

Final Report of Endline Evaluation of BLU 2 Jackfruit Value Chain Project



Kingdom of the Netherlands



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Executive Summary

Executive Summary

The Netherlands Embassy supports various agricultural value chains in Uganda, including jackfruit with the aim of facilitating bilateral trade between Uganda and Netherlands and improving livelihoods of smallholder farmers, especially women and youth.

Since 2022, the Embassy has funded the second phase of the Business Lab Uganda (BLU2) program, focusing on the jackfruit value chain to connect local producers to international markets and create business and job opportunities for smallholder farmers. With the program ending in December 2023, EKN commissioned an End-Term Evaluation to assess achievements, challenges, and document lessons learned to inform future export-oriented value chain interventions.

This report presents the findings of the evaluation based on data collected from review of 16 project documents and research publications, 6 Focus Group Discussions with jackfruit farmer groups and 14 key informant interviews with Embassy officials, program implementers and implementation partners including jackfruit suppliers and processors.

The report is organised in seven chapters, namely: Introduction which provides a background to the program and its objectives; Methodology chapter which highlights the evaluation design, data collection and analysis methods, Program Overview chapter which explores the program's design, implementation and results; Evaluation Findings which provides detailed responses to the evaluation questions. The remaining chapters present the evaluators' conclusion, recommendations and lessons learned.

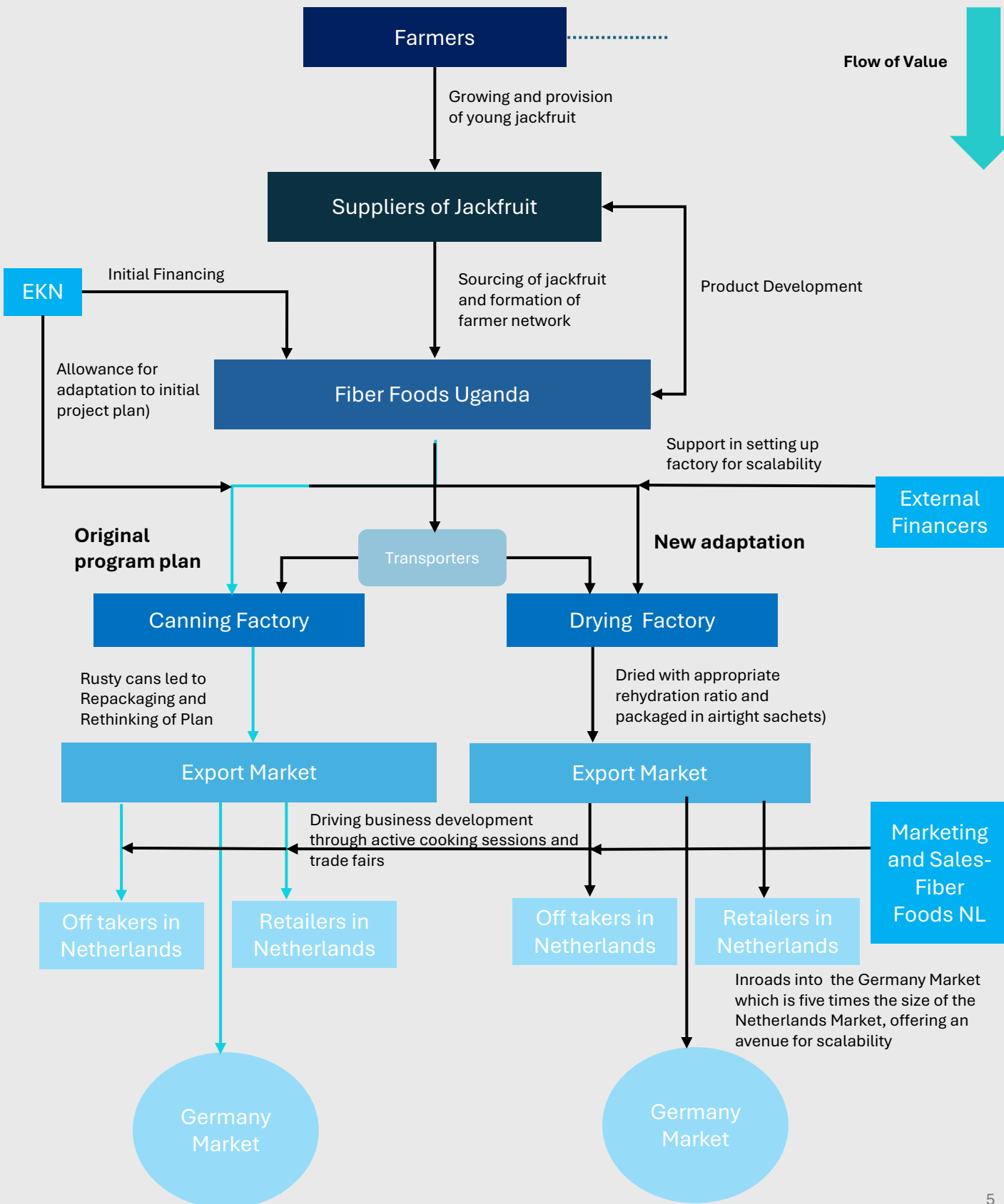
The results of the evaluation show that BLU2 program successfully established a sustainable jackfruit value chain, exceeding expectations by facilitating EUR 3.4 million in trade and linking Ugandan farmers and SMEs to the Dutch market. The program's "market-first" approach, driven by commercial principles and adaptive product and process design, was instrumental in achieving its outcomes. Strategic alignment with SDGs and Uganda's National Development Plan III further reinforced its impact. However, challenges included unmet gender inclusivity goals - with women not benefiting as much as their male colleagues within the same stage of the value chain, especially in the sourcing of jackfruit; and stakeholder management issues, notably dissatisfaction among suppliers excluded from the network. Additionally, while the program proposed synergies with Hortimap, broader collaborations with other initiatives were limited, potentially to avoid bureaucratic delays. Overall, BLU2 serves as a model for market-driven and adaptable program design in developing new export-oriented value chains.

The evaluation recommends that to enhance commercial and social outcomes of BLU2, there was need for strengthening stakeholder engagement across the value chain; improving gender intentionality in program design with more deliberate women empowerment actions especially among smallholder farmers; and leveraging partnerships to sustain future value chain initiatives.

Following are the key lessons learned from the evaluation:

1. Market-Driven approach is effective for value chain development where market demand drives product and process development.
2. Flexibility and adaptability are critical success factors especially for untested value chains by providing the ability to iterate on product and process designs.
3. Leveraging synergies enhances sustainability and building partnerships with other initiatives can strengthen program impact, although managing multiple stakeholder interactions and interests requires careful consideration to avoid delays. Nonetheless, stakeholder engagement is crucial to avoid downplaying program success and impacts due to misconception.

Summary of Value Chain



Chapter One: Introduction to the Evaluation

Introduction

Background

Jackfruit processing is an globally emerging industry with potential to add significant value to Africa’s agricultural sector and contribute tremendously to export earnings. In Uganda, the Embassy of the Kingdom of Netherlands (EKN) supports the several agricultural value chains, including jackfruit, with the overall aim of increasing incomes especially for women and youth. This is in line with the Embassy’s objective of facilitating bilateral trade between Uganda and the Netherlands.

Since 2022, the Embassy has supported the second phase of the Business Lab Uganda (BLU2) programme to implement interventions aimed at improving livelihoods and resilience of farmers to economic shocks through improved production and productivity. BLU2 considered different value chains but focused on the Jackfruit value chain.

With the completion of the BLU2 Program in December 2023, EKN sought to establish the program’s achievements, the challenges faced in attaining the set objectives as well as lessons that can be applied to other export-oriented value chains, particularly those that have not been widely explored. Consequently, EKN contracted ASIGMA to conduct an End-Term Evaluation of BLU2 Program documented in this report.

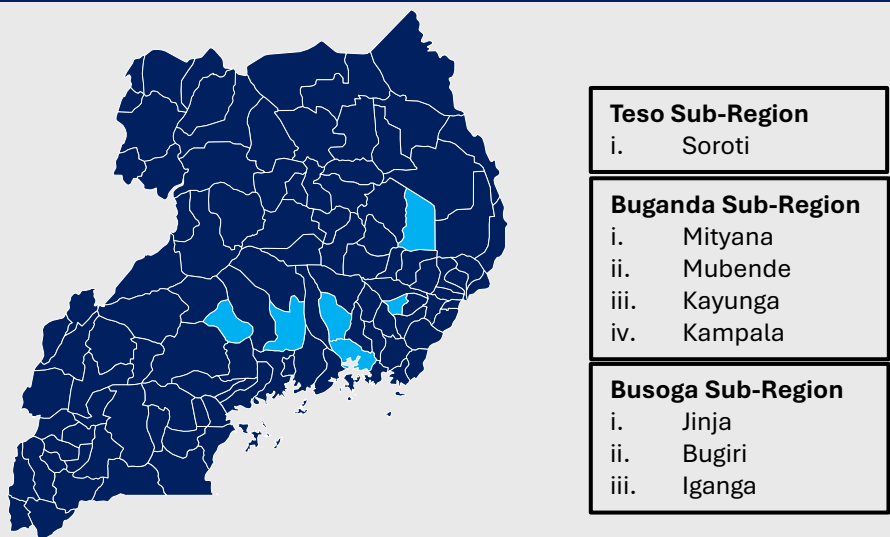
Purpose of the Evaluation

The evaluation sought to assess the success of the BLU2 and the challenges faced in achieving its objectives to enhance the design and implementation of similar programs in future.

Specifically, the evaluation aimed to:

- 1) Assess the achievements of the program with respect to set objectives
- 2) Establish success factors and level of program adaptability
- 3) Document lessons learned from the program’s implementation
- 4) Provide recommendations based on findings of the evaluation

Figure 1.1: Geographical Scope of the Evaluation



Methodology

Evaluation Design

We employed a realist evaluation approach which is a theory-driven method of evaluation that sought to understand how and why programs work (or don't work) in specific contexts. This approach focused on the underlying mechanisms that generate outcomes and how these mechanisms were influenced by the environment in which the program operated.

In the context of this jackfruit value chain program, the realist evaluation helped in understanding how the program's interventions—such as improving farmer practices, establishing market linkages, and enhancing supply chain management—worked differently across various regions and stakeholder groups. By focusing on the interaction between context, mechanisms, and outcomes, the evaluation provided deeper insights into the conditions under which the program was most effective, thereby informing future program design and implementation strategies.

Sampling Strategy

We adopted a mix of purposive sampling and snowball sampling for selection of respondents for the qualitative aspects of data collection. Purposive sampling was utilized to include individuals with unique insights or perspectives such as researchers on jackfruit and program implementing partners. Snowball sampling was used to reach harder-to-find respondents such as trade partners or new off-takers.

Data Analysis Methods

Our analysis encompassed quantitative, qualitative and market analysis techniques. This made sure that program results and evaluation questions were adequately addressed.

Quantitative Analysis: Descriptive statistics were used to summarize data obtained mainly through secondary data sources including program design documents and progress reports. This involved simple counts of frequencies as well as computation of averages. We additionally developed a model to estimate the growth potential of the jackfruit value chain.

Quantitative data analysis was conducted using MS Excel.

Qualitative Analysis: Thematic analysis was used to identify and categorize common themes and patterns in the qualitative data. Transcripts from KIIs and FGDs were coded to highlight recurring topics, sentiments, and key points of discussion. This helped in understanding the qualitative aspects of the project, such as stakeholder experiences, challenges, perceived successes and failures as well as recommendations. For this particular analysis, we used ATLAS.ti23 to extract themes and key words which will help us form nuanced perspectives around the execution of the endline evaluation.

Data Collection Methods

As part of the data collection, we reviewed 13 project documents and 3 publications on jackfruit production in Uganda, conducted 11 key informant interviews with implementing partners, 6 FGDs with farmer groups and 3 in-depth interviews with value chain researchers as detailed below.



