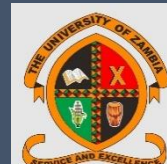


Tomato processing women cooperatives of Chongwe district in Zambia



Lessons Learned

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10/10/2024

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Background

The United States Embassy, through the Zambian Women in Agricultural Research and Development (ZAWARD), provided funding for a project implemented by Agriworth Incubator on a consultancy basis. A total of 100 participants, including 13 men, were trained in basic food safety principles and the processing of tomato sauce and tomato powder. Most of the participants are smallholder maize, soybean, and tomato farmers. The participants were organized into three rural camps or cooperatives in Chongwe District, with each camp comprising approximately 30 to 35 members who gathered at central locations on scheduled days for the four-day tomato processing training. The camps include Lwimba, Mwalumina, and Lukoshi.

This training was critical in addressing the challenges of market access, price fluctuations of raw tomatoes, and the lack of value addition. Training sessions across the camps were conducted between July and August 2022, and supervisory sessions are ongoing on a monthly basis to monitor progress in implementing food safety practices, production, and market access, among other areas. Below is a summary of the work accomplished and a snapshot of "a day in the life" of the women tomato processors in Chongwe District, Zambia.

In August 2022, Thandie Hamaimbo, a lead consultant for Agriworth, shared a presentation on social media about the tomato processing cooperatives in Chongwe District. The presentation highlighted the challenges these women were facing, including the need for further investment, climate change, waste management, demand and supply issues, price inflation, and a call for assistance and partnerships. NET Africa responded to the call, particularly in the areas of climate change and waste management, and agreed to assist the project in securing additional funding.

A memorandum of understanding was signed between the University of Zambia, Agriworth, and NET Africa to address the current challenges facing the women's tomato processing cooperatives in Chongwe. Following the agreement, Agriworth was invited by NET Africa to present these challenges at the United Nations General Assembly Science Summit in September 2022. NET Africa has since mobilized investment interest in the project and developed the AgriFund Risk Toolkit program and an SME agricultural research group. The Risk Toolkit program covers 11 key risk areas, ranging from personal security and integrity to health and safety, as well as natural resource use. It also includes digital supply chain management solutions.

The first online training session for Agriworth consultants on agricultural risk management is scheduled for Tuesday, 7th February. Additional training programs will be arranged for university staff. Full details about the AgriFund Risk Toolkit are provided below.

Introduction

The project of converting unsold tomatoes from the Chongwe market in Zambia into tomato paste and tomato powder aimed to promote a circular economy by reducing food waste, extending shelf life, and providing women farmers with an entrepreneurial opportunity to add value to their produce. While the initiative demonstrated significant potential, it also revealed the various challenges and risks associated with meeting market demands and navigating regulatory frameworks. Below is an analysis of the benefits, risks, and lessons learned from the project.

Benefits for the Women Who Participated

By converting unsold tomatoes into products with a longer shelf life, the women gained the ability to earn additional income from otherwise wasted produce. This move towards value-added processing increased their market potential and diversified their income streams.

The women farmers demonstrated remarkable entrepreneurial capabilities through their engagement in the project. They learned essential business skills such as product development, food safety compliance, and market dynamics, helping them take a more active role in the local economy.

The project encouraged sustainable practices by diverting unsold produce that would have otherwise gone to waste, reducing environmental impact and promoting a more efficient use of resources. This aligns with the principles of the circular economy, which seeks to minimize waste and make the most of existing resources.

The project inspired other women farmers in Zambia to adopt similar concepts, demonstrating the potential for widespread impact. The replication of the model by other groups highlights its sustainability and scalability, offering a blueprint for smallholder farmers to improve their livelihoods.

Risks and Barriers Encountered

A key risk that hindered the project was the lack of essential resources such as business premises, equipment, and transportation. These women operated informally and did not have the infrastructure required to scale up their operations or meet market demands.

