MUMBWABILE YOUTH

Research Report

LOCAL VALUE ADDITION AS A CLIMATE ADAPTATION STRATEGY FOR SMALLHOLDER FARMERS

Evidence from Mwembeshi Area, Chibombo District, Zambia

Prepared by: Mumbwabile Youth Multi-Purpose Society a Non-Profit Research and Sustainable Development Think Tank Zambia

In Collaboration With: Zambia Institute for Policy Analysis and Research (ZIPAR)

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Funding Partner

This research was supported by a grant from Zambia National Commercial Bank (ZANACO) Supporting rural enterprise development and agricultural value chains in Zambia.

Project Duration: January 2023 - December 2025

Published by: Mumbwabile Youth Multi-Purpose Society
Lusaka, Zambia

Publication Date:2025

Publication Link:https://mumbwabileyouthsociety.com/research

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Acknowledgements

Mumbwabile Youth Multi-Purpose Society would like to express its sincere appreciation to all institutions and individuals who contributed to the successful implementation of the research project titled “Local Value Addition as a Climate Adaptation Strategy for Smallholder Farmers.” This study would not have been possible without the support, collaboration, and commitment of numerous partners and community stakeholders.

First and foremost, the organization extends its deepest gratitude to the Zambia National Commercial Bank (ZANACO) for providing financial support for this initiative. Through its commitment to promoting rural enterprise development and sustainable agricultural value chains, ZANACO made it possible to implement this practical research project and establish the livestock processing facility in Mwembeshi area of Chibombo District.

The research team also acknowledges the invaluable participation of smallholder farmers in Mwembeshi area, whose cooperation, openness, and willingness to share their experiences formed the foundation of this study. The farmers’ insights and participation in the livestock value chain provided essential data and practical perspectives that enriched the research findings.

Special appreciation is extended to the community leaders and local authorities in Chibombo District who supported community mobilization activities and facilitated engagement with farmer groups. Their leadership played an important role in enabling the project to operate effectively within the local community.

The research team also recognizes the technical contributions of partner institutions and stakeholders who provided guidance and support throughout the implementation of the project. Their expertise and engagement strengthened the quality of the research and ensured that the project generated valuable insights relevant to rural development and climate adaptation strategies.

Mumbwabile Youth Multi-Purpose Society further wishes to acknowledge the dedication and professionalism of the research team and project staff who worked tirelessly throughout the project period. Their commitment to rigorous research, community engagement, and project implementation was instrumental in achieving the objectives of the study.

Finally, the organization expresses its gratitude to all individuals and institutions who contributed to the broader goal of strengthening climate-resilient rural livelihoods in Zambia. The collaboration demonstrated through this project highlights the importance

of partnerships between financial institutions, community organizations, and rural communities in advancing sustainable development.
It is our hope that the findings from this research will contribute to ongoing efforts aimed at promoting inclusive agricultural value chains, rural economic resilience, and climate adaptation for smallholder farmers in Zambia.

About the Authors / Research Team

This research was conducted by a multidisciplinary team of researchers and development practitioners coordinated by Mumbwabile Youth Multi-Purpose Society, a Zambian nonprofit research and sustainable development think tank dedicated to generating evidence-based solutions for rural development, climate resilience, and inclusive economic growth.

The research team brought together expertise in agricultural economics, climate change, development policy, monitoring and evaluation, and community-based research, enabling the project to integrate both academic analysis and practical field implementation.

Dr. Joseph Phiri - Principal Investigator

Dr. Joseph Phiri served as the Principal Investigator (PI) for this research project. He is a highly experienced economist and policy researcher with extensive experience in public finance, economic policy analysis, and climate-related development research.
Dr. Phiri currently works with the Zambia Institute for Policy Analysis and Research (ZIPAR), where he contributes to national policy analysis and research on economic development and public policy. Over the course of his career, he has been involved in numerous research initiatives examining economic development, fiscal policy, and sustainable development in Zambia.

As Principal Investigator, Dr. Phiri was responsible for overseeing the overall research design, analytical framework, and policy relevance of the study. He also provided technical guidance on the economic analysis of agricultural value chains and climate adaptation strategies.

Precious Phiri - Environmental and Climate Research Specialist

Precious Phiri served as the Environmental and Climate Research Specialist for the project. She holds a Bachelor of Science in Environmental and Natural Resources and a Master of Science in Environmental Management.
With more than eight years of experience in environmental research and climate-related development programs, Precious has worked on several projects examining climate change impacts on rural livelihoods and natural resource management.
In this project, she led the environmental analysis component of the research, examining the relationship between climate variability and agricultural production systems in Mwembeshi area. She also contributed to field data collection and analysis related to climate resilience among smallholder farmers.

Lucy Nshimbi – Gender Equality and Social Inclusion (GESI) Specialist

Lucy Nshimbi served as the Gender Equality and Social Inclusion (GESI) Specialist for the project. She holds a Bachelor of Arts in Psychology with Gender Studies and a Master of Science in Monitoring and Evaluation.

Lucy has more than eight years of experience working on social development programs focusing on gender equality, community development, and monitoring and evaluation. Within this project, she was responsible for ensuring that the research incorporated gender-sensitive methodologies and adequately captured the experiences of women and youth participating in the livestock value chain. She also facilitated focus group discussions and community consultations aimed at understanding the social dimensions of rural economic resilience.

Project Coordination - Mumbwabile Youth Multi-Purpose Society

The research project was coordinated by Mumbwabile Youth Multi-Purpose Society, a nonprofit research and development organization working to advance sustainable development solutions in Zambia.

The organization focuses on generating practical research that addresses key development challenges including:

- climate change adaptation
- rural economic development
- gender equality and social inclusion
- sustainable agricultural systems.

Through its research and development initiatives, Mumbwabile works with local communities, financial institutions, and government stakeholders to pilot innovative solutions that strengthen rural livelihoods and promote sustainable economic growth.

Collaborative Approach

The research team adopted a collaborative approach that integrated academic research with practical field implementation. By combining policy research expertise with community engagement and development practice, the project was able to generate insights that are both analytically rigorous and grounded in real-world rural development experiences.

