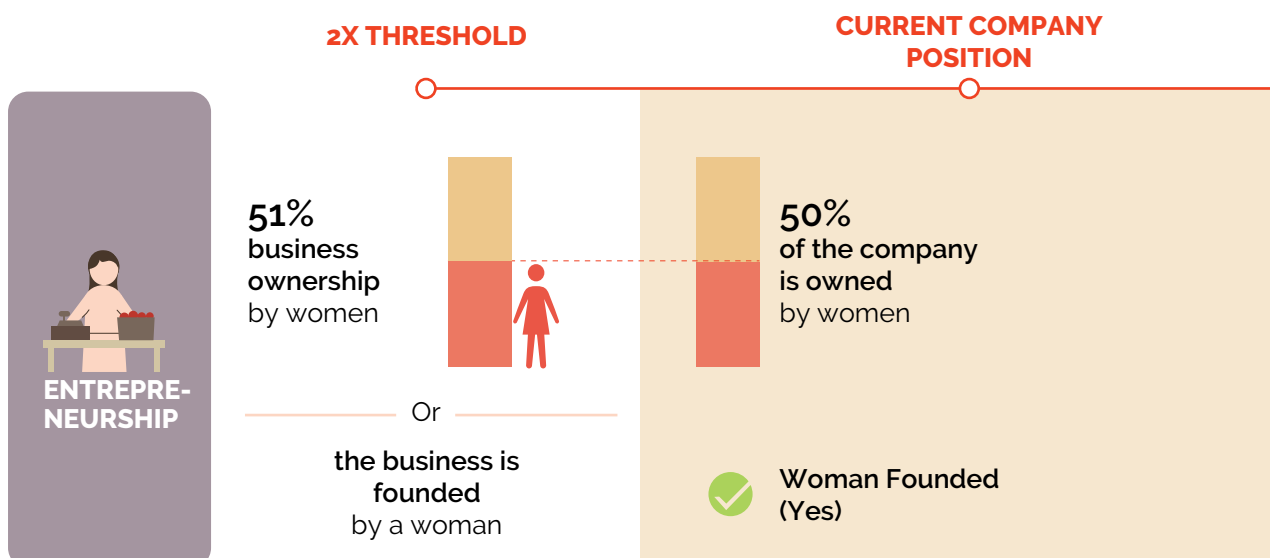
### Lead advisor profile

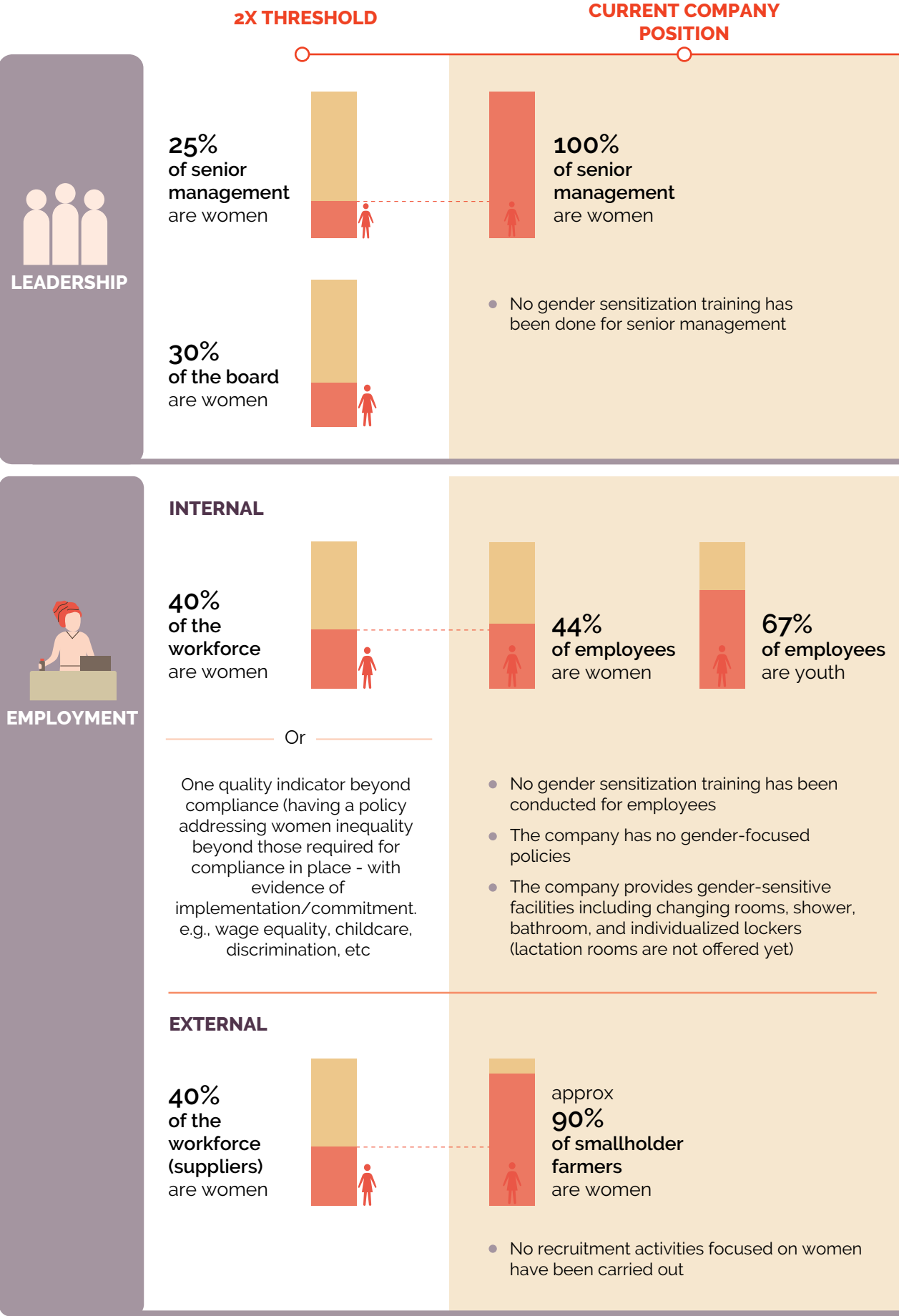
The Gender Equality and Social Inclusion (GESI) technical assistance implementation process was led by The Rallying Cry team in collaboration with Dr. Karen Nortje. The Rallying Cry is an ecosystem initiative working to shift private sector capital at the nexus of gender, climate, and agribusiness. At the same time, Dr. Karen Nortje is a senior researcher and social inclusion subject matter expert. The team supported the Accelerator Partners by equipping them to strengthen the capacity and agency of both the men and women within their agribusiness value chain(s). To achieve this, the team developed a gender action plan for Forest Africa Zambia Ltd to help address the barriers to gender inclusivity.