The Zambian government's stringent food safety and quality standards posed a significant barrier to entry. Without the necessary infrastructure and financial backing to meet these regulations, the women could not access larger markets such as supermarkets, limiting the project's scalability.

Investors and funders were reluctant to commit to the project without significant capacity-building measures in place. The initiative required a high capital investment for training, equipment, and compliance with regulations, all of which made microfinance options insufficient without further assurances.

As the project operated within a volatile agricultural market, fluctuations in tomato prices and demand created financial instability for the farmers. Additionally, the lack of transportation and formal supply chain logistics meant that the women faced difficulties getting their processed products to larger markets.

Lessons Learned for Future Projects on Powdered Vegetables

1. One of the key takeaways from the project was that capacity building must be a priority before scaling up such initiatives. Training programs in food safety, business management, supply chain logistics, and compliance with national and international standards are essential to attract investors and ensure the project's sustainability. Without this foundation, even the most promising entrepreneurial initiatives may fail to meet market expectations.
2. There is a need for a transitional period where low-income, high-risk communities, such as smallholder farmers, are given time to meet stringent food safety standards. Policies that allow a gradual introduction of regulations—accompanied by mentorship, capacity building, and funding—can make a significant difference in helping these groups succeed without being overwhelmed by high compliance costs from the outset.
3. Future projects should prioritize resource investment in critical infrastructure such as processing equipment, transportation, and storage facilities. Addressing these logistical barriers can enable smallholder farmers to participate more effectively in the value-added processing of produce and gain better access to formal markets.

4. To attract funding, future projects need to focus on developing comprehensive risk management strategies that reassure potential investors. The AgriFund Risk Toolkit Program could serve as a model to help mitigate risks related to health, safety, and market volatility. Providing a clear plan for risk mitigation can help unlock funding and provide financial security for microfinance arrangements.
5. The replication of the project by other women farmers shows that once capacity-building programs and resources are in place, these models can be scaled up across multiple regions. Encouraging other communities to adopt the powdered vegetable concept can significantly increase the number of participants and expand its impact across Zambia and beyond.
6. Collaborative efforts with government agencies, NGOs, and the private sector are essential for providing the necessary support for such projects. Strengthening these partnerships can offer technical assistance, resource mobilization, and policy advocacy, helping to overcome the barriers faced by smallholder farmers.

While the project faced substantial challenges, it also opened up significant opportunities for the women involved and for future agricultural ventures. The lessons learned can be applied to future projects focused on powdered vegetables and similar value-added initiatives. Addressing capacity-building needs, ensuring phased compliance with food safety standards, and securing sufficient resource investment will help break the cycle of poverty and create a pathway for smallholder farmers to thrive in the formal market. With sustained efforts and partnerships, these projects can transform the agricultural landscape in Zambia and empower more women farmers to contribute meaningfully to the economy.

The story of the tomato processing women cooperatives of Chongwe district in Zambia



Meet Saphister Chiposo, a rural-based single mother of eight children who participated in the tomato processing training at the Lwimba camp of Chongwe district. View the videos below:

[Saphister's](#)

[background](#)

[Her role and the role of the tomato processing cooperative](#)

[What has gained from participating in the tomato processing activities?](#)

Tomato processing work done in Chongwe district so far

Introductory activities



a) *Figure 1: Introductory session for the women farmers.*



Figure 2: Despite travelling long distances to get to the central training location with babies on their backs, the women put in effort to adhere to COVID-19 guidelines and actively participated in the training. Topics included basic techniques and importance of value addition and basic food safety principles

b) *Hands-on tomato processing training*



Figure 3: Agriworth trainer demonstrating how to use basic utensils to ensure consistent product quality at Mwalumina camp. The training location/area is not connected to the national electricity grid. The lack of access to energy preferably renewable energy resulted in the use of firewood



Figure 4: Blending of the tomato sauce mixture using a traditional manual blender by a male