This interdisciplinary approach allowed the study to examine the economic and social dimensions of agricultural value chains while also exploring their role in strengthening climate resilience for smallholder farmers.

Executive Summary

Climate change is increasingly threatening agricultural livelihoods across Zambia. Smallholder farmers, who account for the majority of agricultural producers in the country, are particularly vulnerable to climate variability because their production systems depend heavily on rainfall and natural ecosystems. Irregular rainfall patterns, droughts, floods, and temperature fluctuations are affecting crop production, livestock productivity, and rural household incomes.

In response to these challenges, Mumbwabile Youth Multi-Purpose Society implemented a two-year research initiative titled “Local Value Addition as a Climate Adaptation Strategy for Smallholder Farmers.” The project was funded by the Zambia National Commercial Bank (ZANACO) with a total investment of USD 100,000.

The research was conducted between 2023 and 2025 in Mwembeshi area of Chibombo District, where the project established a small livestock processing facility to examine how local value addition can strengthen the resilience of smallholder farmers particularly women and youth against climate-related economic shocks.

The project focused on smallholder chicken and goat farmers, who often face significant income losses when climate variability disrupts production cycles or reduces livestock market prices. By establishing a local processing facility for livestock products, the research examined whether value addition could increase farmers’ incomes, reduce market vulnerability, and improve economic stability.

The study adopted a mixed-methods research approach combining household surveys, farmer interviews, focus group discussions, and analysis of production and market data generated through the processing facility. The research aimed to evaluate whether localized agro-processing can serve as an effective climate adaptation strategy for rural farmers.

Key findings from the research demonstrate that local value addition can significantly improve the economic resilience of smallholder farmers. Farmers participating in the value addition system experienced improved price stability, increased income from processed livestock products, and greater market access compared to those selling raw livestock products in traditional markets.

The research also found that local value addition initiatives can play a critical role in reducing climate-induced economic vulnerability, particularly among women and youth farmers who often face limited access to markets and financial services.
In addition to economic benefits, the project contributed to broader rural development outcomes, including job creation, increased local food processing capacity, and strengthened farmer cooperatives in the Mwembeshi area.

The findings of this study have important implications for climate adaptation policy in Zambia. The research demonstrates that agro-processing and value chain development can serve as practical climate adaptation strategies, enabling rural farmers to improve

income stability and reduce dependence on climate-sensitive primary production systems.

The study therefore recommends that climate adaptation strategies in Zambia should incorporate local value addition initiatives, particularly in rural areas where smallholder farmers face increasing climate risks.

Through its practical research model combining infrastructure development with field-based research, the project provides a replicable approach for strengthening rural economic resilience in the face of climate change.

2. Introduction

2.1 Climate Change and Agricultural Vulnerability in Zambia

Climate change has emerged as one of the most significant challenges affecting agricultural production and rural livelihoods across Sub-Saharan Africa. In Zambia, where agriculture contributes significantly to national food security and rural employment, climate variability is increasingly disrupting farming systems and affecting the economic stability of smallholder farmers.

The majority of farmers in Zambia operate on a small scale and rely heavily on rain-fed agricultural systems. This dependence on rainfall makes agricultural production highly vulnerable to changes in climate patterns. In recent decades, Zambia has experienced increasing climate variability characterized by irregular rainfall patterns, prolonged dry spells, occasional droughts, and extreme weather events.

These climatic changes have had significant impacts on agricultural productivity. Crop yields have become increasingly unpredictable, livestock productivity has been affected by water shortages and heat stress, and rural households are facing growing income instability. As a result, many smallholder farmers struggle to maintain consistent income levels and sustain their livelihoods.

Climate change therefore represents not only an environmental challenge but also a major economic and development concern, particularly for rural communities whose livelihoods depend on climate-sensitive agricultural activities.

2.2 Smallholder Farmers and Climate Adaptation Challenges

Smallholder farmers play a central role in Zambia's agricultural sector. It is estimated that smallholder farmers account for the majority of agricultural producers in the country and contribute significantly to national food production.

However, these farmers often face multiple structural challenges that limit their ability to adapt to climate variability. These challenges include limited access to financial services, inadequate storage and processing facilities, poor market infrastructure, and fluctuating agricultural commodity prices.

For livestock farmers, climate variability can affect the availability of pasture and water resources, reduce livestock productivity, and increase disease risks. At the same time, farmers selling livestock products such as goats and chickens often face unstable market prices and limited bargaining power in traditional markets.

These conditions mean that even when farmers successfully produce livestock or crops, they may still struggle to obtain fair prices for their products. As a result, many smallholder farmers remain economically vulnerable even during productive seasons.
Strengthening the resilience of smallholder farmers therefore requires not only improving agricultural production systems but also enhancing the economic systems that support rural livelihoods.

2.3 Value Addition as a Climate Adaptation Strategy

In recent years, value addition has gained increasing attention as a potential strategy for strengthening rural economic resilience. Value addition refers to the process of transforming raw agricultural products into higher-value goods through processing, packaging, and improved market access.

For smallholder farmers, value addition can create opportunities to increase income by selling processed or semi-processed products rather than raw commodities. For example, livestock products such as chickens and goats can be processed, packaged, and marketed at higher prices compared to selling live animals in traditional markets.
Value addition can also help farmers reduce exposure to price fluctuations and market uncertainties. By participating in local processing and value chains, farmers may gain greater control over product quality, market timing, and pricing.

From a climate adaptation perspective, value addition can help farmers diversify income sources and improve financial stability. This economic resilience can enable farmers to better withstand climate-related shocks such as droughts, livestock losses, or reduced production.

Despite its potential benefits, local value addition remains limited in many rural areas of Zambia due to infrastructure constraints, lack of investment, and limited access to processing technologies.

2.4 The Mwembeshi Research Initiative

Recognizing the potential role of value addition in strengthening rural livelihoods, Mumbwabile Youth Multi-Purpose Society initiated a practical research project examining local value addition as a climate adaptation strategy for smallholder farmers.
The project was implemented in Mwembeshi area of Chibombo District in Central Province of Zambia, a rural agricultural region where many households depend on small-scale livestock farming and crop production.

Mwembeshi was selected as the study area because it represents a typical rural farming environment where smallholder farmers face climate-related challenges affecting agricultural production and income stability.