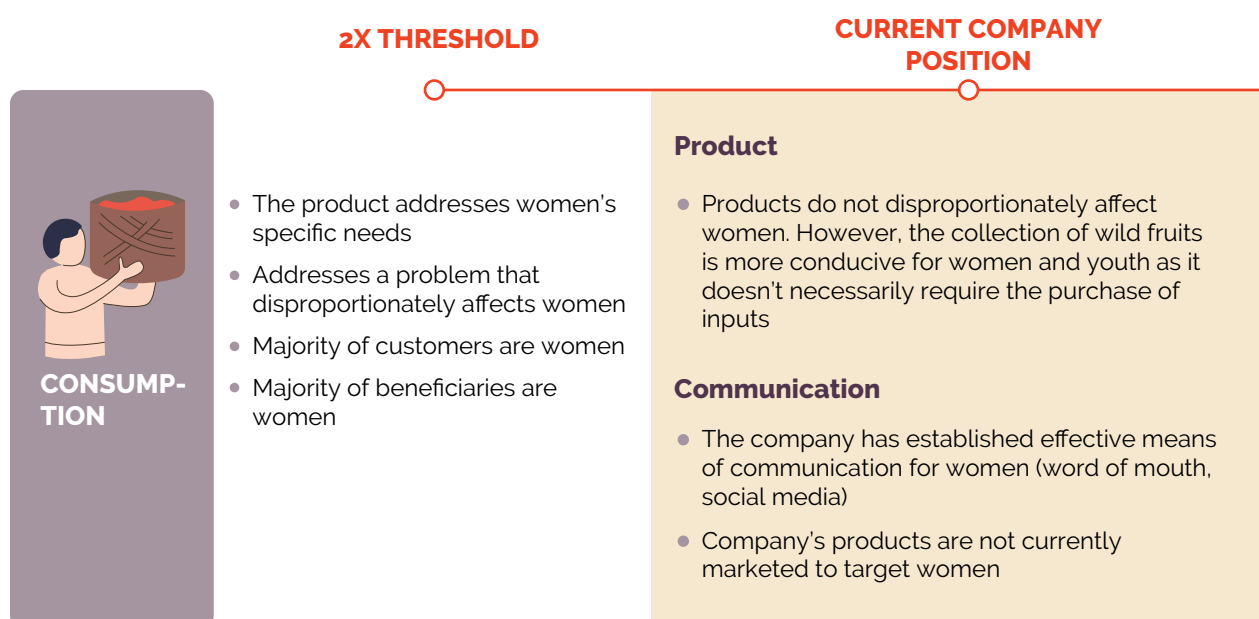
### Company GESI profile and summary of activities

The company is woman-founded, owned (50%) and led (100% of senior managers are women). 67% of employees are youth, 44% of employees are women, and 90% of their smallholder farmers are women. The company does not have gender-focused policies, and gender sensitization training has not been implemented yet. However, the company provides employees with individualized lockers and separate changing rooms for women, including showers and washrooms. Additionally, Forest Africa Zambia identified promotional and communication channels that work best for women (e.g., word-of-mouth social media).