Literature Review

- Original Proposal
- PrimeJack PitchDeck May 2024 and Sales Pitch Presentation
- Original Contract and Top up and Extension Contract
- BLU2 Impact Stories
- BLU 2021, 2022, and 2023 Financial Narratives, Audited Financial Reports (2021-2023)
- Original Budget and Original Budget per Outcome area
- Activity cycle memorandum (Activity Appraisal Document (BEMO))
- Supplier Profile
- BLU2 2021, 2022, 2023 and Final Reports
- Academic journals: Justine Nakintu et al, 2019 Ethno-varieties and distribution of jackfruit tree (Artocarpus heterophyllus Lam.) in Uganda: implications for trade, food security and germplasm conservation. East African Journal of Science, Technology and Innovation 1(1): 27-51, National Development Plan III (NDP III)



13 Project Documents



3 Research Publications



Focus Group Discussions

- Focus Group Discussion with Farmers in Mityana (Zahra)
- Focus Group Discussion with Farmers in Mubende (UCFA)
- Focus Group Discussion with Farmers in Bugiri (Busaino)
- Focus Group Discussion with Farmers in Kayunga (Enimiro)
- Focus Group Discussion with Farmers in Kayunga (Jakana)
- Focus Group Discussion with Farmers in Soroti (Afyasili)



6 FGDs



Key Informant Interviews

Stakeholder	Key Informant
Fiber Foods Project Team	• Agronomist
	• Trade and Strategy Lead
	• Monitoring and Evaluation Lead
EKN	• Policy and Regulatory Officer
Enimiro	• Managing Director
	• Head of Operations
Zahra	• Managing Director
Jakana	• Head of Operations
Flona	• Co-Founder
Busaino	• Farm Manager
Uganda Coffee Farmers Alliance (UCFA)	• Managing Director
Afyasili Fruits Limited	• Chief Executive Officer
Transportation Company	• Logistics Coordinator



12 respondents



In-depth Interviews

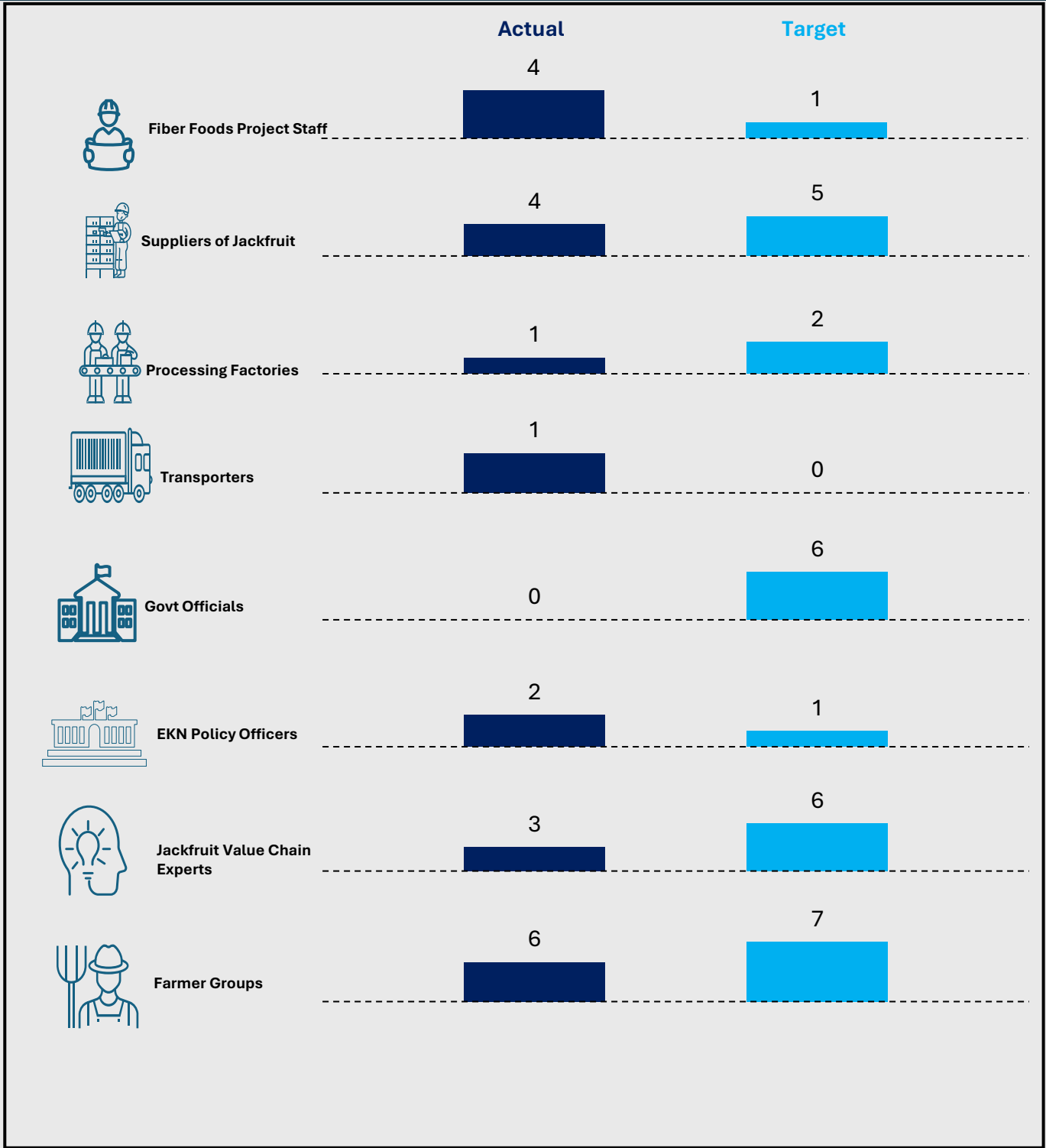
- Key Informant Interviews with Jackfruit Value Chain Researchers (3)
- Key Informant Interviews with EKN Policy Officers (2) –Former Trade and Policy Officer, Current Trade and Policy Officer



5 respondents

We utilized a mixed methods approach to quantify and provide nuanced understanding of the evaluation insights. In terms of quantitative data collection, we collected figures on indicators mainly from literature review. For qualitative data collection, we extracted opinions, attitudes as well as recommendations that will form the basis for improvement of future similar programs.

Summary of Coverage of Data Collection



Note: The program worked within the existing policy and regulatory structures of government and did not receive any special government support or incentives. This justified the need for no special government interview but a local representative from Fiber Foods in charge of regulatory compliance provided much needed insight into engagement with different government entities.

Evaluation Criteria

The end-term evaluation assessed the achievements of the program by answering a set of evaluation questions in response to the evaluation Terms of Reference. The evaluation questions align to the traditional DAC/OECD evaluation criteria, in particular, relevance, effectiveness, coherence, impact and sustainability while accommodating the nuances of the project.

The main evaluation questions were:

- 1 Which parts of the original program were executed or adapted?
- 2 Would the same outcomes have been achieved with the original plan?
- 3 How do participating companies rate the program's success?
- 4 What are the most valuable achievements according to partners?
- 5 What suggestions do stakeholders have for improving the program?
- 6 What obstacles did partners face, and how could they have been addressed more efficiently?
- 7 How flexible was EKN in responding to program needs?
- 8 What lessons can be learned for introducing new Ugandan products to international markets?
- 9 Could this value chain have been developed without EKN's support, and how?
- 10 What were the key success factors and limitations of the program?

Limitations to the Evaluation

Whereas the evaluation was conducted within the stipulated timeline of two (2) months, it did not fall short of limitations. Nonetheless, the evaluation team took relevant measures to ensure an independent objective assessment of the program.

Below are the key limitations and mitigation measures of the BLU2 End-term Evaluation.

Challenges	Mitigation Measures
Refusals to participate by project partners	We endeavored to establish and address the reasons for refusal. In critical cases, refusals were escalated to the EKN team for conversion.
Limited sample space of jackfruit value chain researchers due to nascency of the value chain.	We used the snowballing approach to acquire experts sequentially as well as establishing rapport for interviews.
Limited jackfruit value chain publications to inform key aspects of the evaluation design and analysis.	We concentrated on reviewing project documents and reviewed the few available research publications in depth. Triangulation of findings with studies in similar value-chains.
Scattered and hard-to-locate respondents, particularly rural smallholder farmers.	Use of local mobilisers to organise farmers and carry out pre-correspondence calls. Revised the study approach away from farmer KIIs to FGDs with farmer groups. The groups were easier to locate and access as opposed to individual farmers.
Delays and difficulty in identifying respondents from key value chain actors, particularly in the public sector. Given that the program did not partner with any government institution, we failed to find officials knowledgeable about the value chain	We leveraged the experience of the project teams that were responsible for engaging government officials under BLU2
Lengthy delay between program close and implementation of the evaluation. Consequently, some of the key informants had been reassigned or moved on to other ventures.	We were able to eventually trace and locate all key personnel that were involved in the program and conduct remote interviews.

Chapter Two:

Overview of the BLU Program

Assessment of the Program's Design

In order to assess the level of adaptability of the program and factors that may have contributed to its success or failure, it is imperative to unpack the program's design and context within which it was implemented. This will necessitate a review of the program's design framework and its underlying programmatic logic.



Program Design Framework

This evaluation considered the project proposal document developed by Business Lab Uganda (BLU) as the baseline strategy of the jackfruit value-chain development initiative. Below are the main observations on the program design framework based on review of the proposal.

Strategic Alignment of the Program

- The program responds to SDGs 1, 2, 5, 8, 13, and 17 on poverty, hunger gender equality and women empowerment, decent work and economic growth, climate change, and global partnerships for sustainable growth through trade, respectively.
- Clear alignment of all 4 result areas with Dutch MFA Results Framework on PSD,
- The program resonated with Uganda Vision 2040 and specifically with Uganda NDP III theme: “Sustainable Industrialisation for inclusive growth, employment and sustainable wealth creation” with a focus on private sector-driven growth.

Timeliness

It is not clear whether the programme planned to coincide with and benefit from any major strategic initiatives. However, the program happened against the backdrop of COVID-19 and its impacts.

Partnerships

As part of its sustainability model, the BLU2 Program proposal identified Hortimap - an EKN supported program implemented by Technoserve, for collaboration as a pilot to test its service model. Beside this, the proposal did not mention any other synergetic partnerships with ongoing donor, public or private sector initiatives beyond the direct value chain actors targeted by the program as implementing partners.

Value Chain Development Approach

From the outset, the program emphasized a “market first” approach anchored in a commercially viable self-sustaining Trade Support Organisation to value chain development.

Cross Cutting Issues

- Gender inclusion was informed by a gender analysis study in the program appraisal. However, the proposed BLU2 interventions aiming to promote gender equality fall short of addressing underlying social and cultural norms that perpetuate gender inequality.
- Climate change adaption, mitigation and environmental considerations were incorporated in the design with clear interventions for farmers.



Underlying Program Logic

Logical Linkage of Results

The program logic follows a condensed results framework articulating the envisaged output-outcome/impact logic with an implicitly documented theory of change of how to “*grow good companies bigger (more profit, more employment) and better (more climate friendly, adding more value to people and planet, creating more decent work for Ugandan women) in the long run.*”

However, there is need to unpack the programme activities and clearly link them to the desired outputs, an element that was lacking in the program proposal.

Results Measurement Framework

The program proposal’s results framework included a set of indicators that satisfy the SMART criteria which were used to track progress and evaluate programme performance. Most of the quantitative findings of this evaluation rely heavily on the indicators and targets that were documented in the program proposal.

Underlying Assumptions

The program’s logical framework contains a set of assumptions for the program goal and outcomes. Whereas assumptions are supposed to be conditions outside the program’s control, it is evident that some of the assumptions were either within the control of the program or were too critical for the success of the program and should have been provided for in the design.