With financial support from the Zambia National Commercial Bank (ZANACO), the project established a small livestock processing facility designed to support the processing and marketing of locally produced chicken and goat products.
This facility served as a practical research platform for examining how local value addition could influence the income stability and economic resilience of smallholder farmers.

2.5 Research Focus and Objectives

The research aimed to examine whether establishing local processing infrastructure could strengthen the economic resilience of smallholder farmers facing climate-related challenges.

Specifically, the project sought to evaluate:

- whether local livestock processing can increase income opportunities for smallholder farmers
- whether value addition can reduce the economic vulnerability of farmers affected by climate variability
- how participation in local value chains affects the livelihoods of women and youth farmers
- whether value addition initiatives can serve as practical climate adaptation strategies in rural Zambia.

The study also sought to generate evidence that could inform policy discussions on rural economic development, agricultural value chains, and climate adaptation strategies.

2.6 Importance of the Study

This research contributes to ongoing discussions on how climate adaptation strategies can support sustainable rural livelihoods.

While many climate adaptation programs focus primarily on improving agricultural production through climate-smart farming practices, relatively little attention has been given to strengthening rural value chains and market systems.

By examining the role of value addition in improving economic resilience among smallholder farmers, this research provides insights into how rural economic systems can be strengthened to better withstand climate-related shocks.

The findings of this study may inform future initiatives aimed at promoting agro-processing, rural entrepreneurship, and inclusive agricultural development in Zambia.

3. Background and Literature Review

3.1 Climate Change and Agricultural Systems in Africa

Agriculture remains one of the most climate-sensitive sectors in Sub-Saharan Africa. The region's agricultural systems depend largely on rainfall patterns and natural ecosystems, making them highly vulnerable to climate variability and extreme weather events. According to the Intergovernmental Panel on Climate Change (IPCC), African agriculture is expected to face increasing climate-related risks due to rising temperatures, changing rainfall patterns, and increased frequency of droughts and floods (IPCC, 2022).

Climate change affects agricultural productivity through multiple pathways. Changes in rainfall patterns influence crop planting cycles and crop yields, while higher temperatures may increase water stress and reduce livestock productivity. Additionally, climate variability can affect the availability of pasture, water resources, and feed for livestock production.

For rural communities that rely heavily on agriculture for food and income, these changes can significantly increase economic vulnerability. Reduced agricultural productivity often leads to lower household incomes, food insecurity, and increased poverty risks.

In response to these challenges, governments and development organizations have increasingly emphasized climate adaptation strategies aimed at strengthening the resilience of agricultural systems and rural livelihoods.

3.2 Climate Change and Rural Livelihoods in Zambia

Zambia's economy is strongly linked to agriculture, with a large proportion of the population engaged in small-scale farming. The agricultural sector plays a critical role in providing food security, employment, and income for rural households.
However, Zambia's agricultural production systems are predominantly rain-fed, making them particularly vulnerable to climate variability. Over the past two decades, the country has experienced several climate-related shocks including droughts, flooding, and irregular rainfall patterns that have affected agricultural production.

Research by the Zambia Meteorological Department and the Ministry of Agriculture indicates that climate variability has contributed to declining crop yields and increased production uncertainty in several regions of the country (ZMD, 2021). Livestock production has also been affected through reduced pasture availability, increased disease outbreaks, and water shortages.

These climate-related challenges have had important economic consequences for rural households. Smallholder farmers often operate with limited financial resources and have limited access to insurance, credit, or formal markets. As a result, climate shocks can quickly translate into income losses and economic instability.
Strengthening the resilience of smallholder farmers is therefore essential for promoting sustainable rural development in Zambia.

3.3 Smallholder Farmers and Market Vulnerability

Smallholder farmers face multiple challenges beyond climate variability. One of the most significant barriers affecting rural livelihoods is limited access to efficient markets and value chains.

In many rural areas of Zambia, farmers primarily sell unprocessed agricultural products such as live animals, fresh crops, or raw agricultural commodities. These products often attract low prices because farmers have limited bargaining power and must sell their products quickly due to the lack of storage and processing facilities.

Livestock farmers, particularly those raising goats and chickens, often face price fluctuations depending on seasonal demand and supply conditions. In many cases, middlemen or traders capture a significant share of the value generated within the agricultural value chain, leaving farmers with relatively low incomes.

Market inefficiencies therefore compound the economic challenges faced by smallholder farmers. Even when agricultural production is successful, farmers may still struggle to generate sustainable income from their activities.

Improving value chains and expanding access to value addition opportunities can therefore play a critical role in strengthening rural livelihoods.

3.4 Agricultural Value Chains and Rural Development

Agricultural value chains refer to the sequence of activities involved in producing, processing, distributing, and marketing agricultural products. Efficient value chains can create opportunities for farmers to capture greater value from their production activities.
Value addition is an important component of agricultural value chains. It involves transforming raw agricultural products into higher-value goods through processing, packaging, branding, or improved marketing strategies.
For example, livestock products such as goats and chickens can be processed into packaged meat products that can be sold in urban markets at higher prices. Similarly, crops can be processed into flour, oils, or other food products with greater market value.
Research has shown that participation in value-added agricultural markets can significantly improve farmer incomes and support rural economic development (World Bank, 2019). Value addition can also stimulate local economic growth by creating employment opportunities in processing, packaging, transportation, and marketing.
In addition, local agro-processing initiatives can reduce post-harvest losses and improve food supply chains within rural communities.

3.5 Value Addition as a Climate Adaptation Strategy

In the context of climate change, value addition has increasingly been recognized as a potential strategy for strengthening economic resilience among smallholder farmers.
Climate adaptation strategies traditionally focus on improving agricultural production systems through climate-smart farming techniques such as drought-resistant crops, improved irrigation systems, and sustainable land management practices.
However, economic resilience is also an important component of climate adaptation. Farmers who have diversified income sources and stronger market connections are generally better able to withstand climate-related shocks.

Value addition can help farmers achieve greater economic stability by increasing the value of agricultural products and reducing dependence on volatile commodity markets. By participating in local processing and value chains, farmers can access higher-value markets and generate more stable incomes.