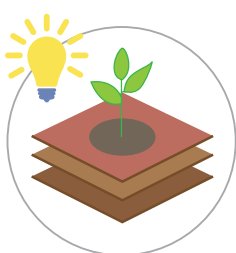
A summary profile is given below:







The company needs to maintain these standards while making some adjustments to be more inclusive including providing regular gender sensitization training, implementing gender-focused policies (e.g., recruitment activities, marketing), and establishing lactation rooms. The company has yet to set up a board, but once it does, women and where practical youth should be represented. These activities are summarized in the company's GESI action plan.



## Climate-Smart Agriculture technical assistance

### Lead advisor profile

Dr. Alamu O. Emmanuel is an experienced food chemist with over 17 years of research experience and strong analytical skills in food science and nutrition.

### The innovation

Forest Africa Zambia Ltd actively participated in the CGIAR Food Systems Accelerator Program under One-CGIAR Regional Initiative (Ukama Utsawi) to seek technical guidance and capacity to improve its operations and market competitiveness. The program had a bespoke approach to providing Technical Assistance to the Accelerator Partners. In the case of Forest Africa Zambia Ltd, one of the key

requirements was the need to strengthen product portfolio to increase wild fruit offtake from rural communities and to increase revenue. Forest Africa accumulates a rich repository of baobab seeds in its processing activities. Apart from pressing a baobab seed oil, most of the seed was potentially underutilized. There was clear need to find innovative ways to commercially utilize the seeds other than planting and oil pressing. In order to achieve this level of innovation, critical expertise was missing within Forest Africa's ranks. However, through the CGIAR Food Systems Accelerator Program, IITA (International Institute of Tropical Agriculture) in Zambia were engaged to look into assisting Forest Africa to formulate additional wild fruit-based products. Through IITA, Forest Africa were introduced to Dr. Alamu Oladeji Emmanuel who is an experienced food chemist with over 17 years of research experience and strong analytical abilities in food science and nutrition. Under Dr. Alamu's direction, Forest Africa Zambia embarked on an innovative path. Creating what could potentially be the first of its kind, a formula for baobab milk using baobab fruit seeds. The vegan milk is a nutritious, vitamin-rich, and antioxidant-rich product. The product was a notable accomplishment under the CFSA support through IITA engagement and key to increase Forest Africa product portfolio and competitiveness. The milk is a base for several additional products that can include tofu, sour milk, cheese, yoghurt. So far, Forest Africa have successfully done trials on baobab seed milk yoghurt which is clearly a new product line.

The baobab Milk based Yoghurt was taken for tests at the University of Zambia and shown results below:

Parameter	Baobab Seed Yoghurt
Moisture	85.86
Crude Fibre	0.00
Crude Protein	2.59
Crude Fat	2.93
Carbohydrates	27.57
Energy	64.34
Calcium	0.59
Total Sugars	8.70
Vitamin C	56.03

The product is currently still undergoing local approvals and certification through the Zambia Bureau of Standards (ZABS). The product is expected to be on the Market once certification from ZABS is received.



## STANDARD PROCEDURES

Baobab vegan milk is a nutritious and refreshing beverage that can be easily made using the simple steps involving Sorting, cleaning, Soaking the Seeds, Boiling the Soaked Seeds, blending the cooked Seeds, and finally, adding essential ingredients.

With these simple steps, you can enjoy delicious and nutritious baobab seed milk, rich in vitamins, minerals, and antioxidants. Experiment with the milk by adding flavors like vanilla or cinnamon or using it as a base for smoothies or other culinary creations.