The success of BLU2 was premised on a ready EU market, for example, and this cannot be left as an assumption but should be verified by studies or deliberately created.

Overview of Program Implementation

PROGRAM STRUCTURE

How the program was managed

The effective management of the jackfruit value chain program was achieved through the collaborative efforts of EKN, Fiber Foods, farmers, and suppliers. This collaborative approach was essential in achieving the program's objectives and enhancing the overall impact on the jackfruit value chain. The key roles of the main stakeholders are highlighted below:

Embassy of the Kingdom of the Netherlands (EKN)

- Provided strategic oversight, guidance, and expertise on international agribusiness and women's empowerment.
- Ensured financial support, transparency, and effective resource management.

Fiber Foods

- Offered technical expertise in processing and quality control, ensuring high product standards.
- Provided training to field teams and led product innovation to create marketable jackfruit products.
- Product innovation and development. Fiber Foods played a crucial role in product development, working with partners to introduce new processing techniques that improved the quality and consistency of jackfruit products.

Farmers

- Served as primary producers, ensuring a steady supply of jackfruit enabling the program to meet production and market demands.
- Adopted sustainable farming practices and engaged in training, contributing to quality standards.

Suppliers

- Acted as intermediaries, managing sourcing, transportation, and delivery to processing facilities.
- Addressed supply chain challenges and collaborated with extension teams to maintain product quality.

Program Organisation

The BLU program, registered as **Linking Pin Africa Ltd (LPA)**, had a structured leadership hierarchy that ensured effective management and accountability. The Team Lead was responsible for overseeing day-to-day activities, face-to-face supervision, and business support, reporting directly to two Strategic Leads/Directors, **Ineke Aquarius and Inez van Oord**. Ineke managed areas like Impact on Gender, MEL, Brand Education, and Finance, while Inez handled Commercial Finance, Partnerships, Trade Support, and Sales. They collaboratively supervised the Team Lead, balancing both social impact and commercial objectives.

The program was overseen by a Board with expertise in international agribusiness, legal/tax/finance, and women's economic empowerment, ensuring strategic alignment. Additionally, Trade Link was established as a commercial entity to facilitate regional and international trade between Dutch companies and Uganda within sustainable value chains, supporting the program's goals. This was later dropped. Overall, the alignment between daily operations and long-term hierarchical structure ensured strategic objectives were met.

STAKEHOLDER ENGAGEMENT

Program Execution and Communication

The program faced challenges in execution, with many participants either unaware or partially aware of its details, indicating gaps in outreach and engagement strategies. This inconsistency in communication likely led to varying levels of involvement, with few participants staying engaged long-term. A more strategic communication plan could have ensured broader awareness, aligning participants with the program's objectives and promoting consistent engagement.

Collaboration with Stakeholders

The program established key collaborations with external partners like Fiber Foods, MIT, UC Davis, and Makerere University. These partnerships led to innovations, such as developing a hybrid dehydrator that improved the drying process, showcasing the program's ability to leverage external expertise for sustainability and technological advancement.

Coordination and Training

Coordination and training were crucial, providing skills development for employees and farmers. Training on jackfruit quality standards and safety measures enhanced production efficiency and adherence to labour standards, with only individuals over 18 participating. Safety training, including having a trained first aider, helped reduce accidents, reflecting the program's commitment to building stakeholder capacity.

Adapting and Addressing Challenges

The program demonstrated resilience by continuously refining the value chain despite obstacles. Feedback indicated that developing new value chains requires research, learning from mistakes, and adaptability. Collaborations with universities emphasized the program's commitment to scalability and enhancing the jackfruit value chain.

The stakeholder engagement approach involved training, sustainability practices, and collaborative partnerships. However, more consistent communication and outreach could have ensured a clearer understanding of the program's goals. Improved coordination, transparent communication, and ongoing engagement would enhance alignment between stakeholder expectations and program objectives in future initiatives.

Chapter Three: Evaluation of Program Development and Implementation

Evaluation of Program Development & Implementation

The end-term evaluation assessed the achievements of the program by answering a set of evaluation questions in response to the evaluation Terms of Reference. The evaluation questions align to the traditional DAC/OECD evaluation criteria, in particular, relevance, effectiveness, coherence, impact and sustainability while accommodating the nuances of the project.

The questions that this evaluation sought to answer as elaborated in Chapter Three are summarized below:

- 1 Which parts of the original program were executed or adapted?
- 2 Would the same outcomes have been achieved with the original plan?
- 3 How do participating companies rate the program's success?
- 4 What are the most valuable achievements according to partners?
- 5 What suggestions do stakeholders have for improving the program?
- 6 What obstacles did partners face, and how could they have been addressed more efficiently?
- 7 How flexible was EKN in responding to program needs?
- 8 What lessons can be learned for introducing new Ugandan products to international markets?
- 9 Could this value chain have been developed without EKN's support, and how?
- 10 What were the key success factors and limitations of the program?

Question 1 - Which parts of the original program were executed or adapted?

Program Component	Planned	Adapted	Rationale for Adaptation
Organizational Structure and Team Composition	Female founders and owners CEO was expected to be Milly Roy	No adaptation in ownership CEO was changed to Michael Swank	<ul style="list-style-type: none"> New CEO has experience in organizational scale up and investor tracks. He also has long term commitment which promotes sustainability
Organizational Identity	Founded as Linking Pin Africa with Tradelink registered as a facilitator of international trade	Morphed into Fiber Foods Uganda and Fiber Foods Netherlands	<ul style="list-style-type: none"> Creation of one unified strong brand.
Partnerships with Processors	Working with many factories to develop a most viable product and drawing lessons from each	Working with Enimiro to set up a model factory in Kayunga	<ul style="list-style-type: none"> One model factory built together as a pilot as a strategy for growing capacity and attaining optimisation
Partnerships with Suppliers and Farmer Networks	Developing a strong network of farmers and suppliers of jackfruit	<p>7 suppliers initially to now 4 (Jakana, Zahra, Enimiro, Busino).</p> <p>Some farmers have been dropped out of the network as they are connected to suppliers who dropped out as well.</p> <p>Network still maintained</p>	<ul style="list-style-type: none"> Increased costs associated with transporting jackfruit from locations such as Mubende caused them to drop suppliers and sourcing from these areas. Disagreement with suppliers over certain terms of engagement for example cost and quality considerations
Partnerships with Service Providers – Transporters, Packaging Partners	Initial design was for young JF to be collected and ferried to Kenya for processing and onward shipping to NL	This has since been adapted to allow for in-country processing of JF – with the hope that other suppliers would invest in their own processing set-up. To-date, no supplier has been able to set up their own factory	<ul style="list-style-type: none"> Need to build local content within Uganda and optimize operational costs

Question 1 - Which parts of the original program were executed or adapted?

Program Component	Planned	Adapted	Rationale for Adaptation
Product Sourcing	Source from suppliers who have an established farmer network	<p>Drop off of some suppliers reduced number of districts from which jackfruit was sourced.</p> <p>Development of patent for sustainable sourcing</p>	<ul style="list-style-type: none"> Sourcing from Kenya provided a mitigation measure against sourcing from only Uganda. Additionally, existing political economic challenges with the introduction of Uganda Anti-Homosexuality Bill strengthen the need to source Kenya as an alternative. Coming up with a patent to promote sustainable sourcing and fair prices for farmers JF – focus on Central region; Western and NE were dropped for several reasons mainly because travel to distant areas was costly as well as produce from these areas had lower quality and lower rehydration ratios.
Cashflow	Organise cashflow instrument or partner with suppliers that offer services on credit	No adaptation	<ul style="list-style-type: none"> EKN grant and loan from Invest International through Dutch Good Growth Fund (DGGF) solved cashflow challenges and suppliers accepted late payments in some scenarios.
Processing	Canned jackfruit product was to be exported.	Shift from an already existing canned jackfruit product to dehydrated jackfruit.	<ul style="list-style-type: none"> The first shipment of canned jackfruit had rust on the cans obtained during transportation and this had to be repackaged. There was no local capacity for this type of product Dehydrated young jackfruit was a blessing in disguise due to existence of drying facilities locally as well as growing health conscience in the Western world. This provided an opportunity for scaling up

Question 1 - Which parts of the original program were executed or adapted?

Program Component	Planned	Adapted	Rationale for Adaptation
Solving Tax Challenges	Make agreements with URA and UNBS to facilitate first shipment and obtain a tax waiver	No special agreements or concessions reached with the different regulatory bodies	<ul style="list-style-type: none"> Fiber Foods had to work within the existing regulatory environment and adapt to the local environment within Uganda.
Organic Certification	Build a committed network of organic certified suppliers of fresh fruit Work closely with organic certifiers such as ECOCERT AND NOGAMU	No work done with organic certifiers	<ul style="list-style-type: none"> Necessary partnerships were built with organic certified suppliers who have experience in export market such as Jakana, Zahra
Quality Standardisation	Work with local value chain experts (Dr Abel) and Team Taste Makers to develop dehydrated jackfruits and sales	Changes in product concepts along the way for minimum viable product	<ul style="list-style-type: none"> The team did experimentation to come up with a most viable product especially around the canned product. Most notable discovery was use of citric acid instead of ascorbic acid to prevent browning

Question 1 - Which parts of the original program were executed or adapted?

Program Component	Planned	Adapted	Rationale for Adaptation
Monitoring and Evaluation	Baseline, midterm and final evaluation to be conducted	Only endline evaluation conducted	<ul style="list-style-type: none"> Shift in project priorities and finances towards comprehensive development of value chain.
TA & Business Development	Personal coaching and peer-to-peer learning	Learning from other partners to develop product along blended meat market segment.	<ul style="list-style-type: none"> Expansion of the market coverage as well as demand for product as a key ingredient for healthier eating for example blended meat, vegan fast foods
Intercropping Supply Model	Build on infrastructure by well-established value chains such as coffee and vanilla to source fresh fruits	Using network of suppliers to develop own traceability system	<ul style="list-style-type: none"> Markets in Europe especially for sustainable value chains have a strong affinity for knowledge about origin of products consumed.
Strong Brand	Driving brand awareness led by a Mikono women led brand	<p>There has been increased public awareness due to the success of the program particularly interviews with reputable media such as CNN, New Vision</p> <p>Brand developed under Fiber Foods</p>	<ul style="list-style-type: none"> The brand has exceeded expectations with traction being gained on both a local and international level

Question 1 - Which parts of the original program were executed or adapted?

Key Area	Planned	Adapted	Rationale for Adaptation
Destination Market	Closing of export deals especially in the Netherlands	Entry to new markets especially in Europe and US	<ul style="list-style-type: none"> Beyond the Netherlands, there are bigger markets for the product in other countries such as Germany which is projected to be five times bigger.
Gender	Development of a gender strategy based on the six tenets of the gender analysis framework that is access, beliefs, practices and participation, time and space, legal rights and status and, decision making	Shortfalls in implementation of gender strategy especially in tenets such as access which are still dominated by men	<ul style="list-style-type: none"> Value creation formed the core of the value chain. Full blown implementation of gender aspects after creation of value will push the gender agenda further.
Climate Adaptation	Promotion of an organic and circular economy Promotion of sustainable farming practices	Shift to dried young jackfruit increased sustainability footprint	<ul style="list-style-type: none"> Dried jackfruit was a blessing in disguise as it was a more sustainable product than canned jackfruit. This aligned with the growing health conscience in the Western world as people were taking interest in blended meat.
Product Mix	Initial products included canned jackfruit, pineapple and dried jackfruit	Dominant product is now dried young jackfruit	<ul style="list-style-type: none"> Innovative dried young jackfruit took priority due to its immense market potential for example order from a major international brand such as McDonald's

Adaptability mechanisms at the operations level

In the implementation of the BLU program, several deviations from the original design occurred due to a combination of internal and external factors. These deviations had significant implications on timelines, resource allocation and program outcomes as elaborated below:

1

Timeline Delays: The program experienced delays in training and processing methods due to logistical challenges and resource constraints, which affected the roll-out of standardized practices. To address this, the program introduced flexible training schedules and remote engagement options using digital tools such as the BLU traceability app, reducing the reliance on in-person sessions. Processing companies adjusted their quality control protocols and improved operational workflows to meet new timelines, while on-the-ground extension teams provided essential support to farmers and suppliers. This adaptability allowed the program to maintain progress and uphold quality standards despite the delays.