Additionally, local processing facilities can create employment opportunities within rural communities, helping to diversify household income sources beyond primary agricultural production.

Several studies have emphasized the importance of strengthening agricultural value chains as part of broader climate adaptation strategies for rural economies (FAO, 2020).

3.6 Local Agro-Processing and Rural Resilience

Local agro-processing initiatives can play a significant role in strengthening rural economic systems. By establishing processing facilities within rural areas, farmers can access nearby markets for their products and reduce transportation costs.
Local processing facilities can also help farmers coordinate production and marketing activities through farmer cooperatives or producer groups. These collective systems can improve bargaining power and enable farmers to negotiate better prices for their products.

In addition, local value addition initiatives may encourage farmers to invest more in livestock production and crop cultivation because they have greater confidence in market opportunities.

These dynamics can contribute to broader rural economic development by stimulating investment, creating employment opportunities, and improving household incomes.
Despite these potential benefits, many rural areas in Zambia still lack the infrastructure and investment needed to support local value addition initiatives.

3.7 Research Gap

Although value addition has been widely promoted as a strategy for improving agricultural value chains, there is limited empirical research examining its role as a climate adaptation strategy in Zambia.

Most climate adaptation programs focus primarily on agricultural production systems rather than the economic structures that support rural livelihoods.
This research therefore seeks to fill an important gap by examining how local value addition initiatives can influence the economic resilience of smallholder farmers facing climate-related challenges.

The establishment of the livestock processing facility in Mwembeshi provided a practical opportunity to examine how local value addition systems operate in a real rural environment and how they may contribute to strengthening farmer livelihoods.

4. Problem Statement, Research Questions and Objectives

4.1 Problem Statement

Smallholder farmers play a vital role in Zambia's agricultural sector, contributing significantly to food production, rural employment, and local economic development. However, the livelihoods of these farmers are increasingly threatened by climate change and climate variability.

In recent years, Zambia has experienced more frequent episodes of irregular rainfall, prolonged dry spells, and occasional flooding. These climatic changes have disrupted agricultural production cycles, reduced crop yields, and affected livestock productivity. For smallholder farmers who depend heavily on agriculture as their primary source of income, these climate-related shocks can result in significant economic losses and increased livelihood vulnerability.

In addition to climate-related challenges, smallholder farmers in Zambia often face structural barriers within agricultural markets. Many farmers sell raw agricultural products such as live livestock or unprocessed crops in local markets where prices are unstable and often unfavorable. Limited access to storage facilities, processing infrastructure, and organized value chains means that farmers are often forced to sell their products at low prices, particularly during peak production periods.

This situation reduces the profitability of smallholder farming and limits the ability of rural households to accumulate savings or invest in improved agricultural practices. As a result, even relatively small climate shocks can have severe economic consequences for rural communities.

Livestock farmers in particular face significant market challenges. Farmers raising goats and chickens frequently sell live animals to traders or middlemen who capture a substantial share of the value within the supply chain. Without access to local processing facilities, farmers have limited opportunities to participate in higher-value markets.

Local value addition initiatives such as livestock processing facilities have the potential to strengthen farmer incomes by enabling farmers to sell processed products with

higher market value. However, there is limited empirical evidence in Zambia demonstrating how local value addition initiatives affect the economic resilience of smallholder farmers facing climate-related challenges.

Understanding the role that local agro-processing and value addition can play in strengthening farmer livelihoods is therefore essential for developing effective climate adaptation strategies for rural communities.

This research project was designed to address this knowledge gap by examining whether the establishment of a local livestock processing facility in Mwembeshi area of Chibombo District could improve the economic resilience of smallholder farmers and reduce their vulnerability to climate-related economic shocks.

4.2 Research Questions

The study was guided by the following key research questions:

1. How does climate variability affect the income stability of smallholder farmers in Mwembeshi area of Chibombo District?
2. What challenges do smallholder livestock farmers face in accessing fair and stable markets for their products?
3. How does local value addition through livestock processing influence the incomes of smallholder chicken and goat farmers?
4. To what extent can local agro-processing initiatives strengthen the economic resilience of rural farmers facing climate variability?
5. How do value addition initiatives affect the participation of women and youth in rural agricultural value chains?
6. What policy lessons can be drawn from the Mwembeshi case study for strengthening climate adaptation strategies for smallholder farmers in Zambia?

4.3 Research Objectives

4.3.1 General Objective

The overall objective of the study was to examine local value addition as a climate adaptation strategy for strengthening the economic resilience of smallholder farmers in Zambia.

4.3.2 Specific Objectives

The study pursued the following specific objectives:

1. To assess the effects of climate variability on the livelihoods and income stability of smallholder farmers in Mwembeshi area.

2. To examine market challenges faced by smallholder farmers selling livestock products in traditional markets.

3. To evaluate the impact of establishing a local livestock processing facility on the incomes of smallholder chicken and goat farmers.

4. To analyze how value addition can contribute to improved economic resilience among smallholder farmers facing climate-related risks.

5. To assess the participation and benefits of women and youth in local value addition initiatives.

6. To generate policy recommendations on how local value addition initiatives can be integrated into climate adaptation strategies for rural agricultural systems in Zambia.

4.4 Significance of the Study

The findings of this research are expected to contribute to ongoing discussions on climate adaptation, rural economic development, and agricultural value chain transformation in Zambia.

The study provides practical evidence on how local agro-processing initiatives can strengthen rural livelihoods by improving market access and increasing farmer incomes. The research is also expected to inform policymakers, financial institutions, and development organizations interested in promoting climate-resilient agricultural systems and inclusive rural economic development.

By examining the role of local value addition in improving farmer livelihoods, the study contributes to a broader understanding of how rural economic systems can adapt to the growing challenges posed by climate change.

5. Conceptual Framework and Theoretical Foundations

5.1 Introduction

Understanding how local value addition can contribute to climate adaptation requires an examination of the economic and institutional factors that shape rural livelihoods. Smallholder farmers operate within complex systems influenced by environmental conditions, market structures, and institutional arrangements.
Climate change affects these systems by altering agricultural productivity, increasing uncertainty, and disrupting traditional livelihood strategies. As a result, farmers must

adopt adaptation strategies that not only improve agricultural production but also strengthen economic resilience.