*Figure 1: Sample of baobab milk produced using the developed recipe.*

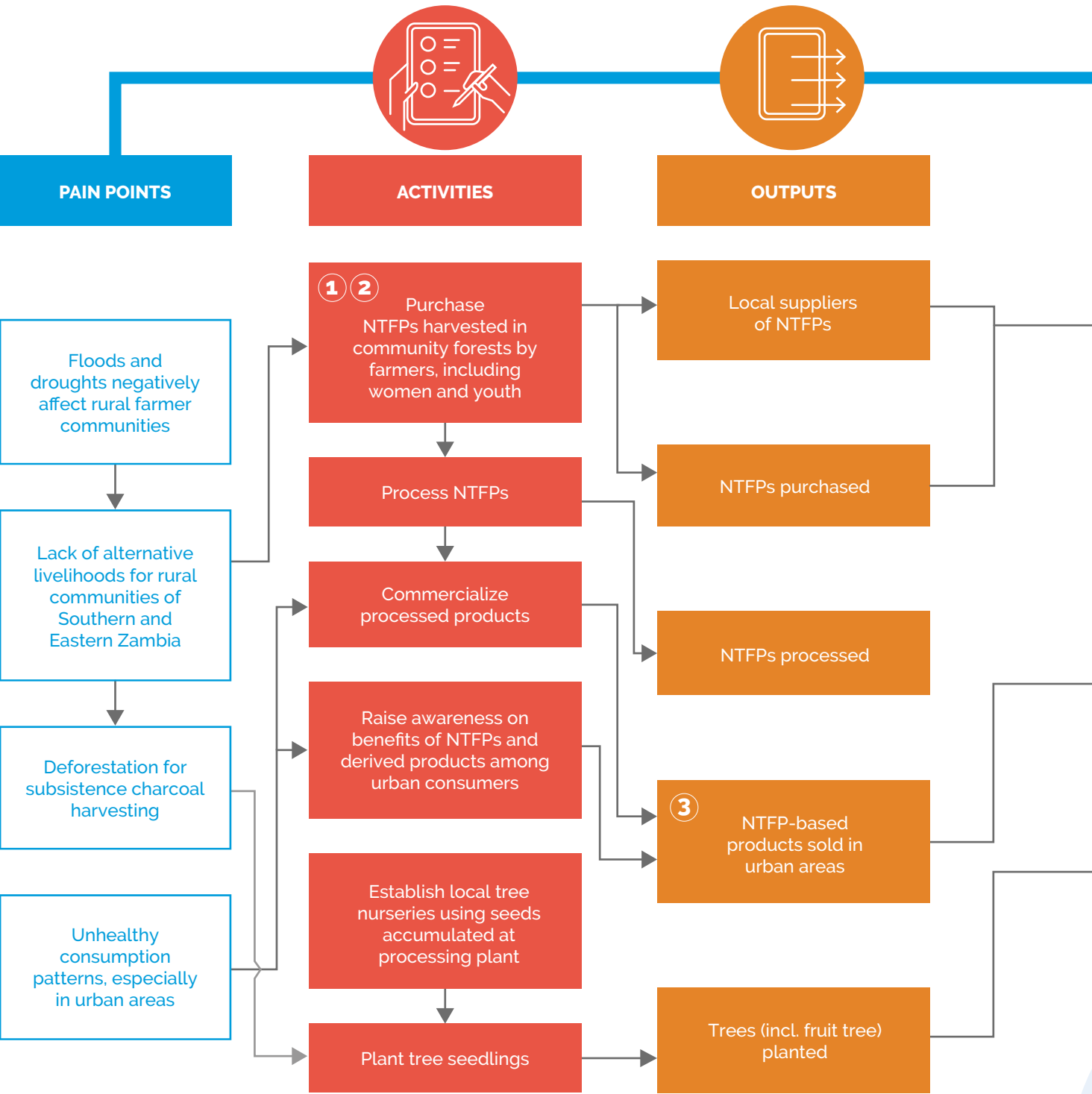


## Impact Measurement and Management

### Lead advisor profile

The impact pathway was delivered by Andreea Nowak, a social science researcher at the Alliance of Bioversity and CIAT, with interest in how to improve the assessment and reporting on climate adaptation and resilience. Within the FSA, her interests were to assess the current impact measurements and metrics used by the agribusinesses and develop additional indicators for impact measurement reporting, data collection, consolidation, and fundraising. Together with a team of researchers, she has conducted interviews and workshops and co-designed the below-impact pathway with the agribusiness.

The impact pathways



Assumptions: 1) Communities are willing and able to shift from charcoal production to NTFP-based livelihoods; 2) The local ecosystem can support a sustainable harvest of NTFPs; 3) There is sufficient market demand for NTFPs collected and processed by communities, 4) The income generated from the sale of NTFPs is sufficient to support livelihoods of local communities and discourages them from deforesting new areas for charcoal harvesting.

By focusing on indigenous non-timber forest products (NTFPs), Forest Africa Zambia Ltd addresses pressing environmental and social issues, creating alternative livelihood opportunities for rural communities through Ecosystem-based Adaptation and healthier consumption choices for consumers.