2

Addressing Cultural and Superstitious Labor Challenges: Unexpected backlash from farming communities arose due to cultural superstitions about harvesting young jackfruit. This challenge was managed by engaging community leaders to educate farmers on the value of selling young jackfruit. In areas where resistance persisted, the program adapted by shifting sourcing to more receptive regions, showcasing flexibility in addressing unforeseen cultural barriers.

3

Changes in Program Engagement and Supply Sources: Sourcing was planned primarily from a few targeted regions that could easily be accessed from processing centres, mainly focusing on the central region where jackfruit was abundant. Due to rising demand, sourcing expanded to multiple regions, including Pallisa, Budaka, and Iganga. This expansion aimed to meet the volume requirements set by BLU. Increased demand for larger quantities of jackfruit drove the need to expand sourcing regions. Additionally, seasonal scarcity and transportation issues made it necessary to adapt. Although this expanded the supply network, it also introduced new logistical challenges, including higher transportation costs and the need to negotiate with more farmers.

4

Adaptations in Gender and Inclusion Strategy: The program's initial strong emphasis on gender impact and women's economic empowerment was modified, with certain gender-focused interventions integrated into broader commercial activities, particularly for partner SMEs. As commercial ambitions grew, it became challenging to maintain standalone gender-specific initiatives, necessitating their integration into the larger trade support model. More specifically, most downstream activities were a preserve for men due to social cultural norms.

Question 2. Would the same outcomes have been achieved with the original plan?

The overarching outcome was to increase the sales volume for benefiting companies in the BLU2 network to EUR 1.37 million. At the end of the program in 2023/24, BLU2 had registered deals worth EUR 3.848 million. It is unlikely that the program would have exceeded its target with the original plan.

Key program adaptations that contributed to this success include:

1. The program targeted 1-3 Dutch companies in each of the created value chains such as anned jackfruit, banana blossom, shea nut. However, BLU2 eventually identified and focused on the dried-jackfruit value chain which had an assured market in the EU. Consequently, the program was able to concentrate its resources to ensure the VC was developed efficiently to meet EU market standards.
2. BLU2 was able to register a patent for dried jack fruit which ensured among others that Fiber Foods was the sole supplier of dried jackfruit globally. Furthermore, due to the patent, the quality of dried jack-fruit is protected from adulteration by companies with inferior production processes.
3. Whereas the original plan highlighted organic certification for fear of downstream rejection or price discounts on non-certified products, it later emerged that the EU blended meat market was not conscious-driven towards organic certification. This resulted in ease of entry to EU market, faster/shortened route to market and attendant downstream benefits to value chain actors.

Below is a summary of outcomes that accrued from the adapted approach

Outcome Indicator	Target	Status at end of BLU2	Would Target have been met with original plan?
Sales volume for the benefiting companies in the BLU2 network	EUR 1.1 million	EUR 3.348 million	Unlikely
No. of Dutch companies working in Uganda as a result of BLU.	1-3 per value chain	Through provision of services to BLU, 8 companies started working in Uganda. These include; HFC Food consultancy BV, Team Tastemakers, Beeholder BV, Promising Sources, Purpose Pioneers, Studio Hester Ezra, AJCM Holding BV, Mr Kitchen	Unlikely
No. of off-takers of BLU's products in the Netherlands	1-3 per value chain	There are 14 off-takers for the dehydrated jackfruit from BLU. These include; Pennings, Hutten, BidFood, Sababa, McCain/Mora, Le Frique, Van Gelder, Dr. Oetker, Zwanenberg, deKoning, Cargill, Hak Professional, Bokall, Four Seasons	Unlikely
Constant stream of supply (No. of containers)	1 per week	6 containers per year	Unlikely
No. of companies that benefit from the constant stream of orders with an increase of t/o or profit	50 no.	47 including 37 farmer groups, 2 processors, 5 fruit suppliers & 2 transport companies.	Unlikely
No. of new jobs and business opportunities.	5-10 p. company (250-500 overall)	60 jobs in processing facility 60 extension workers 1,313 farmers	Unlikely

Question 3. How do participating companies rate the program's success?

To a larger extent, positively...

Participating companies highlighted several key benefits which included;

- New knowledge and skills.
- Access to new market.
- Increase in revenue.
- Expansion of their workforce.
- Product diversification.
- Improved collaboration with their farmer network.
- Increased awareness of the available opportunities in the jackfruit value chain.

To a lesser extent, negatively...

Some companies raised concerns such as;

- The lack of clarity on how to independently utilize the acquired knowledge to continue processing dehydrated jackfruit due to the patent. This left them feeling restricted from processing it on their own.
- The supplier fee did not sufficiently cover expenses such as transportation, as suppliers had to source from multiple districts to meet demand, nor did it account for compensation costs for workers injured during the harvest.
- A breach in transparency as the implementers of the program became the buyers which was not clearly communicated at the start of the program.

Question 4. What are the most valuable achievements according to partners?

DIRECT PROGRAM BENEFITS

Key Partners



Fiber Foods

Reported Benefits

- Established partnerships with suppliers and processors within the jackfruit value chain and created for them business opportunities to generate revenue.
- Secured committed buyers for dehydrated jackfruit both locally and internationally, to ensure a consistent income stream for sustainability of the value chain.
- Generated job opportunities for youth and women, providing them with a source of income.
- Created an alternative source of income for farmers as they were able to sell their young jackfruit.
- In collaboration with suppliers and processors, developed dehydrated jackfruit, a product that was more sustainable and easily scalable, enhancing its market penetration potential.
- Attracted equity investments and impact loans to finance the growth of the business.



Suppliers and Processors

- Acquired new knowledge and skills on harvesting young jackfruit through training and learned how to process dehydrated jackfruit through research and development. Key areas of training included product specification, fair trade policies, child labor policies, sexual harassment, gender-based violence and organic training.
- Gained access to a new market for young jackfruit as Fiber Foods became the buyer and generated more revenue.
- Expanded their workforce, primarily hiring more casual employees to meet the increased demand for young jackfruit orders.
- Diversified their product offerings by adding young jackfruit to their portfolio.
- Obtained equipment such as crates and weighing scales to support the harvesting of quality young jackfruits.



Farmers

- Improved jackfruit farming practices as farmers began intercropping jackfruit trees with other crops as well as pruning which resulted into more yield.
- Acquired new knowledge on harvesting young jackfruit and learned about potential value-added products that can be made from it.
- Increased income as farmers gained an alternative source of revenue.
- Gained access to new markets through Fiber Foods for young jackfruit, which was an addition to their market for mature ripe jackfruit.
- Contributed to community development by hiring local youth and boda boda riders to assist with harvesting and transporting young jackfruit to collection points.

Question 5. What were the key success factors and limitations of the program?

The jackfruit value chain program achieved success through comprehensive training, effective partnerships, sustainable practices, and gender inclusion, which enhanced production and market access. However, it faced limitations such as transportation challenges and quality control issues. This section explores the main factors that contributed to its success and the limitations that affected the program's effectiveness.

Key Success Factors due to implementation framework

Effective use of technology and traceability

The BLU traceability app streamlined operations by enabling real-time tracking of jackfruit from farm to processing. This ensured transparency, quality control, and adherence to organic certification standards, improving overall product quality. The digital tool efficiently monitored and managed the supply chain, reducing the chances of errors and enhancing the program's operations.

Sustainability and environmental benefits

A main factor in the program's success was emphasizing sustainability, particularly in promoting jackfruit as an eco-friendly meat replacement. By positioning jackfruit as an alternative to soy, the program addressed deforestation issues associated with soy production. This approach not only contributed to environmental conservation but also increased jackfruit's appeal in the market for eco-friendly, plant-based alternatives.

Stringent quality control protocols

The program's success was underpinned by strict quality control measures. Training field teams on product specifications, along with guidance from partners like Jakana and Fiber Foods, ensured that the jackfruit met the required standards. These efforts minimized rejects during processing and increased the overall acceptance rate of the products in the market. Maintaining high-quality standards contributed significantly to building a reputation for consistency and reliability.

Limitations of the Program

Lack of an inclusive communication strategy

The program lacked a clear exit strategy and continuity plan. The sudden end of the program in some areas such as Mubende and Soroti left many jackfruit farmers confused and uncertain, adversely affecting their incomes and livelihoods. Many participants were heavily reliant on the program's support and market access, leading to significant disruptions.

Farmer in Soroti: *"It was a very good program, but they just disappeared, and we didn't see them again"*

Insufficient training and awareness

Farmers in Mityana, Bugiri, Soroti, and some areas in Kayunga, reported not receiving any specific training on jackfruit farming and harvesting, aside from buyer requirements. These expressed a need for training on optimal jackfruit care, pest and disease control, and best practices for planting to improve yield and productivity as is done in other export driven value chains.

Farmer in Kayunga: *"We have never got any jackfruit trainings here"*

Farmer in Bugiri: *"We need training about this jackfruit farming like the pest, disease and control"*

Unique value chain characteristics

The jackfruit value chain is distinct, and suppliers have tailored their sourcing strategies to mitigate quality and supply risks. This uniqueness can complicate relationships with buyers who have stringent quality requirements, necessitating clear communication about quality standards.

Key Success Factors due to implementation framework

Effective Supply Chain Management

The program's structured approach to supply chain management was a vital success factor. By registering farmers and monitoring their production capabilities, the program ensured a steady supply of jackfruit, reducing inconsistencies in quality and quantity. The system allowed the program to anticipate supply needs, plan effectively, and mitigate potential disruptions, leading to a more reliable and efficient value chain.

Community Engagement and Adaptability

The program demonstrated adaptability and resilience by engaging with community leaders to address labour challenges, such as overcoming cultural superstitions about jackfruit farming. This proactive approach ensured smoother program implementation, gained community support, and increased farmer participation, which were essential for the successful scaling of the value chain. By adapting to local contexts, the program effectively integrated with the communities, resulting in a more sustainable impact.

Research and Development and Adoption of a Market-Based Approach

The program incorporated rigorous research and development to create dehydrated jackfruit specifically tailored customer preferences. This demand-driven approach ensured the availability of the market while also providing consistent income for farmers and suppliers. By aligning product innovation with market needs, the program enhanced both its commercial viability and long-term sustainability.

Limitations of the Program

Constrained Market Expansion due to Supply and Demand Imbalance

This imbalance was worsened by long lead times and inefficient collection processes. Due to these challenges, some collection points received priority support while others lacked resources, leading to inconsistencies among farmers. As a result, the processing capacity was limited, and overall efficiency was undermined.

Seasonal Variability on Quality

The quality of jackfruit was heavily influenced by seasonal weather patterns. Rainfall can enhance quality, but since quality was only verified upon cutting the jackfruit, suppliers faced risks that led to rejection of jackfruit that did not meet strict quality standards. Trainings were conducted to equip farmers with knowledge on how best to maintain quality regardless of the weather patterns.

Transportation and Logistics

Transporting jackfruit from farms to market presented logistical hurdles, particularly in remote areas with inadequate infrastructure. Poor road conditions and lack of reliable transport options complicated the timely sale of produce, potentially leading to post-harvest losses however the program provided logistical support to the extension teams, and they were better equipped to reach more farmers and ensure that jackfruit could be transported quickly and efficiently to markets, reducing the time between harvesting and sale.