This study draws on several theoretical perspectives to explain how local value addition initiatives can support climate adaptation among smallholder farmers. These perspectives include climate resilience theory, agricultural value chain theory, and rural livelihood resilience frameworks.

5.2 Climate Resilience Theory

Climate resilience refers to the ability of individuals, communities, and economic systems to absorb, adapt to, and recover from climate-related shocks and stresses. In agricultural systems, resilience involves the capacity of farmers to maintain productive livelihoods despite climate variability and environmental change.

Traditional climate adaptation strategies often focus on improving agricultural production through climate-smart farming practices such as drought-resistant crop varieties, improved irrigation systems, and sustainable land management techniques.

However, economic resilience is also an important component of climate adaptation. Farmers who have diversified income sources, stable market access, and stronger financial resources are better able to cope with climate-related disruptions.

From this perspective, strengthening rural economic systems is essential for building climate resilience among smallholder farmers.

5.3 Agricultural Value Chain Theory

Agricultural value chain theory emphasizes the importance of understanding how value is created, distributed, and captured within agricultural production systems.

A value chain includes all the activities involved in producing, processing, transporting, and marketing agricultural products. These activities typically involve multiple actors such as farmers, traders, processors, wholesalers, retailers, and consumers.

In many developing countries, smallholder farmers capture only a small portion of the value generated within agricultural value chains. This occurs because farmers often sell raw agricultural products with limited processing or value addition, while downstream actors capture greater profits through processing, packaging, and marketing.

Strengthening value chains can therefore help improve farmer incomes by enabling farmers to participate in higher-value market segments.

Local value addition initiatives such as livestock processing facilities can help farmers capture a greater share of value within agricultural supply chains by enabling them to sell processed products rather than raw commodities.

5.4 Rural Livelihood Resilience

Rural livelihood resilience refers to the capacity of households and communities to sustain their livelihoods in the face of environmental, economic, and social challenges.

The Sustainable Livelihoods Framework developed by the United Nations Development Programme (UNDP) and other development organizations identifies several forms of capital that influence livelihood resilience. These include:

- natural capital (land, water, and environmental resources)
- human capital (skills and knowledge)
- financial capital (income, savings, and credit)
- physical capital (infrastructure and equipment)
- social capital (networks and community organizations).

Climate change can affect several of these forms of capital simultaneously. For example, droughts can reduce natural capital by affecting soil fertility and water availability, while also reducing financial capital through lower agricultural income.

Value addition initiatives can strengthen multiple forms of livelihood capital simultaneously. For example, agro-processing facilities can improve physical capital by providing infrastructure, strengthen financial capital by increasing farmer incomes, and enhance social capital through the formation of farmer cooperatives and producer networks.

5.5 Value Addition and Climate Adaptation

Local value addition can contribute to climate adaptation by improving the economic resilience of rural households. When farmers are able to process and market higher-value agricultural products, they can generate more stable income streams and reduce their vulnerability to fluctuations in commodity prices.

Value addition can also reduce post-harvest losses and improve supply chain efficiency, allowing farmers to capture greater value from their production activities.

Furthermore, local processing initiatives can stimulate rural economic development by creating employment opportunities in food processing, packaging, transportation, and marketing.

In the context of climate change, these economic benefits can help farmers better withstand climate-related shocks and maintain stable livelihoods.

5.6 Conceptual Framework of the Study

Based on the theoretical perspectives discussed above, this study proposes a conceptual framework linking climate variability, market structures, value addition initiatives, and farmer resilience.

The framework suggests that climate change affects smallholder farmers primarily through its impact on agricultural production and market conditions. Climate variability can reduce crop yields and livestock productivity, leading to lower household income.
At the same time, limited access to processing infrastructure and organized markets reduces farmers' ability to capture value from their agricultural products.

Local value addition initiatives such as livestock processing facilities can help address these challenges by improving market access and increasing the value of agricultural products.

By strengthening farmer incomes and improving market participation, value addition initiatives can enhance the economic resilience of rural households and reduce their vulnerability to climate-related shocks.

Figure 5.1: Conceptual Framework Linking Climate Change, Market Systems, and Farmer Resilience

Climate variability
↓
Reduced agricultural productivity
↓
Income instability for smallholder farmers
↓
Market vulnerability and limited value capture
↓
Local value addition initiatives (livestock processing facility)
↓
Improved market access and higher-value products
↓
Increased farmer income and livelihood resilience
↓
Strengthened climate adaptation capacity

5.7 Relevance of the Conceptual Framework to the Mwembeshi Case Study

The Mwembeshi livestock processing facility established through this research project provides a practical case study for examining the relationships outlined in the conceptual framework.

By introducing local processing capacity into the agricultural value chain, the project aimed to improve the economic opportunities available to smallholder chicken and goat farmers.

The facility enabled farmers to supply livestock products for processing and marketing within a structured value chain, allowing them to capture higher value from their production activities.

Through this approach, the research examined how strengthening value chains can contribute to improved livelihood resilience and climate adaptation among smallholder farmers.

6. Research Methodology

6.1 Introduction

This section describes the research design, data collection methods, sampling procedures, and analytical approaches used in the study titled “Local Value Addition as a Climate Adaptation Strategy for Smallholder Farmers in Zambia.”

The study was implemented between 2023 and 2025 in Mwembeshi area of Chibombo District in Central Province of Zambia. The research combined practical project implementation with field-based data collection in order to examine how the establishment of a livestock processing facility could influence the economic resilience of smallholder farmers.

The research adopted a mixed-methods approach, integrating both quantitative and qualitative data collection techniques to provide a comprehensive understanding of the impacts of local value addition on farmer livelihoods.

6.2 Research Design

The study used a case study research design focusing on the Mwembeshi livestock processing initiative. A case study approach was selected because it allowed the research team to examine the effects of a real-world intervention within a specific rural agricultural context.

The project involved the establishment of a small livestock processing facility that processed chicken and goat products sourced from local smallholder farmers. This facility served both as an economic intervention and as a research platform for analyzing how value addition influences farmer incomes and livelihood resilience.

The research design incorporated both baseline assessments and follow-up observations in order to track changes in farmer incomes, market participation, and livelihood outcomes over the course of the project.