Figure 5: Mwalumina camp Women working together to make tomato sauce



Figure 6: Final tomato sauce product



Figure 7: Sample of packaging material that was used for demonstration purposes



Figure 8: One of the trainees participating in constructing a solar dryer for drying tomatoes



Figure 9: Basic solar dryer



Figure 10: Lwimba camp has since put in the effort to service and install a better solar dryer to increase production



Figure 11: Tomato powder with no additives produced by the women of Chongwe district which they are also using to make tomato gravy in their homes among other things



Figure 12: Tomato products in recycled packaging materials

C) Supervisory visits

[Lwimba camp women welcoming Agriworth trainers and ZAWARD team to one of the supervisory visits](#)

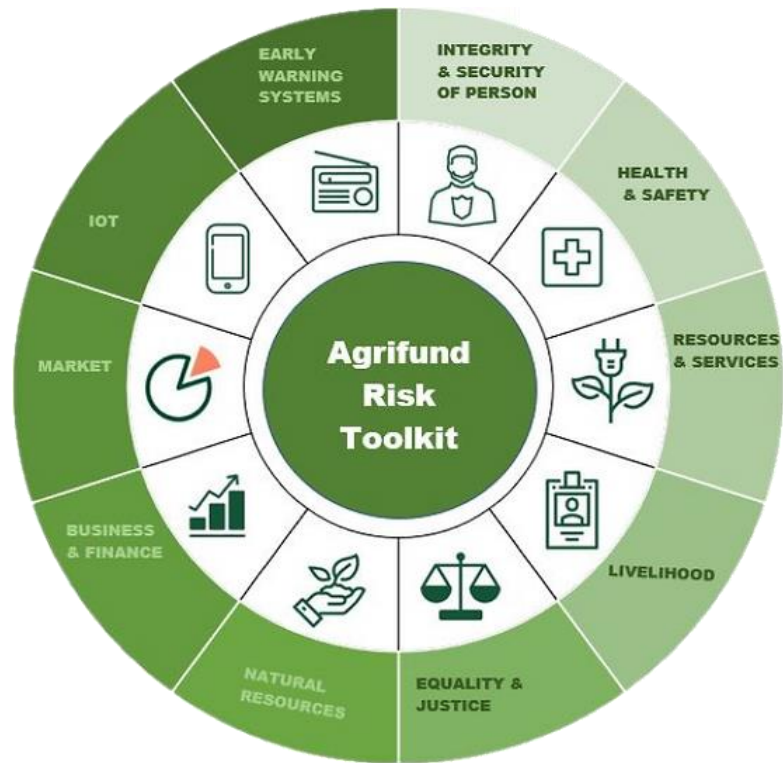
The video also shows products that the women made on their own after the training and had packaged in recycled packaging materials.