Question 6. What suggestions do stakeholders have for improving the program?

Project Team



- Adoption of the model that starts with developing market first to ensure that it matches with production
- Setting up of a model factory from the get-go which could have been copied by other stakeholders in the program and reduced the costs associated with a trial-and-error innovation approach.
- Growth of the local market. There should be intentionality around growing market base through sensitization, collaboration and active sales efforts.
- On the policy side, government should have a one-stop-centre for innovative products rather than data silos at different regulators.

Suppliers of Jackfruit



- There is a need for transparency and communication around the long-term future ambitions of the program so that it can be mutually beneficial to all parties involved.
- Price paid for each kilo supplied should be increased to cater for operational costs that come with ensuring that standards are met.
- Network of suppliers should be treated as partners and allowed to participate in scaling up production without the very stringent patent terms.

Processing Factories



- Involvement of more academia to increase research and development which will further lead to more innovation around jackfruit as a raw material

Farmers



- Provision of planting materials such as seedlings to boost production.
- Creation of alternative products from jackfruit waste to get maximum value from the trees.
- More gender targeted programming to ensure more women benefit from the root of the value chain which is production of the jackfruit.

Question 7. What obstacles did partners face, and how could they have been addressed more efficiently?



Obstacles

How They Could Have Been Managed Efficiently?

Suppliers of Jackfruit

- Delays in verification of orders and subsequent payments.
- Cultural norms which led to hostility towards extension workers.

- Improved capacity for efficiency of verification
- Sensitization of the local populace on the benefits to enable mindset change

Processing Factories

- Production of waste which might be difficult to manage or put to other uses
- Entry barriers to full-blown production and marketing due to stringent patent guidelines

- Intensification of Research and Development to increase the number of uses for jackfruit waste.
- Alleviation of stringent patent conditions based on discussions of a middle ground to ensure all interests are integrated

Farmers

- Sudden drop-off from program after enthusiasm to participate had been aroused.
- **Market Dependency and Sustainability Issues:** The program's focus on being the primary buyer created over-reliance among farmers, and the absence of an exit strategy or alternative market linkages hindered their ability to sustain progress independently.

- Better communication to enable partners come to terms with the implications of tough decisions.
- **Market Diversification:** Linking participants to alternative markets for jackfruit to reduce reliance on specific markets.

Fiber Foods Project Team

- Dissatisfaction of some of the program partners with the management of the program which may undermine program achievements
- Government bureaucracy which caused delays in getting the critical route to the export market

- Open stakeholder engagement to allow consensus based on the interests of the different partners
- Higher level government engagement to obtain a buy-in for an innovative product which was an exception to the normal

Question 8. How flexible was EKN in responding to program needs?

Flexibility

EKN Policy Officer

“Do not be too rigid in project description and allow alterations along the way because you cannot predict everything.”

Supporting
Quote

Justification

The right checks and balances need to be in place to ensure that the company is genuinely interested in long term results and commitment. This will create more value for money as commercial organizations are more inclined towards creativity and adaptation

Fiber Foods

“The biggest success factor for the whole project was the group of people at the Embassy who were moving with us along every step of the way. They knew everything. It was a less structured and less bureaucratic process”

Supporting
Quote

Justification

The freedom to adapt the program based on prevailing conditions was one of the key factors to program success in the long run.

Conclusion

The transparent communication between the project team and the Embassy allowed flexibility which was a key contributor to program success.

Question 10. Could this value chain have been developed without EKN's support, and how?

Program Sustainability



Fiber Foods

“The success could not have happened without the support of EKN. They softened the start by offering a grant.”

Fiber Foods

“The biggest success factor for the whole project was the group of people at the Embassy who were moving with us along every step of the way. They knew everything. It was a less structured and (less) bureaucratic process”



With EKN

EKN provided Initial financing in form of a grant which would not have been provided by any financial service provider within the economy due to the **riskiness of the entire venture**. The value chain was not a proven and tested idea rather just an innovation seeking a scale-up as well as creation of socio-economic impact.

EKN offered the **flexibility for the project team to adjust certain parts of the project design** to handle certain challenges as they evolved. Given **the profit-driven nature of commercial enterprises**, this spurred **innovation** that led to creation of a new product that is dried young jackfruit with an even greater market reach and potential.

Without EKN

With a joint venture arrangement with Ugandan partners, Fiber Foods would have taken advantage of cheap credit of up to **5 billion UGX through the Agricultural Credit Facility (ACF)** whose main goal is to promote commercialization of agriculture by providing financing to enterprises especially in value addition and market linkages. **The favourable grace period of up to 3 years** would also provide an opportunity to experiment and innovate based on unforeseen impediments.

The Uganda Export Promotion Board (UEPB), which is a local Trade Support Organisation, would have provided expert advisory knowledge on getting the processed product to the foreign market as well as any estimated costs.

Program Sustainability

Drivers of Sustainability

Creation of Model Factory

This will drive volumes of jackfruit being processed and onboarding of more farmers to benefit from the value chain.

Entry of New Market Players

Organic competition will drive innovation in the sphere of dried jackfruit and acquisition of many virgin markets in Europe, UK and even the United States of America.

Expansion of Blended Meat and Vegetarian Market Segment

Given the initial success of the dried jackfruit product, demand is expected to increase as people aim towards a healthier lifestyle especially in the Western World.

Growth of Local Market

Collaboration with local meat processors to blend meat with jackfruit will greatly optimize the price of processed meat products hence driving local demand

Existence of Sustainable Sourcing Patent

This ensures a fair price is paid to farmers as well as fair wages are given to labourers with the appropriate working conditions. This creates satisfaction for players at the beginning node of the value chain.

Risks to Sustainability

Stringent Patent Conditions

This will limit entry of new players in market and create monopolistic tendencies which violates the free-market economy system prevailing in Uganda

Exit of Fiber Foods from Ugandan Market

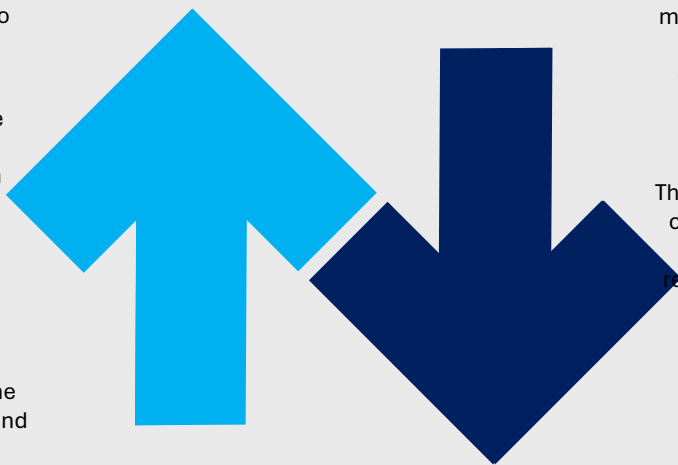
This unfortunate scenario might cause a value chain disruption which will need some time to recover for the different parties involved such as farmers, suppliers

Global Supply Chain Disruptions

This might limit the seamless movement of goods across countries which will kill the niche market segments for dried young jackfruit.

Shift in Government Policy

This might increase the cost of doing business in Uganda and cause shifts to other viable suppliers such as Kenya



Chapter Four: Evaluation of Program Results

Evaluation of Program Results

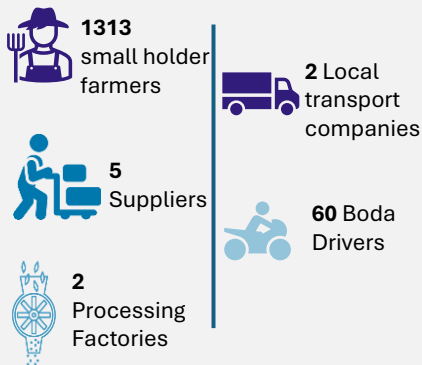
The end-term evaluation assessed the achievements of the program by answering a set of evaluation questions in response to the evaluation Terms of Reference. The evaluation questions align to the traditional DAC/OECD evaluation criteria, in particular, relevance, effectiveness, coherence, impact and sustainability while accommodating the nuances of the project.

The questions that this evaluation sought to answer as elaborated in Chapter Four are summarized below:

- 1 ● How many farmers, companies etc. benefited from the BLU2 project?
- 2 ● How much did revenue increase for participating companies, farmers and other stakeholders in the BLU network (agribusiness and farmers)?
- 3 ● How many new job and business opportunities have been created as a result of growth of sales volume, aggregated by gender?
- 4 ● What is the value of stream of consistent orders caused by BLU?
- 5 ● How many off-takers (actual and prospect) have been added to the BLU value chain?
- 6 ● What is the potential growth of the value chain developed by BLU in the coming 5 years in Uganda (market size, number of farmers benefiting, income of SMEs)?
- 7 ● What additional investments (actual and prospect) has BLU attracted from non-government and private investors?
- 8 ● How many inclusive and sustainable value chains have been strengthened by BLU?
- 9 ● How many companies have a supported plan to invest or trade through BLU?
- 10 ● For what percentage of costs of operations is BLU self-reliant?
- 11 ● What are the unforeseen benefits of the program (reforestation, CO2 emission reduction)?

Summary of Key Program Results

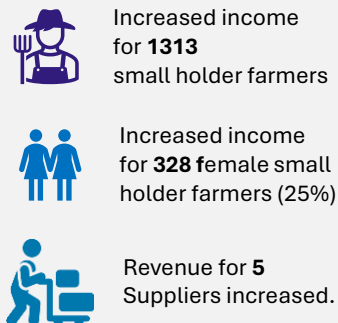
BENEFICIARIES



EMPLOYMENT OPPORTUNITIES

- **60** Extension Workers hired of which **24** (40%) were female.
- **160** jobs created in processing facilities with **90%** being held by women.

REVENUE



OFF-TAKERS

- A total of **10 actual** and **10 prospective** off-takers.

SALES AND ADDITIONAL INVESTMENTS

Sales Pipeline: €3,848,400 worth of orders for jackfruit

Actual Investments

- Sold 7.5% of shares for **€400,000**
- Loan from Invest International worth **€405,000**

Prospect Investments

- Closing Venture Capital 12% of shares worth **€800,000**

INCLUSIVE AND SUSTAINABLE VALUE CHAINS STRENGTHENED

- Dehydrated Jackfruit Value Chain
- Oyster Nuts Value Chain (In the process of being developed)

Beneficiaries and Revenue earned

Question 1: How many farmers, companies etc. benefited from the BLU2 project?



From the BLU2 project, the beneficiaries included **2 processing factories, 5 fruit supplying companies, 1313 farmers, 1 local transport companies** and **60 boda drivers**. The beneficiaries gained valuable training, market access, and steady income opportunities, reflecting the program's significant impact on building a sustainable and inclusive jackfruit value chain.

Farmer in Kayunga: “When we were trained, we were shown that jackfruit can be pruned which boosts its productivity.”

Supplier: “So, I think for me the money from the jackfruit was good. The farmers benefited. The suppliers also benefited. Everybody in between the value chain benefited.”

Question 2: How much did revenue increase for participating companies, farmers and other stakeholders in the BLU network (agribusiness and farmers)?



Participating companies, farmers, and other stakeholders, reported an **increase in their revenue due to the BLU2 program**.

Category	Approximate Revenue(2023)
Farmers	<ul style="list-style-type: none">Each farmer earned €165.8.Total revenue earned by all the farmers was €217,634
Suppliers	<ul style="list-style-type: none">Each supplier earned €37,723.2Total revenue earned by all the suppliers was €188,616.
Processors and Transporters	<ul style="list-style-type: none">Each processor earned €95,919.3Each transporter earned €25,000.

Female Farmer in Kayunga: “ We used to sell our jackfruit and each one of us would take their money. But when we created a SACCO, I borrowed money based on the savings I had and enlarged my plot of land...”