# ENDNOTES

- 1 <https://www.cgiar.org/>
- 2 UKAMA USTAWI. 2022. CGIAR Food Systems Accelerator Technical Report (Concept Note). CGIAR and IFDC.
- 3 <https://csa.guide/csa/what-is-climate-smart-agriculture>
- 4 *ibid.*
- 5 <https://www2.deloitte.com/us/en/insights/deloitte-review/issue-22/diversity-and-inclusion-at-work-eight-powerful-truths.html>
- 6 [www.stable-foods.com](http://www.stable-foods.com)
- 7 <https://techcabal.com/2022/11/17/stable-foods-raises-600000-to-help-kenyan-farmers-increase-output/>
- 8 [https://www.ifad.org/en/web/operations/w/country/kenya#anchor-country\\_documents](https://www.ifad.org/en/web/operations/w/country/kenya#anchor-country_documents)
- 9 USAID. 2020. Improving smallholder productivity and profitability. Feed the Future, The US Government Global Hunger and Food Security Initiative.
- 10 <https://techcabal.com/2022/11/17/stable-foods-raises-600000-to-help-kenyan-farmers-increase-output/>
- 11 Okou C, Spray J, Unsal DF. 2022. Africa Food Prices are Soaring Amid High Import Reliance: Factors include the region's heavy reliance on food imports and changes in food consumption and incomes. International Monetary Fund, Washington DC, USA. Available: <https://www.imf.org/en/Blogs/Articles/2022/09/26/africa-food-prices-are-soaring-amid-high-import-reliance>
- 12 USAID. 2020. Improving smallholder productivity and profitability. Feed the Future, The US Government Global Hunger and Food Security Initiative.
- 13 <https://techcabal.com/2022/11/17/stable-foods-raises-600000-to-help-kenyan-farmers-increase-output/>
- 14 *ibid.*
- 15 *ibid.*
- 16 UKAMA USTAWI. 2022. CGIAR Food Systems Accelerator Technical Report (Concept Note). CGIAR and IFDC.
- 17 <https://theinsectary.co.ke/>
- 18 *ibid.*
- 19 [https://www.ifad.org/en/web/operations/w/country/kenya#anchor-country\\_documents](https://www.ifad.org/en/web/operations/w/country/kenya#anchor-country_documents)
- 20 USAID. 2020. Improving smallholder productivity and profitability. Feed the Future, The US Government Global Hunger and Food Security Initiative.
- 21 <https://theinsectary.co.ke/>
- 22 *ibid.*

- 23 *ibid.*
- 24 UKAMA USTAWI. 2022. CGIAR Food Systems Accelerator Technical Report (Concept Note). CGIAR and IFDC.
- 25 <https://www.shambarecords.com/>
- 26 *ibid.*
- 27 *ibid.*
- 28 Heyer J. 1991. Poverty and food deprivation in Kenya's in Kenya's Smallholder Agricultural Areas. In: Dreze J and Sen A (eds). *The Political Economy of Hunger: Volume 3: Endemic Hunger*, Oxford University Press.
- 29 USAID. 2020. Improving smallholder productivity and profitability. Feed the Future, The US Government Global Hunger and Food Security Initiative.
- 30 Kahan D. 2013. Managing risk in farming: farm management extension guide. Food and Agricultural Organisation (FAO), Rome, Italy.
- 31 *ibid.*
- 32 <https://www.shambarecords.com/>
- 33 Food Systems Accelerator Info Pack. Climate Adaptation, Mitigation, and Productivity. CGIAR.
- 34 Batian Nuts Limited Public Case Report. 2022. Service Delivery Model Analysis. The Sustainable Trade Initiative. Available: [https://www.idhsustainabletrade.com/uploaded/2020/11/201126-Batian-Nuts-SDM-Case-Report\\_PUBLIC\\_v2.o.pdf](https://www.idhsustainabletrade.com/uploaded/2020/11/201126-Batian-Nuts-SDM-Case-Report_PUBLIC_v2.o.pdf).
- 35 *ibid.*
- 36 *ibid.*
- 37 Langyintuo A. 2020. Smallholder farmers' access to inputs and finance in Africa. In: Gomez et al., (eds). *The role of smallholder farms in food and nutrition security*. Springer Nature, Switzerland AG.
- 38 Heyer J. 1991. Poverty and food deprivation in Kenya's in Kenya's Smallholder Agricultural Areas. In: Dreze J and Sen A (eds). *The Political Economy of Hunger: Volume 3: Endemic Hunger*, Oxford University Press.
- 39 USAID. 2020. Improving smallholder productivity and profitability. Feed the Future, The US Government Global Hunger and Food Security Initiative
- 40 Langyintuo A. 2020. Smallholder farmers' access to inputs and finance in Africa. In: Gomez et al., (eds). *The role of smallholder farms in food and nutrition security*. Springer Nature, Switzerland AG.
- 41 Rapsomanikis G. 2015. The economic lives of smallholder farmers: an analysis based on household data from nine countries. Food and Agricultural Organisation of the United Nations. Rome, Italy.
- 42 Hinai AA, Jayasuriya H, Bathare PB, Al Shukaili T. 2022. Present status and prospects of value addition industry for agriculture produce- A review. *Open Agriculture*, 7: 207-216.
- 43 <https://mzeros.com/10-ways-a-farmer-can-add-value-to-agricultural-products/#:~:text=Value%20addition%20involves%20transforming%20raw,catering%20to%20diverse%20consumer%20preferences> (Assessed: 08 September 2023).
- 44 Batian Nuts Limited Public Case Report. 2022. Service Delivery Model Analysis. The Sustainable Trade Initiative. Available: [https://www.idhsustainabletrade.com/uploaded/2020/11/201126-Batian-Nuts-SDM-Case-Report\\_PUBLIC\\_v2.o.pdf](https://www.idhsustainabletrade.com/uploaded/2020/11/201126-Batian-Nuts-SDM-Case-Report_PUBLIC_v2.o.pdf).