6.3 Study Area

The research was conducted in Mwembeshi area of Chibombo District, located in Central Province of Zambia.

Mwembeshi is a rural agricultural region characterized by smallholder farming systems. Farmers in the area engage in a combination of crop production and livestock rearing, including poultry and goat farming. Agriculture in the region is predominantly rain-fed, making farmers highly vulnerable to climate variability.

The area was selected for the study because it represents a typical rural agricultural environment where farmers face both climate-related production challenges and market access constraints.

In addition, Mwembeshi's proximity to urban markets such as Lusaka creates opportunities for linking rural farmers to higher-value markets through local processing initiatives.

6.4 Target Population

The target population for the study consisted of smallholder farmers engaged in chicken and goat farming in Mwembeshi area.

These farmers were selected because livestock production is a common livelihood activity in the region and represents an important source of income for rural households. The research also considered the participation of women and youth farmers, who often play significant roles in small-scale livestock production but may face limited access to formal markets.

6.5 Sampling Strategy

The study used a purposive sampling approach to identify farmers participating in the livestock value chain linked to the Mwembeshi processing facility.
A total of 150 smallholder farmers were included in the study sample. These farmers were selected based on the following criteria:
• engagement in chicken or goat farming
• residence in Mwembeshi area
• willingness to participate in the research activities.
The sample included both male and female farmers as well as youth participants involved in livestock production.

Table 6.1: Gender Distribution of Survey Respondents

Category	**Number of Respondents**	**Percentage**
Male farmers	63	42%
Female farmers	87	58%
Total	150	100%

The sample reflects the significant role played by women in smallholder livestock production in the Mwembeshi area.

Table 6.2: Livestock Activities Among Survey Respondents

Livestock Activity	**Percentage of Farmers**
Poultry farming (chickens)	61%
Goat farming	27%
Mixed livestock farming	12%

These results show that poultry farming represents the most common livestock activity among farmers participating in the study.

6.6 Data Collection Methods

The research employed multiple data collection methods to gather both quantitative and qualitative information.

Household Surveys

Structured household surveys were conducted with participating farmers to collect data on:

- livestock production levels
- market access and marketing practices
- income from livestock sales
- perceptions of climate-related challenges.

These surveys provided quantitative data for analyzing economic outcomes and farmer participation in the value chain.

Key Informant Interviews

Key informant interviews were conducted with:

- local farmer leaders
- cooperative representatives
- project staff managing the processing facility
- local agricultural extension officers.

These interviews provided deeper insights into market challenges, farmer experiences, and the operational aspects of the value addition initiative.

Focus Group Discussions

Focus group discussions were organized with farmer groups to explore community perspectives on climate change, market access challenges, and opportunities for strengthening rural livelihoods.

Separate focus group discussions were conducted with women farmers and youth farmers to ensure that their perspectives were adequately captured.

Facility Operations Data

The livestock processing facility generated operational data related to:

- number of livestock processed
- sales volumes of processed products
- market distribution channels.

These operational records provided valuable insights into the economic viability of the value addition model.

6.7 Data Analysis

Quantitative data collected from household surveys were analyzed using descriptive statistical techniques. The analysis focused on identifying patterns in farmer income levels, participation in livestock markets, and engagement with the processing facility.

Qualitative data from interviews and focus group discussions were analyzed using thematic analysis techniques. This approach allowed the research team to identify key themes related to farmer experiences, market constraints, and the perceived benefits of local value addition.

The integration of quantitative and qualitative findings enabled the study to provide a comprehensive understanding of how value addition initiatives influence rural livelihoods.

6.8 Ethical Considerations

The research adhered to ethical standards for conducting field-based research involving human participants.

Farmers participating in the study were informed about the purpose of the research and provided voluntary consent before participating in surveys or interviews.

Confidentiality of participant information was maintained throughout the research process. Personal data collected during surveys and interviews were used solely for research purposes and were not disclosed to third parties.

The research team also ensured that the study respected local cultural norms and community structures during the data collection process.

7. Implementation Activities and Project Timeline

7.1 Introduction

This section outlines the key activities undertaken during the implementation of the research project titled “Local Value Addition as a Climate Adaptation Strategy for Smallholder Farmers.” The project combined research activities with the establishment and operation of a small livestock processing facility in Mwembeshi area of Chibombo District.

The initiative was implemented over a two-year period (2023-2025) with financial support from the Zambia National Commercial Bank (ZANACO). The implementation strategy was designed to create a practical research platform that could demonstrate how local value addition initiatives can strengthen the economic resilience of smallholder farmers.

The project implementation involved several stages including infrastructure development, farmer mobilization, capacity building, value chain development, and market linkage activities.

7.2 Establishment of the Livestock Processing Facility

One of the central components of the project was the establishment of a small livestock processing facility designed to process chicken and goat products sourced from local farmers.

The facility was constructed in Mwembeshi area to provide nearby farmers with access to processing services that would allow them to transform livestock products into higher-value goods suitable for local and urban markets.

The facility included basic processing equipment, cold storage capacity, and packaging facilities designed to support small-scale livestock product processing.

The establishment of this facility served two important purposes:

1. It provided a practical platform for examining how value addition can influence farmer incomes and market access.

2. It created an operational value chain through which smallholder farmers could participate in higher-value agricultural markets.

7.3 Farmer Mobilization and Participation

Following the establishment of the processing facility, the project team conducted community mobilization activities to encourage participation among smallholder livestock farmers in Mwembeshi area.

Local farmers were invited to participate in the initiative through farmer meetings, cooperative engagement sessions, and consultations with local community leaders.
These activities helped identify farmers who were interested in supplying livestock products to the processing facility.

Special attention was given to encouraging the participation of women and youth farmers, recognizing their important role in small-scale livestock production.

7.4 Farmer Capacity Building

To support farmer participation in the value addition initiative, the project organized a series of training workshops and capacity-building sessions.
These training activities focused on several key areas including:

- improved livestock production practices
- animal health management
- product quality standards for processing
- market requirements for processed livestock products.

The training sessions also provided farmers with information about how participation in value chains can improve income opportunities and reduce vulnerability to market fluctuations.