Supplier 1: “We know that at least every month we have something like 8-9 million and that money is helping us in terms of the workers”

Supplier 2: “It was able to give us money to increase our capital since we're still a young company and we didn't have funders”

Transporter: “I started this business with just one truck. But at the moment I am having three trucks.”

New job opportunities and value of stream of consistent orders

Question 3: How many new job and business opportunities have been created as a result of growth of sales volume, aggregated by gender?



The program created new employment opportunities for farmers and other stakeholders, contributing to improved livelihoods and economic growth.



Total jobs created: **220**



24 (40%) Female extension workers

36 (60%) Male extension workers

144 jobs for women in processing facilities(**90%**)

16 jobs for men in processing facilities(**10%**)

328 (25%) female farmers with increased income (out of **1,313** farmers)

985 (75%) male farmers with increased income (out of **1,313** farmers)

Processor: “With the volumes going high of course the number also goes high because we need to get in more staff to help with production. And also, in the field we need to have more staff in the field for us to be able to purchase more.”

Question 4: What is the value of stream of consistent orders caused by BLU?



By the end of 2023, the BLU2 project had generated consistent orders (sales pipeline) worth **EUR 3,848,400** which is **UGX 15,800,310,240**. Every two (2) months, 1 container of dehydrated jackfruit, approximately 30 tonnes was being exported. This represents the sustained demand generated by BLU2's efforts to strengthen the jackfruit value chain.

Supplier 1: “ We started supplying like two tonnes then when we were able to supply two tonnes comfortably, they increased it to four tonnes then we were able to go to eight tonnes until I think our highest amount of jackfruit that were able to supply them was 10 tonnes per supply.”

Supplier 2: “At first, we began with about 21 farmers. And we were supplying four for six tonnes around there. We adjusted to 83 farmers and also the demand went to eight tonnes. Right now, we are having around 150 farmers, and the demand now is 14 tonnes.”

Off-takers and additional Investments

Question 5: How many off-takers (actual and prospect) have been added to the BLU value chain?



- A total of **14** actual and **2** prospective off-takers.

Actual: Pennings, Hutten, BidFood, Sababa, McCain/Mora, Le Frique, Van Gelder, Dr. Oetker, Zwanenberg, deKoning, Cargill, Hak Professional, Bokall, Four Seasons

Prospective: Rugenwalder Muhle and Zur Muhlen Gruppe.

Note: McDonald's, Royal Smilde Foods, Hilton Foods, and Corroos, had previously placed orders for dehydrated jackfruit but later cancelled. Fiber Foods hopes to re-engage them.

Fiber Foods Strategy Lead: *"My company made a suggestion to Dr. Oetker to replace **45** percent of each chicken piece with jackfruit. And we are now in the stage that the board has approved these samples...Dr. Oetker is backing us they signed with us the letters of intent."*

Question 7: What additional investments (actual and prospect) has BLU attracted from non-government and private investors?



Sales Pipeline: **€3,848,400** worth of orders for jackfruit

Actual Investments

- Sold 7.5% of shares for **€400,000**
- Loan from Invest International worth **€405,000**

Prospect Investments

- Venture Capital 12% of shares worth **€800,000**

Fiber Foods Strategy Lead: *"We are completely funded by equity so we've sold already about 20% of our equity and we got millions of investment..."*

Inclusive and sustainable value chains, companies with a supported plan and self reliance of BLU

Question 8: How many inclusive and sustainable value chains have been strengthened by BLU?



Inclusive and Sustainable Value Chains Strengthened

- Dehydrated Jackfruit Value Chain
- Oyster Nuts Value Chain (In the process of being developed)

Question 9: How many companies have a supported plan to invest or trade through BLU?



Companies with a supported plan to invest and trade

There are no Ugandan and Dutch companies with a supported plan to invest and trade through BLU. The 8 Dutch companies offer route-to-market services to Fiber Foods but do not trade through BLU. The original plan was to build a trading service to support Dutch companies to directly source in Uganda, but this did not happen. Other Dutch companies were not interested to trade in jackfruit as originally planned since Fiber Foods took up that role.

Question 10: For what percentage of the costs of operation is BLU self reliant?



BLU is 100% self reliant. BLU was contracted by SCADU(Strengthening Capacity of Youth Agri-business Development)/K-ABIC (Korea Agri-business Innovation Center) to support some of their value chain programs based on the experience gained with the Jackfruit value chain. This contract covers BLU's costs.

Question 11. What are the unforeseen benefits of the program (reforestation, CO2 emissions reduction)?

UNFORESEEN PROGRAM BENEFITS

Thematic Area

Reported Benefits



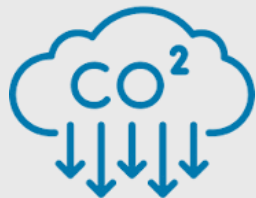
Jackfruit was grown alongside or intercropped with other crops, hence promoting agroforestry. Additionally, farmers planted more jackfruit trees, and previously cut trees for charcoal were replaced, which promoted reforestation.

Agroforestry and Reforestation



Farmers earning income from jackfruit became protective of their trees and planted more trees on their existing land, which eliminated the need for deforestation. Furthermore, the BLU traceability system ensured transparency throughout the supply chain, starting from the source of the jackfruit, which indirectly supported compliance with the EUDR.

Indirect Compliance with EUDR Regulation

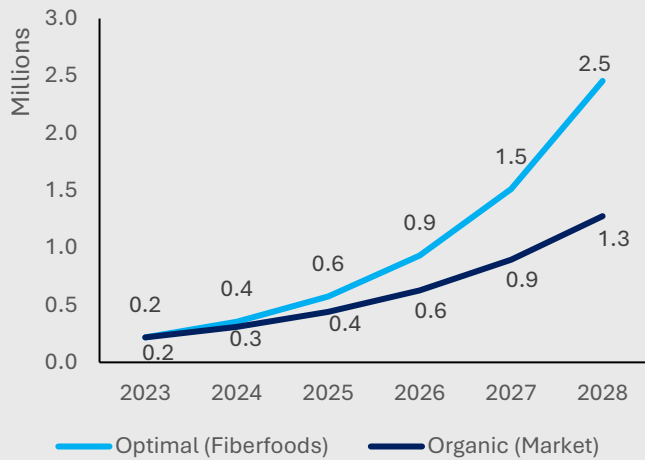


With farmers practicing reforestation, being more protective of their trees and processors using black soldier flies for waste management, the program contributed to a reduction in carbon emissions. This is because farmers reduced cutting down trees for charcoal and processors were able to efficiently break down their organic waste.

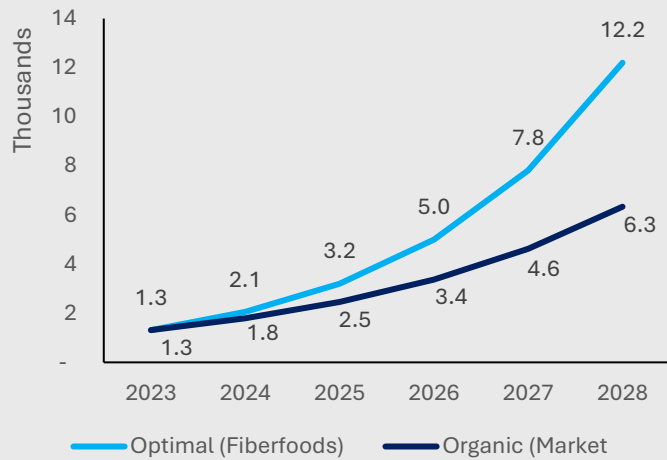
Reduction of CO2 emissions

What is the potential growth of the value-chain developed by BLU in the coming 5 years in Uganda ? (Market Size, Number of farmers, Income of SMEs)

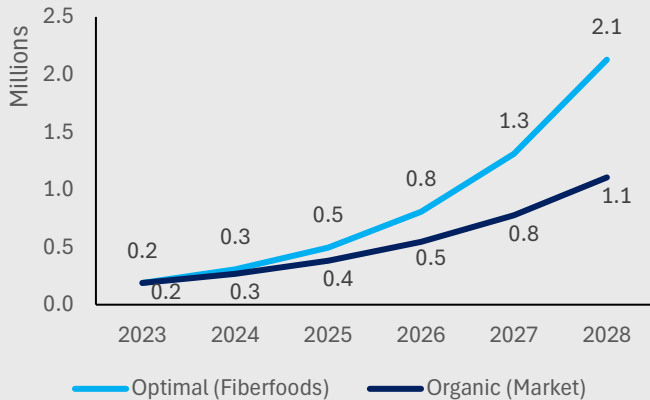
Farmer Value (EUR)



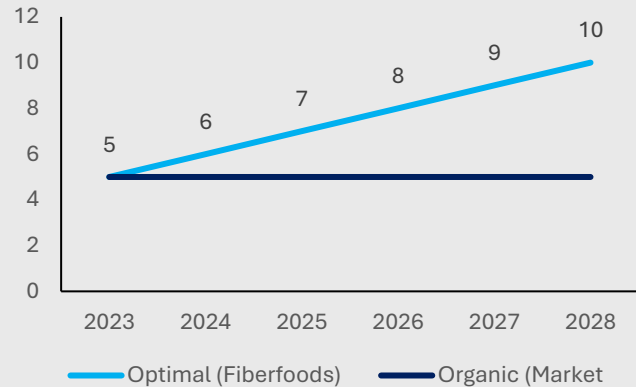
Number of Farmers



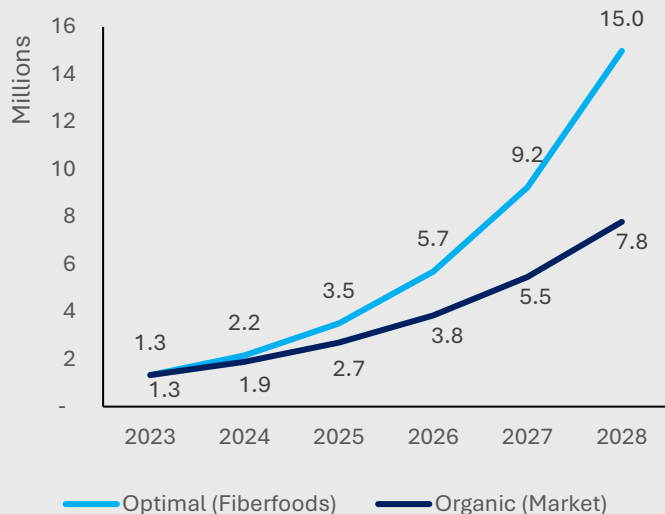
Supplier Value (EUR)



Number of Suppliers



Fiber Foods Market Value (Total Market Value)



Key Assumptions

- Annual Inflation Rate of 5% on Prices- Stable Inflation Rate based on World Economic Outlook
- Depreciation Rate of 1% based on time-series analysis of exchange rates
- Uganda is the sole supplier of Jackfruit
- Fiber Foods still holds monopoly power due to the patent
- Conversion Factor of 6:1 for raw jackfruit to dried jackfruit
- Since Fiber Foods is using the market first approach, all its production is tailored to the available market

Potential Value of Value Chain

Process

Selection of Modeling Approach

We adopted a hybrid modeling approach that utilizes demand and supply side to estimate potential value.

Modeling Assumptions

We made reasonable assumptions with regards to inflation rates, expected growth rate of supply and demand.



Collation of Relevant Data

We conducted secondary literature review to obtain key metrics for building the model.



Building and Fitting Model

We combined data and key assumptions to build a conservative predictive model based on prevailing market conditions and market analysis.