NET Africa - AgriRisk toolkit

(train-the-trainer) program and the research group

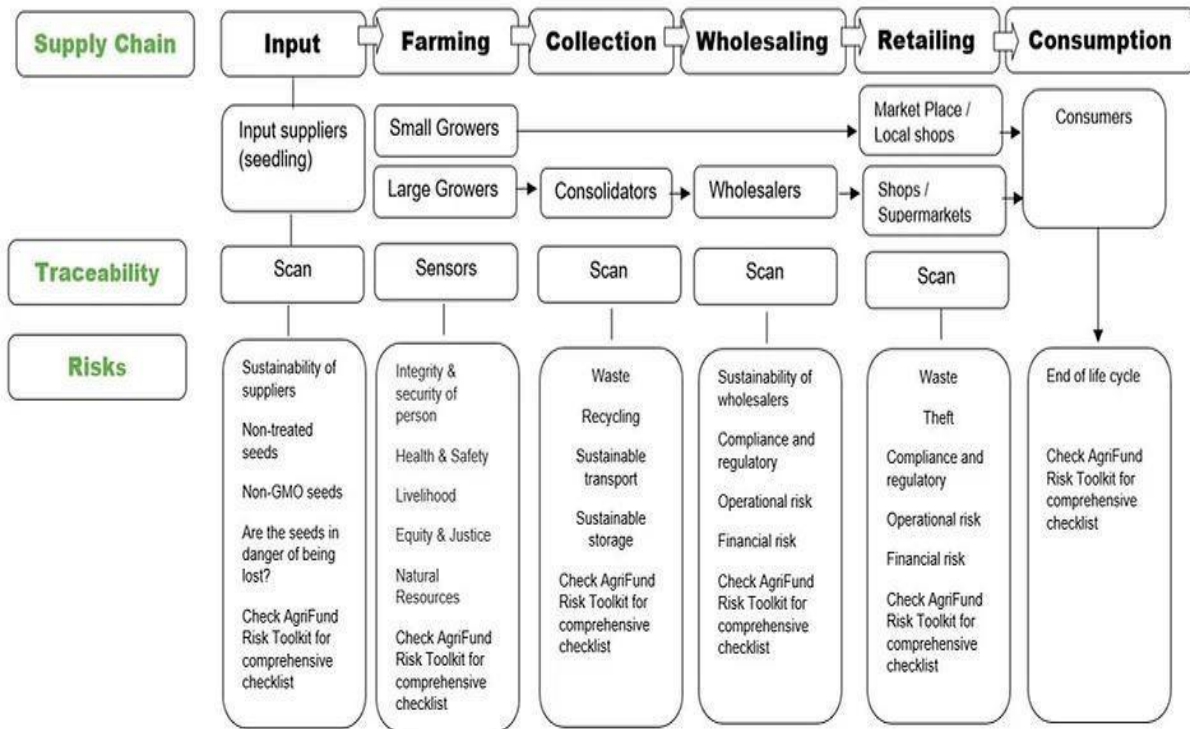
Basic Accountancy Training for farming cooperatives using our NABs system

Natural Accounting Business Software (NABS)		for Small Business Enterprises		Natural Environment Technology Ltd					
Y1 - Annual Income Statement		Y2 - Annual Income		Y3 - Annual Income		Y4 - Annual Income		Y5 - Annual Income	
Income	£	Income	£	Income	£	Income	£	Income	£
Sales	22,039	Dairy	23400	Dairy	29700	Dairy	10000	Dairy	20900
Crops	34,387	Crops	69,000	Crops	67,980	Crops	76,098	Crops	79,612
Pigs	43,387	Pigs	23,425	Pigs	24,080	Pigs	23,425	Pigs	26,509
Cows	65,489	Cows	65,489	Cows	62,080	Cows	66,908	Cows	65,489
Flowers	34,445	Flowers	27,090	Flowers	26,099	Flowers	29,809	Flowers	27,654
	201,007								
Cost of Goods Sold (COGS)	£	(COGS)	£	(COGS)	£	(COGS)	£	(COGS)	£
Materials	10,000	Materials	10,000	Materials	10,000	Materials	10,000	Materials	10,000
Labour	35,000	Labour	35,000	Labour	35,000	Labour	35,000	Labour	35,000
Overheads	13,000	Overheads	13,000	Overheads	13,000	Overheads	13,000	Overheads	13,000
	58,000		58,000		58,000		58,000		58,000
Gross Income	143,007	Total Income	208,404	Total Income	209,939	Total Income	206,240	Total Income	220,364
Operating Expenses	£	Operating Exp	£	Op Expenses	£	Op Expenses	£	Op Expenses	£
Spraying	20,000	Spraying	25,000	Spraying	28,900	Spraying	27,070	Spraying	24,356
Harvesting	23,000	Harvesting	39,000	Harvesting	29,000	Harvesting	32,987	Harvesting	24,987
Fertiliser	4,000	Fertiliser	4,000	Fertiliser	3,900	Fertiliser	3,890	Fertiliser	4,000
Herbicide	7,000	Herbicide	7,000	Herbicide	8,643	Herbicide	6,890	Herbicide	7,000
Contractors	25,000	Contractors	30,000	Contractors	24,890	Contractors	35,000	Contractors	36,890
Freight	24,000	Freight	20,000	Freight	24,000	Freight	24,000	Freight	26,000
Irrigation	22,000	Irrigation	10,000	Irrigation	12,897	Irrigation	11,785	Irrigation	11,234
Total Operating Expenses	125,000	Total Op Exp	135,000	Total Op Exp	132,030	Total Op Exp	141,602	Total Op Exp	134,467
Other Expenditure	£	Other Expendit	£	Other Expendit	£	Other Expendit	£	Other Expendit	£
Depreciation	2200	Depreciation	2200	Depreciation	2200	Depreciation	2200	Depreciation	2200
Interest Costs (Includes interest paid on all loans)	9000	Interest Costs (Inc)	9000	Interest Costs (In	9000	Interest Costs (In	9000	Interest Costs	9000
Total Other Expenditure	11200	Total Other Exp	11200	Total Other Exp	11200	Total Other Exp	11200	Total Other Exp	11200
Earnings Before Taxes (EBT)	6,807	EBT	73,404	EBT	77,909	EBT	64,638	EBT	85,897
Less Taxes (this may vary from country to country)	3,476	Less Taxes	5,434	Less Taxes	6,098	Less Taxes	4,434	Less Taxes	5,434
Net Income	3,331	Net Income	67,970	Net Income	71,811	Net Earnings o	60,204	Net Earnings	80,463