7.5 Development of the Local Livestock Value Chain

The project facilitated the development of a local livestock value chain linking farmers, the processing facility, and downstream markets.

Farmers participating in the initiative were able to supply chickens and goats to the processing facility, where the animals were processed into packaged meat products suitable for sale in local markets.

The processing facility helped ensure quality control, packaging, and product standardization, enabling farmers to access higher-value markets compared to traditional livestock trading systems.

Through this value chain structure, farmers were able to participate more actively in the marketing of processed livestock products rather than selling live animals to intermediaries.

7.6 Market Linkages and Product Distribution

An important component of the project involved establishing market linkages for processed livestock products.

The project team engaged with local retailers, food vendors, and market traders to create distribution channels for processed chicken and goat products produced through the facility.

These market linkages helped ensure that processed products could reach consumers in nearby urban markets, including Lusaka.
Improved market access played a critical role in enabling farmers to benefit from higher-value agricultural products.

7.7 Monitoring and Research Activities

Throughout the implementation period, the research team conducted ongoing monitoring activities to track the performance of the value addition initiative.
These activities included:

- monitoring the number of farmers supplying livestock to the processing facility
- tracking the volume of livestock processed
- recording sales volumes and product distribution data
- collecting feedback from participating farmers.

These monitoring activities provided valuable data for assessing how the value addition initiative affected farmer livelihoods and economic resilience.

7.8 Project Timeline

The project was implemented over a two-year period from January 2023 to December 2025. The timeline below summarizes the major phases of project implementation.

Table 7.1: Project Implementation Timeline

Project Activity	**Timeline**
Project planning and design	January – March 2023
Construction of livestock processing facility	April – September 2023
Procurement of processing equipment	July – October 2023
Farmer mobilization and registration	October – December 2023
Farmer training and capacity building	January – April 2024

Establishment of livestock supply chains	April – June 2024
Processing facility operational phase	July 2024 – June 2025
Market linkage development	August 2024 – August 2025
Data collection and monitoring	2024 – 2025
Data analysis and research reporting	September – December 2025

7.9 Summary of Implementation

The implementation of the Mwembeshi livestock processing initiative provided a unique opportunity to combine development practice with research.
By establishing a functioning livestock processing facility and linking farmers to structured value chains, the project created a practical environment in which the economic effects of local value addition could be observed and analyzed.
The lessons generated through this implementation process provide valuable insights into how rural agro-processing initiatives can contribute to strengthening the resilience of smallholder farmers facing climate-related challenges.

8. Financial Report and Grant Utilization

8.1 Introduction

This section provides an overview of the financial resources allocated to the research project titled “Local Value Addition as a Climate Adaptation Strategy for Smallholder Farmers.” The project was implemented by Mumbwabile Youth Multi-Purpose Society with financial support from the Zambia National Commercial Bank (ZANACO).

ZANACO provided a total grant of USD 100,000 to support the implementation of the project over a two-year period from 2023 to 2025. The grant was designed to finance the establishment of a livestock processing facility in Mwembeshi area of Chibombo District, as well as support research activities examining the impact of local value addition on the livelihoods of smallholder farmers.

The financial resources were used to support infrastructure development, equipment procurement, farmer training, operational costs, and research activities associated with the project.

8.2 Budget Allocation Framework

The project budget was structured around several key components designed to ensure effective implementation of the research initiative and the operationalization of the livestock processing facility.

The major budget categories included:

- construction of the livestock processing facility
- procurement of processing equipment
- farmer mobilization and training
- operational and logistics costs
- research and monitoring activities
- administrative and project management costs.

The allocation of financial resources across these categories was designed to ensure that both the infrastructure and research components of the project could be effectively implemented.

8.3 Infrastructure Development

A significant portion of the project funding was allocated to the construction of the Mwembeshi livestock processing facility. This infrastructure was necessary to enable the practical implementation of the value addition initiative and to create a functional platform for examining the economic impacts of local agro-processing.

The facility included basic structures for livestock processing, storage, and packaging operations. Infrastructure development costs covered building materials, construction labor, and site preparation activities.

8.4 Processing Equipment Procurement

The project also required the procurement of equipment necessary for processing chicken and goat products. These included equipment used for slaughtering, cleaning, packaging, and storing processed livestock products.
Cold storage equipment was also acquired to maintain product quality and ensure compliance with food safety standards.

The availability of appropriate processing equipment was essential for enabling farmers to produce value-added products that could access higher-value markets.

8.5 Farmer Training and Capacity Building

Another component of the project budget supported farmer training and capacity-building activities. These activities aimed to equip participating farmers with knowledge and skills related to improved livestock production, quality control, and participation in agricultural value chains.

Training workshops were conducted for farmer groups in Mwembeshi area and covered topics such as livestock management practices, product quality standards, and market participation strategies.

Capacity building activities were particularly important for supporting the participation of women and youth farmers in the value addition initiative.

8.6 Operational and Logistics Costs

Operational costs were incurred in order to ensure the smooth functioning of the livestock processing facility and the broader value chain system
These costs included transportation of livestock products, facility operations, product packaging, and coordination of distribution activities.

Operational resources also supported engagement with local market actors including retailers and traders involved in distributing processed livestock products.

8.7 Research and Monitoring Activities

In addition to development activities, the project budget supported research and monitoring activities associated with the study.

These activities included household surveys, focus group discussions, interviews with farmers and value chain actors, and data analysis.
Research costs also covered the documentation of project outcomes and the preparation of the final research report.

The integration of research activities into the project ensured that the initiative generated evidence that could inform broader policy discussions on climate adaptation and rural economic development.

8.8 Project Management and Administration

Project management and administrative costs were allocated to support coordination of project activities, financial management, and reporting.

These resources enabled the project team to oversee implementation activities, manage financial resources responsibly, and ensure accountability to the funding partner.

Administrative support also facilitated coordination between research partners, farmers, and market actors involved in the project.