Comparison of Model Scenarios

Organic (Market) Scenario	Optimal (Fiber Foods) Scenario
Compounded Annual Growth Rate (CAGR) of 42.4% based on the annual growth rate of the meat substitute market across the world by Grandview market insights	Compounded Annual Growth Rate of 56.2% based on growth in number of farmers and building of processing capacity and expected growth by Fiber Foods.
Less aggressive marketing and maintenance of current leads	Aggressive Marketing by Fiber Foods through cooking sessions and developing new leads
Entry of new participants without capacity to dictate the entire value chain	Maintenance of patent by Fiber Foods to limit entry of new participants
Dormancy of local market in adopting blended meat products.	Growth of local market for blended meat products through local partnerships for example Rancher's Finest, Farmer's Choice

Overall Outlook of the Value Chain



Current State of the Value Chain

- **Processing:** There are several processing companies involved, and a joint venture for a dedicated jackfruit factory has been established.
- **Transport:** Involvement of 2 transport companies and 60 boda drivers.
- **Farmer Engagement:** 1313 smallholder farmers and 37 farmer groups are engaged, with 3000 acres of smallholder farmland utilized.
- **Partnerships:** The project includes strong partnerships with international players like Albert Heijn and McCain.



Market Potential

- The product is targeted at export markets due to higher margins and larger volumes needed to make the product profitable.
- Dehydrated jackfruit is efficient: 1 kg of DJF reconstitutes to 8 kg of cooked jackfruit.
- There's ongoing engagement with large international food companies, making the export potential significant.



Challenges and Lessons Learned

- **Long Lead Times:** Developing a market for DJF as an ingredient, rather than a branded product, takes a long time, as experience with partnerships like McDonald's, which took 1.5 years to get to market.
- **Scaling:** The need for patient capital to overcome the long lead time to profitability, particularly in the export market.



Future Outlook

- A focus on scaling operations through export markets to Europe (notably Germany and United Kingdom) and exploring new markets such as East Africa (Kenya) and the Middle East.
- Onboarding of more farmers (~10,000 in Uganda alone)
- Increase in the potential new entrants due to a patent for the DJF product to enable sustainable sourcing and fair pay.

Chapter Five:

Conclusion

Conclusion

BLU2 was successful in identifying and developing a new commercially viable sustainable dried jackfruit value chain with a ready export market. It was able to achieve and even exceed some of its planned outcomes including facilitating the addition of EUR 3.4 million to bilateral trade in terms of jackfruit sales between Uganda and the Netherlands. This was attained by linking Uganda farmers and SMEs in the jackfruit value chain to high value markets, specifically to 8 major customers in the Netherlands.

The program demonstrated a robust design and approach and employed an organisational structure built on commercial principles. The following factors were identified as key contributors to the success of BLU2;

1. The program employed a “market first” approach and worked backwards to establish a sustainable commercially viable route-to-market facilitated by a commercial Trade Support Organisation which ensured commercial principles across the value chain including patenting to protect quality of the product.
2. The process of zeroing in on “what works” involved several iterations in product and process design which required a flexible structure and less rigid controls from funders. Whereas the evaluation did not extensively explore the role of EKN in the program beyond financier, it was evident that the Embassy greatly contributed to an enabling environment for adaptability through participatory implementation and were aware of required adjustments at each stage of value chain development.
3. The timing of the program as well as the choice of value chain also played an important part in the success. The program was implemented against the backdrop of the COVID-19 pandemic when the target market was more conscious about healthy food choices and organic products.

Despite the notable success, however, the evaluators found that the program fell short of its gender inclusivity objectives and stakeholder management. Of particular concern are the low markups for women compared to men especially among smallholder jackfruit farmers and the dissenting voices from some of the jackfruit suppliers and processors who were dropped from the Fiber Foods network, respectively.

In addition, there was no evidence of synergies built with other programs or government entities to benefit from incentives offered to export-oriented value chains. However, this may have been intentional to avoid delays due to public sector bureaucracies and inefficiencies.

In conclusion, new value chain development needs a flexible program design and management structure that can facilitate process and product iterations and adaptability while ensuring a robust stakeholder engagement mechanism.

Chapter Six:

Recommendations

Recommendations

The recommendations provided below aim to enhance the design, implementation, and sustainability of future value chain programs by addressing key challenges and leveraging lessons learned from BLU2. By amplifying strengths of the BLU2 program design and implementation and identifying strategies to mitigate challenges encountered, these recommendations will contribute to more effective, inclusive, and sustainable interventions in export-oriented agricultural value chains.



Participatory Program Design and Implementation

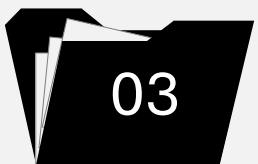
Value chain programs should endeavor to involve stakeholders at all stages of the program. Adopting participatory design and implementation enhances program effectiveness by fostering stakeholder ownership, allowing adaptive adjustments, and ensuring that interventions align with market needs and contextual realities, ultimately contributing to a more sustainable and impactful value chain. This is especially relevant for nascent value chains where program dynamics are subject to frequent changes before stability can be realised.



Transparency and communication across partners to manage expectations

Programs should have deliberate stakeholder engagement and communication strategies to ensure that program objectives are not misconstrued. Part of the negative feedback from smallholder farmers and suppliers arose out of lack of clear communication about the program's sourcing model.

When the program implementers become the buyers, that may breach the trust by other program stakeholders. This combined with the patent limits the involvement of others in the value chain.



Innovate through collaboration with existing structures

There is need to leverage strategic partnerships through collaboration with public and private entities to strengthen value chain stability in the long run. Opportunities for research by partnering with Uganda Industrial Research Institute (UIRI) as well as making use of available export oriented public initiatives through the Exports Promotions Board and Uganda Free Zones Authority can go a long way in multiplying impacts and scale.



Enhance gender intentionality in program design and implementation

To enhance gender inclusivity, future programs should integrate gender intentionality in design and implementation by addressing underlying social norms, setting clear gender-specific targets, and ensuring equitable access to resources, training, and market opportunities for women throughout the value chain.

Recommendations



Promote Inclusive Dialogue on Patenting and Sustainable Sourcing

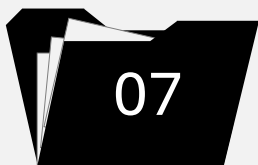
The patent for sustainable sourcing, developed with the support of the Embassy, presents both an opportunity and a challenge for the jackfruit industry. While it enables Fiber Foods to promote a fair price for farmers by creating a sustainable sourcing model, it may unintentionally stifle broader industry growth.

By fostering dialogue and aligning the patent's objectives with the broader goals of industry growth and farmer welfare, the value chain can benefit from innovations without limiting market access or competition.



Establish Open Access Standards

By working with Uganda National Bureau of Standards, Fiber Foods can form an industry consortium to develop open-source standards for jackfruit processing and product specifications. By collaboratively creating industry-wide quality benchmarks, the consortium will ensure that all companies can adopt these standards instead of relying on proprietary processes. This will set up a level playing field, promote transparency, and encourage more companies to enter the market without fear of patent infringement, while fostering innovation and maintaining consistent product quality across the industry.



Community Level Gender Sensitization

Projects should implement community level interventions especially targeting social norms around household power dynamics on financial decision making and shared-responsibility in farming.

Failure to understand and transform social norms has been identified as a major challenge to community level women empowerment programs in Sub-Saharan Africa especially in the agricultural sector. Program interventions should therefore be informed by detailed gender needs assessments specific to each program area and ensure that subsequent tasks are contextualized to communities including training and skilling programs, farmer group structuring, and distribution of value-chain benefits.

Such an engendered approach to program design and implementation will ensure that new value chains have inbuilt mechanisms to empower women economically while increasing sustainability of program results.

Chapter Seven:

Lessons Learned

Question 9. What lessons can be learned from introducing new Ugandan products to international markets?

1. Traceability

Ensure that the origin of the product can be traced back to original producer. For example, back to the profiles of the different small-holder farmers in Uganda

3. Standardization and Quality Assurance

International markets often have stringent quality, safety, and environmental standards. Getting certifications such as ISO, organic labels, or fair trade boosts credibility. Develop a strong quality control process to ensure every batch meets the recommended industry standards.

5. Development of a Strong Distribution Channel

Reliable and cost-effective shipping is crucial. Understanding tariffs, customs regulations, and duties in the destination country is necessary to avoid unexpected costs.

2. Dedicated Sales and Marketing

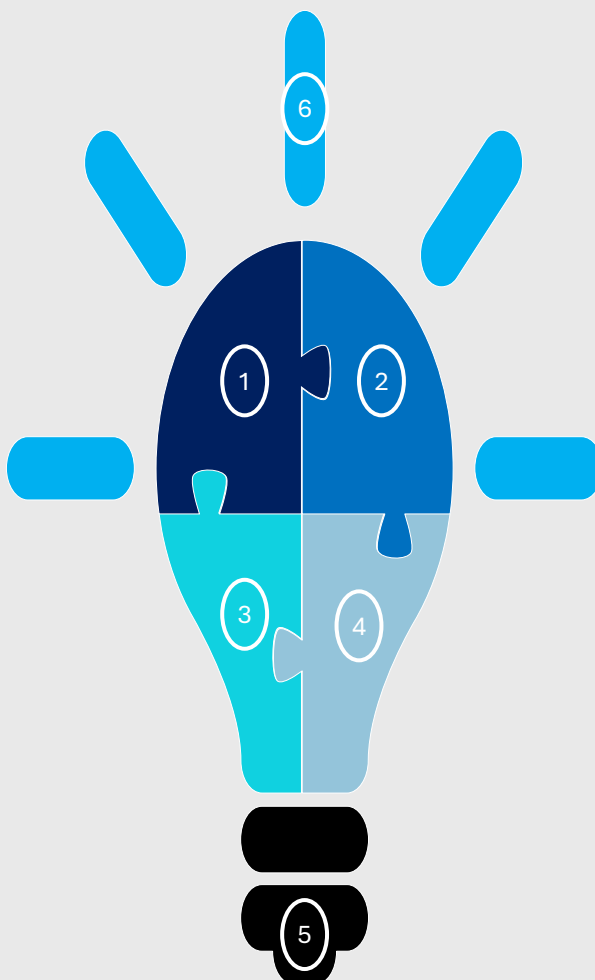
Understand consumer preferences, cultural trends, and pricing expectations in different regions. By aggressively searching for business, one is assured of consistent product orders from clients.

4. Regulations Regarding Locally Produced Exports

Leverage Trade Agreements and Government Support. Explore free trade agreements or government-backed export programs to reduce barriers to entry.

6. Pricing Strategies

Ensure your product is priced competitively while covering export and distribution costs. A thorough understanding of the cost structures and consumer purchasing power in target markets is essential. Make use of market analysts for a picture of market.



Introducing new Ugandan products to international markets presents a unique opportunity to tap into global demand while promoting the country's rich natural resources. Success in international markets requires a deep understanding of consumer preferences and market trends, as well as compliance with stringent quality and safety standards. Ugandan producers must prioritize maintaining consistent quality, obtaining necessary certifications, and tailoring their products to meet the tastes and expectations of diverse markets.

General Lessons Learned



1

A Market-Driven Approach is Effective for Value Chain Development: A market-driven approach ensures that the development of the value chain is directly aligned with existing demand. The market demand for the young jackfruit as a meat substitute drove the need for product innovation and process improvement. By focusing on market requirements such as quality standards, product specifications, and end-consumer preferences, the program was able to develop products that had clear value in the international market. This approach also helped secure committed buyers, ensuring a consistent income stream for farmers and suppliers.



2

Flexibility and Adaptability are Critical Success Factors for Untested Value Chains:

Flexibility and adaptability allowed the program to respond to unforeseen challenges and opportunities in the emerging jackfruit value chain. Since this was a relatively untested value chain, it required iteration in product and process designs. For instance, during the program, it became clear that a shift had to be made from canned jackfruit to dehydrated jackfruit which showed greater market potential and contributed significantly to the program's success.