- 45 Food Systems Accelerator Info Pack. Climate Adaptation, Mitigation, and Productivity. CGIAR.
- 46 <https://www.cgiar.org/news-events/news/cgiar-food-systems-accelerator-entrepreneur-spotlight-af-ri-farmers-market-leveraging-technology-to-empower-rural-farmers/>
- 47 Kropff W, Mabaya E, Afun-Odigan O, Girvetz E, Jarvis A. 2021. Digital Agriculture Profile: Rwanda. Rome, Italy. P: 18
- 48 <https://www.cgiar.org/news-events/news/cgiar-food-systems-accelerator-entrepreneur-spotlight-af-ri-farmers-market-leveraging-technology-to-empower-rural-farmers/>
- 49 World Bank; CIAT. 2015. Climate-Smart Agriculture in Rwanda. CSA Profiles for Africa, Asia, and Latin America, and the Caribbean Series. Washington DC, The World Bank Group.
- 50 Von Grebmer K, Bernstein J, Wiemers M, Reiner L, Bachmeier M, Hanano A, Towey O, Ní Chéilleachair R, Foley C, Gitter S, Larocque G, Fritschell H. 2022. Global Hunger Index: Food Systems Transformation and Local Governance. Bonn/Dublin.
- 51 <https://www.cgiar.org/news-events/news/cgiar-food-systems-accelerator-entrepreneur-spotlight-af-ri-farmers-market-leveraging-technology-to-empower-rural-farmers/>
- 52 *ibid.*
- 53 Food Systems Accelerator Info Pack. Climate Adaptation, Mitigation, and Productivity. CGIAR.
- 54 [https://issuu.com/cgiarfoodsystemsaccelerator/docs/230602\\_cgiar\\_food\\_systems\\_accelerator\\_info\\_pack/s/25728136](https://issuu.com/cgiarfoodsystemsaccelerator/docs/230602_cgiar_food_systems_accelerator_info_pack/s/25728136)
- 55 Papsomakis G. 2015. The economic lives of smallholder farmers: an analysis based on household data. Food and Agriculture Organisation of the United Nations, Rome, Italy.
- 56 Kropff W, Mabaya E, Afun-Odigan O, Girvetz E, Jarvis A. 2021. Digital Agriculture Profile: Rwanda. Rome, Italy. P: 18.
- 57 <https://www.cgiar.org/news-events/news/cgiar-food-systems-accelerator-entrepreneur-spotlight-af-ri-farmers-market-leveraging-technology-to-empower-rural-farmers/>
- 58 World Bank; CIAT. 2015. Climate-Smart Agriculture in Rwanda. CSA Profiles for Africa, Asia, and Latin America, and the Caribbean Series. Washington DC, The World Bank Group.
- 59 Von Grebmer K, Bernstein J, Wiemers M, Reiner L, Bachmeier M, Hanano A, Towey O, Ní Chéilleachair R, Foley C, Gitter S, Larocque G, Fritschell H. 2022. Global Hunger Index: Food Systems Transformation and Local Governance. Bonn/Dublin.
- 60 <https://www.aggregatortrust.rw/#> (Accessed: 07 September 2023).
- 61 Langyintuo A. 2020. Smallholder farmers' access to inputs and finance in Africa. In: Gomez et al. (eds). The role of smallholder farms in food and nutrition security. Springer Nature, Switzerland.
- 62 Rutayisire E, Marete O. 2020. Prevalence of iron deficiency anemia and associated factors among children aged six to fifty-nine months seen at Kabutare District Hospital. EC Nutrition, 14: 1-12.
- 63 Danquah I, Gahutu JB, Zeile I, Musemakweri A, Mockenhaupt FP. 2014. Anaemia, iron deficiency, and common polymorphism of iron regulation, TMPRSS6 rs855791, in Rwandan children. Tropical Medicine and International Health, 19(1): 117-112.
- 64 Matsiko E, Melse-Boonstra A, Tuyisenge L, Feskens EJM. 2019. Dietary iron intake does not predict anemia, iron deficiency, or iron deficiency anemia among 12-month-old Rwandan children. Current Develop-