This is the AgriFund Risk toolkit that provides a full holistic overview of the risk currently facing the Agri-SME. <https://www.netafrica.be/risk-toolkit> Training the trainer program - Overview of the program and how to use it - Tuesday 7th February, other dates for training to be arranged.

AgriFund Domestic Supply Chain Management



AgriFund Supply Chain Management - training program (7th February - overview and start of program)

The OECD framework for well-being, which includes three pillars—material living conditions, quality of life, and sustainability—provides a comprehensive approach to evaluating and improving the well-being of populations. Applying this framework to the poor women tomato farmers in Zambia highlights both their current struggles and potential areas for intervention to improve their livelihoods. Using this framework, I explored how each pillar relates to the challenges and opportunities facing these women. We had aspirations to conduct primary research among the women but due to financial

1. Material Living Conditions

Income and Wealth:

The women tomato farmers in Zambia typically have low and inconsistent incomes due to their reliance on small-scale, informal agriculture. The lack of market access, price fluctuations, and inability to add value to their crops limits their wealth accumulation. Without value-added products, such as tomato paste or powder, their income remains highly vulnerable to market shocks. This condition highlights the need for interventions to help them create more stable income streams through training, better access to resources, and improved supply chains.

Jobs and Earnings:

These women are self-employed and their earnings are directly tied to their farm yields and ability to sell their produce. However, job security is low, and earnings fluctuate based on seasonal demand, weather conditions, and the perishability of tomatoes. If they could formalize their operations, process their produce, and diversify their income sources, they could secure more stable employment and better earnings, improving their overall material living conditions.

Housing:

Although not directly related to their tomato farming, poor living conditions often compound their challenges. Many of these women live in rural areas with limited access to infrastructure, sanitation, and stable housing, which adds stress to their daily lives and hampers productivity. Improving housing and rural infrastructure would directly contribute to better working and living environments.

2. Quality of Life

Health Status:

The physical demands of farming, combined with poor access to healthcare and nutritious food, negatively impact the health of these women. Additionally, the lack of proper storage facilities for tomatoes leads to food waste and reduces their income, which affects their ability to access quality healthcare. Ensuring access to healthcare services, nutrition education, and better food security would improve their well-being.