3

Leveraging Synergies Enhances Sustainability: The program benefited from leveraging synergies by partnering with other initiatives and stakeholders, which strengthened its impact and sustainability. Collaboration with suppliers, processors, and researchers, helped pool resources, share knowledge, and create a sustainable product.



4

Commercialization is Necessary for Sustainability of New Value Chains:

New value chain development programs should adopt a commercial approach rather than a purely non-profit model to ensure sustainability. By focusing on market-driven strategies, the jackfruit value chain program was able to generate consistent revenue streams for farmers and suppliers, fostering long-term growth and reducing dependency on donor funding.



5

Prioritization of Engagement with Localized Stakeholders: Working with distant stakeholders can raise expectations and consume resources for training, only to encounter challenges related to high transport costs, which ultimately limit their involvement in the program. By prioritizing engagement with localized suppliers and farmers, the program can optimize resource allocation and enhance participation, leading to more effective and sustainable outcomes.

Bibliography

List of Secondary Literature Reviewed

1. PrimeJack PitchDeck May 2024 and Sales Pitch Presentation
2. Original Proposal
3. Original Contract and Top up and Extension Contract
4. BLU2 Impact Stories
5. BLU 2021, 2022, and 2023 Financial Narratives, Audited Financial Reports (2021-2023)
6. Original Budget and Original Budget per Outcome area
7. Activity cycle memorandum (Activity Appraisal Document (BEMO))
8. Supplier Profile
9. BLU2 2021, 2022, 2023 and Final Reports
10. Academic journals: Justine Nakintu et al, 2019 Ethno-varieties and distribution of jackfruit tree (*Artocarpus heterophyllus* Lam.) in Uganda: implications for trade, food security and germplasm conservation. East African Journal of Science, Technology and Innovation 1(1): 27-51, National Development Plan III (NDP III)

Annexes

Terms of Reference for the End-Term
Evaluation

Project: Business Lab Uganda phase 2 (10-
0001471)

Contents

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Background

The Netherlands Embassy in Uganda supports the growth of bilateral trade between Uganda and the Netherlands by supporting several agricultural value chains. Developed value chains increase the incomes of all actors, especially women and the youth.

For 2 years, the Embassy has supported Business Lab Uganda (BLU2) to implement interventions aimed at improving the livelihoods of farmers and enhancing their resilience to economic shocks by improving their production, both in quality and quantity. It was anticipated that linkages to the export market, would give farmers better prices for their produce, if they observed the right standards, produced consistently and the offtake demand remained high. BLU2 targeted the Jackfruit value chain in several parts of Uganda.

BLU2 was built on lessons learned from BLU1 to construct a sustainable, replicable, and scalable concept, which is anchored in a Trade Support Organization and has the potential to be used by the Netherlands, other donors and potentially, other stakeholders (NGO's, private sector).

Project Goal

To develop the Jackfruit value chain and connect local producers to international markets to create business and job opportunities, especially for women.

Purpose of the Evaluation

After two years of implementing several interventions to support local exporters, the Netherlands Embassy is commissioning an End-term Project Evaluation to assess the success of the program and the challenges faced in achieving its objectives. The results of the evaluation will be used to enhance intervention design and execution of similar projects in the future. The Netherlands Embassy invites proposals from competent Consultants to implement this evaluation.

Scope

The evaluation will focus on the program development and implementation as well as the results obtained under the BLU2 program. It will also consider the impact of the interventions on the SMEs that participated in the project and the entire value chain, including interfacing with several stakeholders that contributed to the realization of the project results.

The evaluation will cover the full project implementation period, from start to finalization in December 2023. The scope of the review shall be limited to the activities described in the project document as approved by EKN. The evaluation will assess the questions identified under the evaluation criteria below.

Evaluation Criteria

The Consultant is expected to evaluate and assess the achievements of the program by answering the questions identified below.

Questions to assess the program development and implementation

- What part of the original program has been executed and what part has been adapted?
- Would the same outcomes have been achieved when the original plan had been continued?
- How do the companies that participated in BLU rate the success of the program?
- What do partners perceive as the most valuable achievement / outcome of the program? And what could have been changed in the program to focus more directly on this achievement / outcome?
- What suggestions would stakeholders make that could have improved the program's outcomes?
- What obstacles did the partners face in the implementation of the program (e.g. trade barriers, patenting of products, monopoly risks) and how could these have been addressed in a more efficient way?
- How would program partners assess the flexibility of EKN in responding to the needs of the program?
- What lessons should the stakeholders learn when it comes to introducing new Ugandan products and value chains to markets in the Netherlands? (make comparisons if any to similar projects introducing new value chains to the EU market)
- Could this value chain have been developed without the support of EKN and how?

Questions to assess the results of the program

- How many farmers, companies etc. benefited from the BLU2 project?
- How much did revenue increase for the participating companies, farmers and other stakeholders in the BLU network (agribusinesses and farmers)?
- How many new job and business opportunities have been created as a result of growth of sales volume, aggregated by gender?
- What is the value of the stream of consistent orders caused by BLU?
- How many off-takers (actual and prospect) have been added to the BLU value chain?
- What is the potential growth of the value chain developed by BLU in the coming 5 years in Uganda? (market size, number of farmers benefiting, income of SMEs)
- What additional investments (actual and prospect) has BLU attracted from non-government and private investors?
- How many inclusive and sustainable value chains have been strengthened by BLU?
- How many companies have a supported plan to invest or trade through BLU?
- For what percentage of the costs of operation is BLU self-reliant?
- What are unforeseen benefits of the program? (reforestation, CO2 emissions reduction)

Methods of Evaluation

The evaluation will be carried out based on an extensive review of relevant literature on the problem this program addressed as well as the project documentation. Questionnaires should be developed, and interviews carried out targeting project beneficiaries, project trade facilitation agencies, trade sector specialists, and focal persons at EKN.

Approach	Explanation
Desk review	The Consultant shall review the following project documents: <ul style="list-style-type: none">- Project proposal- Progress reports.- Perusal of the project baseline, and mid-term evaluations, event reports, annual plans, events, presentations, documents among others.
Interviews key stakeholders	Tailored Questionnaires (can be close or open ended)/ question guides will be developed for facilitate interviews (can be conducted electronically or physically). Foreseen stakeholders include Project focal persons and other stakeholders. (For the analysis, it is the prerogative of the consultant to determine whether to use one or both quantitative and qualitative methods) Information about the project administration can be obtained from the project manager or the responsible Policy Officer at EKN.

Deliverables

- An inception report, including workplan, detailed methodology and risk assessment, to be delivered within two weeks after signing the contract
- A discussion based on inception report with EKN, before the start of fieldwork
- A presentation of initial results and draft recommendations, to be presented to EKN and BLU2 upon the completion of fieldwork.
- A draft report, (maximum 30 pages, excluding annexes) to be submitted within 10 days after completion of the fieldwork
- A final report, to be submitted within 10 days after receipt of feedback from the EKN.

Evaluation Planning

Task	Information	Timeline	Results
Preparation of the evaluation	Project document	22-07-2024	Terms of Reference for the Evaluation
Hiring of the Consultant	ToR	09-08-2024	Selection of the Consultant. Consultancy contract signed.
Data Analysis and Draft Report	Desk Studies, completed questionnaires, summary of interviews	20-09-2024	Draft evaluation report
Final Report		04-10-2024	Submission of the final evaluation report

Logistics

The consultant is responsible for arranging visas, travel and insurance.

Lodging is to be arranged by the consultant. BLU2 can be asked to help to book lodging in the project areas. Transport will be hired by the contractor.

Resources

The evaluation will be completed by the Consultant in line with the schedule detailed under section 7. (Foreseen maximum budget for the evaluation: EUR 33,000/-). The Policy Officer (PO) will provide oversight of the process including but not limited to preparation, execution, and review of the draft evaluation report. Where necessary, the PO will draft introductory letters to some of the hard-to-access stakeholders (such as Government Ministries, Departments and Agencies, Development Partners, and Non-Governmental Organizations).

Selection Criteria for Evaluator

The preferred Evaluator should have:

- An advanced university degree or equivalent background in relevant disciplines, with specialized training in areas such as evaluation, project management, statistics, research, and analysis.
- Good knowledge of and experience (minimum 5 years) in agricultural value chain development, trade (local and international) and project management
- Relevant professional experience (minimum 3 years) in design and management of evaluation processes with multiple stakeholders, survey design and implementation, and project planning, monitoring and management.
- Demonstrated methodological knowledge of evaluations, including quantitative and qualitative data collection and analysis for end-of-cycle project evaluations (share report(s)).
- High proficiency in written and spoken English.

Detailed Evaluation Methodology

Detailed Approach

We utilized a mixed methods approach (qualitative and quantitative) to extract the key learnings from project implementation as well as provide recommendations for improvement of future programming. The qualitative approach sought to determine the how and why of the program results. It also provided insights on how best the program can be improved for scalability, replicability and overall sustainability. It formed the main core of the assignment as key findings were used to derive recommendations and lessons learned. The quantitative approach involved collating of data on key program results as well as modelling the jackfruit value chain market to provide a prediction on its potential for growth and the role it played in poverty alleviation and economic development in Uganda.

Evaluation Approach

We employed a realist evaluation approach which is a theory-driven method of evaluation that seeks to understand how and why programs work (or don't work) in specific contexts. This approach focused on the underlying mechanisms that generate outcomes and how these mechanisms were influenced by the environment in which they operate.

In the context of the jackfruit value chain program, the realist evaluation helped in understanding how the program's interventions—such as improving farmer practices, establishing market linkages, and enhancing supply chain management—will work differently across various regions and stakeholder groups. By focusing on the interaction between context, mechanisms, and outcomes, the evaluation provided deeper insights into the conditions under which the program would be most effective, thereby informing future program design and implementation strategies.

The realist evaluation approach was implemented as follows:

a) Identifying the Program Theory: The first step involved clarifying the underlying theory or theories that the jackfruit value chain program is based on. This will include understanding the intended mechanisms of change, such as improving farmer practices, enhancing supply chain efficiency, or increasing market access for jackfruit products. The program theory outlined the expected relationships between inputs, activities, outputs, outcomes, and impacts.

b) Context-Mechanism-Outcome(CMO)

Configurations: Using the realist evaluation framework, the evaluation focused on identifying and testing CMO configurations. This involved determining

how specific contexts (e.g., local market conditions, farmer education levels, availability of resources) interacted with program mechanisms (e.g., training programs, market linkages, financial support) to produce outcomes (e.g., increased income, improved product quality, market expansion).

c) Data Collection Aligned with CMO

Configurations: Data collection was designed to explore the different CMO configurations. This involved gathering qualitative and quantitative data from various stakeholders, including farmers, suppliers, processors, and market actors. For example, interviews and FGDs focused on understanding how specific interventions led to changes in behavior or outcomes within different contexts. The data was used to test the validity of the CMO configurations and refine the understanding of how the program works.

d) Analyzing the Variability in Outcomes: Realist evaluation acknowledged that programs often produce different outcomes in different contexts. The analysis therefore focused on understanding why the jackfruit value chain program succeeded in some areas or among certain groups and not others. This involved examining how different contextual factors will influence the activation of program mechanisms and lead to varied outcomes. For instance, the analysis might reveal that certain training programs can only be effective when combined with access to finance or that market access improvements were most impactful in regions with well-developed transport infrastructure.

e) Refining the Program Theory: Based on the findings from the CMO analysis, the initial program theory was refined. This helped to better explain how and why the program worked in different contexts. The refined theory provided a more nuanced understanding of the program's impact and offered insights into how similar programs could be adapted or improved in the future.

f) Formulating Recommendations: The final step involved formulating recommendations based on the refined program theory. These recommendations were context-specific, offering guidance on how to replicate successes in similar contexts and how to adapt the program for different environments. For example, recommendations might include tailoring interventions to local market conditions or providing additional support in areas where contextual challenges were identified.