- ments in Nutrition, P10-124-19.
- 65 Kim J, Wessling-Resnick M. 2014. Iron and mechanisms of emotional behavior. *The Journal of Nutritional Biochemistry*, 25: 1101-1107.
  - 66 <https://www.aggregatortrust.rw/#> (Accessed: 07 September 2023).
  - 67 *ibid.*
  - 68 <https://afchub.org/entrepreneurs/sheila-alumo-27954>
  - 69 *ibid.*
  - 70 *ibid.*
  - 71 *ibid.*
  - 72 [http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB\\_revised.pdf](http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB_revised.pdf)
  - 73 World Health Organisation. 2021. Levels and trends in child undernutrition: UNICEF/WHO/World Bank Group joint child malnutrition estimates key findings of the 2023 edition. World Health Organisation, United Nations Children's Fund (UNICEF) & International; Bank for Reconstruction and Development/ The World Bank.
  - 74 Kasiye I. 2007. Rural Credit Markets in Uganda: Evidence from the 2005/6 National Household Survey.
  - 75 Kasiye I. 2007. Rural Credit Markets in Uganda: Evidence from the 2005/6 National Household Survey.
  - 76 <https://www.globalforestwatch.org/dashboards/country/UGA/?category=undefined> (Accessed: 09 September 2023).
  - 77 [http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB\\_revised.pdf](http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB_revised.pdf)
  - 78 Langyintuo A. 2020. Smallholder farmers' access to inputs and finance in Africa. In: Gomez et al., (eds). *The role of smallholder farms in food and nutrition security*. Springer Nature, Switzerland AG.
  - 79 [http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB\\_revised.pdf](http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB_revised.pdf)
  - 80 <https://afchub.org/entrepreneurs/sheila-alumo-27954>
  - 81 [http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB\\_revised.pdf](http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB_revised.pdf)
  - 82 <https://www.globalforestwatch.org/dashboards/country/UGA/?category=undefined> (Accessed: 09 September 2023).
  - 83 <https://afchub.org/entrepreneurs/sheila-alumo-27954>
  - 84 [http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB\\_revised.pdf](http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB_revised.pdf)
  - 85 <https://afchub.org/entrepreneurs/sheila-alumo-27954>
  - 86 [http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB\\_revised.pdf](http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB_revised.pdf)
  - 87 [http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB\\_revised.pdf](http://www.pabra-africa.org/wp-content/uploads/2021/02/EADC-FINAL-PPT-World-Pulses-Day-2021-presentation-10-FEB_revised.pdf)

- 88 UKAMA USTAWI. 2022. CGIAR Food Systems Accelerator Technical Report (Concept Note). CGIAR and IFDC.
- 89 <http://yellowstarfoodprocessors.com/services/>.
- 90 *ibid.*
- 91 *ibid.*
- 92 *ibid.*
- 93 *ibid.*
- 94 *ibid.*
- 95 *ibid.*
- 96 Uganda Bureau of Statistics. 2020. Statistical Abstract. [https://www.ubos.org/wp-content/uploads/publications/11\\_2020STATISTICAL\\_\\_ABSTRACT1](https://www.ubos.org/wp-content/uploads/publications/11_2020STATISTICAL__ABSTRACT1)
- 97 Siddiqui F, Salam RA, Lassi ZS, Das JK. 2020. The intertwined relationship between malnutrition and poverty. *Frontiers in Public Health*, 8: 453. doi: [10.3389/fpubh.2020.00453](https://doi.org/10.3389/fpubh.2020.00453) \_2020.pdf
- 98 World Health Organisation. 2021. Levels and trends in child undernutrition: UNICEF/WHO/World Bank Group joint child malnutrition estimates: key findings of the 2023 edition. World Health Organisation, United Nations Children's Fund (UNICEF) & International Bank for Reconstruction and Development/ The World Bank.
- 99 Kasiyie I. 2007. Rural Credit Markets in Uganda: Evidence from the 2005/6 National Household Survey.
- 100 *ibid.*
- 101 <https://www.globalforestwatch.org/dashboards/country/UGA/?category=undefined>
- 102 Siddiqui F, Salam RA, Lassi ZS, Das JK. 2020. The intertwined relationship between malnutrition and poverty. *Frontiers in Public Health*, 8: 453. doi: [10.3389/fpubh.2020.00453](https://doi.org/10.3389/fpubh.2020.00453) \_2020.pdf
- 103 Govender L, Pillay K, Siwela M, Modi A, Mabhaudhi T. 2017. Food and nutrition insecurity in selected rural communities of KwaZulu-Natal, South Africa- Linking human nutrition and agriculture. *International Journal of Environmental Research and Public Health*, 14: 17. doi: [10.3390/ijerph14010017](https://doi.org/10.3390/ijerph14010017).
- 104 <https://www.snv.org/update/yellow-star-breaking-barriers-provide-low-income-people-nutrient-rich-foods> (Accessed: 13 September 2023).
- 105 International Labour Organisation. 2017. Improving market access for smallholder farmers: What works in out-grower schemes-evidence from Timor-Leste. Issue Brief No.1. International Labour Organisation, Geneva, Switzerland.
- 106 <http://yellowstarfoodprocessors.com/services/>.
- 107 Siddiqui F, Salam RA, Lassi ZS, Das JK. 2020. The intertwined relationship between malnutrition and poverty. *Frontiers in Public Health*, 8: 453. doi: [10.3389/fpubh.2020.00453](https://doi.org/10.3389/fpubh.2020.00453) \_2020.pdf
- 108 <https://www.snv.org/update/yellow-star-breaking-barriers-provide-low-income-people-nutrient-rich-foods> (Accessed: 13 September 2023).
- 109 <http://yellowstarfoodprocessors.com/services/>.
- 110 <https://www.snv.org/update/yellow-star-breaking-barriers-provide-low-income-people-nutrient-rich-foods> (Accessed: 13 September 2023).