Work & Life Balance:

These women face a difficult work-life balance as they juggle farming responsibilities, household duties, and often childcare. Long hours spent in informal agricultural work, combined with limited earnings, leave little room for rest or personal development. Providing support such as childcare facilities, financial empowerment programs, and community-based women's cooperatives could improve their balance between work and life.

Education & Skills:

Education levels are often low among rural women farmers, limiting their access to information on modern farming techniques, food safety standards, and business management. Training programs that focus on skill-building—particularly in areas like food processing, entrepreneurship, and sustainability—could greatly enhance their ability to manage their farms and take advantage of value-added processes like tomato paste or powder production.

Civil Engagement & Government:

The women's ability to engage in decision-making processes related to agriculture and economic development is often limited. They are rarely included in policy discussions, which means their specific needs, such as access to markets and infrastructure, are overlooked. Encouraging civil engagement and creating platforms for these women to voice their concerns would improve their influence over the policies that affect their livelihoods.

Social Connections:

The women farmers are often part of informal cooperatives, which provide social support and opportunities for collaboration. Strengthening these cooperatives and creating formal networks would help them share knowledge, pool resources, and create a more supportive social structure for collective growth.

Environmental Quality:

Agricultural practices can negatively impact the environment, and these women are particularly vulnerable to environmental degradation. Soil erosion, climate change, and water scarcity affect their crop yields and income. Training in sustainable farming techniques, such as water conservation and soil management, would improve both their productivity and environmental quality.

Personal Security:

Rural women farmers often face personal security risks, including the threat of gender-based violence and theft of their produce. Ensuring personal security and providing safe working conditions through legal frameworks and community support can help improve their quality of life.

Subjective Well-being:

Despite the hardships, many women may find fulfilment in their roles as farmers and providers for their families. However, economic instability, food insecurity, and lack of opportunities often negatively impact their overall well-being. Efforts to stabilize their income, provide education, and offer social support can significantly improve their subjective well-being.

3. Sustainability

Natural Capital:

The sustainability of the natural environment is critical for these women, as their livelihoods depend on fertile soil, water availability, and stable climate conditions. Deforestation, soil degradation, and climate change pose significant risks. Implementing sustainable farming practices, investing in renewable energy, and promoting conservation would help protect natural resources, ensuring long-term agricultural productivity.

Human Capital:

These women represent a valuable pool of human capital, with untapped potential in entrepreneurship and agricultural development. However, without proper education, training, and access to resources, their potential remains underutilized. Investing in

capacity-building programs that provide technical skills, business management training, and access to technology can unlock their potential and contribute to their personal and community growth.

Social Capital:

Building stronger networks and social ties among women farmers can enhance their collective bargaining power and improve access to markets. Social capital, in the form of cooperatives and community organizations, can help women pool resources, share knowledge, and support each other in achieving economic goals. Strengthening these networks would increase resilience and improve their ability to adapt to market and environmental changes.

Economic Capital:

These women farmers have limited access to economic capital, including funding, investment, and financial services. Microfinance programs have the potential to support small-scale farmers, but the high-risk nature of agriculture and the inability to meet stringent food safety standards make them less attractive to investors. To address this, a combination of public and private investment is needed, alongside policies that provide transitional periods for compliance with food safety regulations. Encouraging investment in rural infrastructure, market access, and capacity building would improve their economic capital and open up new growth opportunities.

Conclusion

Applying the OECD framework for well-being to the women tomato farmers in Zambia reveals several areas of intervention. While they face significant challenges in material living conditions, quality of life, and sustainability, there are clear pathways for improvement. Addressing their needs through capacity building, access to resources, and supportive policies would not only improve their economic situation but also enhance their overall well-being and contribute to sustainable agricultural practices in Zambia. Through targeted investments and collaborative efforts, these women can transition from subsistence farming to being key players in the agricultural economy, lifting themselves and their communities out of poverty. We hope as a result of this work that further assistance will be provided to these women.