- 111 *ibid.*
- 112 UKAMA USTAWI. 2022. CGIAR Food Systems Accelerator Technical Report (Concept Note). CGIAR and IFDC.
- 113 <https://farmdepot.co.zm/>.
- 114 Living Conditions Monitoring Survey, Central Statistical Office 2015.
- 115 *ibid.*
- 116 [https://idev.afdb.org/sites/default/files/documents/files/Evaluation%20Week%202022%20-%20BOOSTING%20SMALLHOLDER%20FARMERS\\_Dr%20Babafemi\\_Agrulture%20session%20\(1\).pdf](https://idev.afdb.org/sites/default/files/documents/files/Evaluation%20Week%202022%20-%20BOOSTING%20SMALLHOLDER%20FARMERS_Dr%20Babafemi_Agrulture%20session%20(1).pdf).
- 117 Langyintuo A. 2020. Smallholder farmers' access to inputs and finance in Africa. In: Gomez et al., (eds). The role of smallholder farms in food and nutrition security. Springer Nature,
- 118 <https://farmdepot.co.zm/>.
- 119 <https://www.cgiar.org/news-events/news/cgiar-food-systems-accelerator-entrepreneur-spotlight-for-rest-africa-zambia-ltd-redefining-fruit-processing-for-a-greener-future/>
- 120 <https://www.cgiar.org/news-events/news/cgiar-food-systems-accelerator-entrepreneur-spotlight-for-rest-africa-zambia-ltd-redefining-fruit-processing-for-a-greener-future/>
- 121 Living Conditions Monitoring Survey, Central Statistical Office 2015.
- 122 <https://www.cgiar.org/news-events/news/cgiar-food-systems-accelerator-entrepreneur-spotlight-for-rest-africa-zambia-ltd-redefining-fruit-processing-for-a-greener-future/>
- 123 Day M, Gumbo D, Moombe KB, Wijaya A, Sunderland T. 2014. Zambia country profile: Monitoring, reporting, and verification for REDD+. Occasional Paper 113, Bogor, Indonesia: CIFOR.
- 124 *ibid.*
- 125 *ibid.*
- 126 <https://www.cgiar.org/news-events/news/cgiar-food-systems-accelerator-entrepreneur-spotlight-for-rest-africa-zambia-ltd-redefining-fruit-processing-for-a-greener-future/>

# REFERENCES

UNDP, “Human Development Report 2016,” 2017, <http://hdr.undp.org/en/content/human-development-report-2016-overview>.

<https://www.forbes.com/sites/forbescommunicationscouncil/2022/03/03/the-importance-of-diversity-and-inclusion-for-today's-companies/?sh=957631649df9>

<https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters>

<https://hbr.org/2019/06/research-women-score-higher-than-men-in-most-leadership-skills>

<https://thebpp.com.au/gender-equality-and-social-inclusion/#:~:text=Having%20a%20diverse%20workforce%20and,views%20to%20solve%20complex%20problems.>

<https://hbr.org/2022/07/we-cant-fight-climate-change-without-fighting-for-gender-equity>

<https://therallyingcry.org/publications/>

<https://www.v4w.org/resources/gtbn-in-agriculture>

[https://wrld.unwomen.org/sites/default/files/2022-04/EN%20Women%20in%20Climate%20Resilient%20Agriculture%20in%20WCA\\_o.pdf](https://wrld.unwomen.org/sites/default/files/2022-04/EN%20Women%20in%20Climate%20Resilient%20Agriculture%20in%20WCA_o.pdf)

<https://www.un.org/ohrls/news/young-people%E2%80%99s-potential-key-africa%E2%80%99s-sustainable-development#:~:text=Africa%20has%20the%20youngest%20population,to%20realise%20their%20best%20potential.>

<https://www.nepad.org/blog/gendering-agriculture-empowering-african-women-farmers-using-modern-technologies>

<https://www.nationalgeographic.com/culture/article/partner-content-empowering-female-farmers>

<https://www.un.org/development/desa/disabilities/youth-with-disabilities.html>



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