8.9 Financial Summary

Table 8.1: Summary of Grant Utilization (USD)

Budget Category	Amount (USD)
Construction of livestock processing facility	40,000
Processing equipment procurement	22,000
Farmer mobilization and training	10,000
Operational and logistics costs	12,000
Research and monitoring activities	8,000
Project management and administration	8,000
Total Grant Funding	100,000

8.10 Financial Accountability

The project maintained transparent financial management practices throughout the implementation period. Financial records were maintained for all project expenditures, and funds were used in accordance with the objectives of the grant agreement.
The financial resources provided by ZANACO enabled the successful implementation of both the infrastructure and research components of the project.

The investment in local agro-processing infrastructure not only supported the research objectives of the project but also contributed to strengthening rural economic development in Mwembeshi area.

9. Research Findings and Analysis

9.1 Introduction

This section presents the key findings from the research examining local value addition as a climate adaptation strategy for smallholder farmers in Mwembeshi area of Chibombo District.

The analysis draws on data collected from household surveys, interviews with farmers and value chain actors, operational records from the livestock processing facility, and focus group discussions conducted during the implementation of the project.

The findings focus on several key areas:

- climate-related challenges affecting smallholder farmers
- market constraints faced by livestock producers
- the economic effects of local value addition
- participation of women and youth in the value chain
- changes in farmer income stability.

9.2 Climate Variability and Agricultural Livelihoods

Survey results indicated that smallholder farmers in Mwembeshi area are experiencing increasing climate variability affecting agricultural production.

Farmers reported irregular rainfall patterns, occasional droughts, and extreme weather events that disrupt agricultural activities.

Table 9.1: Climate Shocks Experienced by Farmers

Climate Event	**Percentage of Farmers Reporting Impact**
Irregular rainfall	68%
Prolonged dry spells	47%
Flooding	26%
Livestock disease outbreaks	31%

These climate-related challenges have affected both crop production and livestock productivity. Farmers reported that prolonged dry spells reduce the availability of pasture and water resources, affecting livestock growth and reproduction.
The results suggest that climate variability is contributing to income instability among smallholder farmers in the region.

9.3 Market Challenges Faced by Smallholder Livestock Farmers

In addition to climate-related production challenges, farmers reported several market-related constraints that limit their ability to generate stable incomes.
Prior to the establishment of the processing facility, most farmers sold live animals to traders or middlemen who transported livestock to urban markets.

Table 9.2: Common Market Constraints Reported by Farmers

Market Challenge	**Percentage of Farmers Reporting Issue**

Low livestock prices in local markets	63%
Limited access to formal markets	52%
Dependence on middlemen	58%
Lack of processing and storage facilities	71%

These findings indicate that market inefficiencies represent a major barrier to improving farmer incomes.

Without access to processing facilities or organized value chains, farmers often sell livestock products at relatively low prices.

9.4 Participation in the Livestock Processing Value Chain

The establishment of the Mwembeshi livestock processing facility created opportunities for farmers to participate in a structured value chain.

Farmers participating in the initiative supplied chickens and goats to the processing facility where the animals were processed into packaged meat products.

Table 9.3: Farmer Participation in the Processing Initiative

Participation Category	Percentage of Farmers
Farmers supplying poultry	59%
Farmers supplying goats	24%
Farmers supplying both poultry and goats	17%

Participation in the value chain enabled farmers to access new market opportunities for processed livestock products.

Farmers reported that the processing facility provided a more reliable and organized market compared to traditional livestock trading systems.

9.5 Changes in Farmer Income

One of the primary objectives of the research was to examine how participation in local value addition initiatives affects farmer incomes.

Survey results indicate that farmers participating in the value chain experienced improvements in income stability.

Table 9.4: Changes in Income from Livestock Sales

Income Change	Percentage of Farmers
Significant income increase	38%
Moderate income increase	42%
No significant change	15%
Income decline	5%

These results suggest that local value addition can contribute to improved income outcomes for smallholder farmers.

Farmers participating in the processing value chain reported receiving better prices for processed products compared to selling live animals in local markets.

9.6 Price Differences Between Raw and Processed Livestock Products

Operational data from the processing facility showed that processed livestock products attracted higher market prices compared to live animals sold in traditional markets.

Table 9.5: Average Market Prices (Illustrative Comparison)

Product Type	Average Market Price
Live chicken	ZMW 120 per bird
Processed chicken	ZMW 165 per bird
Live goat	ZMW 1,200 per animal

Processed goat meat	ZMW 1,650 equivalent

These price differences illustrate the potential economic benefits of value addition for smallholder farmers.

By participating in the value chain, farmers were able to capture a greater share of the value generated within the livestock market.

9.7 Participation of Women and Youth

The project also examined the participation of women and youth farmers in the livestock value chain.

Table 9.6: Participation of Women and Youth

Category	Percentage of Participants
Women farmers	57%
Male farmers	43%
Youth participants (under 35 years)	34%

These findings indicate that the value addition initiative created opportunities for women and young farmers to participate in agricultural markets.

Several women participating in the project reported that selling livestock products through the processing facility provided a more reliable income source compared to traditional market channels.

9.8 Perceived Benefits of Local Value Addition

Farmers participating in the research identified several benefits associated with the value addition initiative.

Table 9.7: Farmer Perceptions of Value Addition Benefits

Reported Benefit	Percentage of Farmers
Improved market access	61%
Better livestock prices	56%

More stable income	48%
Reduced dependence on middlemen	44%

These results suggest that farmers view value addition as an important opportunity for improving their economic conditions.

9.9 Summary of Findings

The research findings highlight several key insights.
First, smallholder farmers in Mwembeshi area face significant climate-related challenges affecting agricultural production and income stability.

Second, market inefficiencies particularly the lack of processing infrastructure limit the ability of farmers to capture value from livestock production.
Third, the establishment of the livestock processing facility created new opportunities for farmers to participate in higher-value markets.

Fourth, farmers participating in the value addition initiative experienced improvements in income stability and market access.

Finally, the initiative provided opportunities for women and youth to participate more actively in livestock value chains.

These findings suggest that local value addition initiatives can play an important role in strengthening the economic resilience of smallholder farmers facing climate-related challenges.

10. Discussion and Policy Implications

10.1 Introduction

This section interprets the findings of the study in relation to broader discussions on climate adaptation, rural economic resilience, and agricultural value chain development. The research conducted in Mwembeshi area of Chibombo District provides practical evidence on how local value addition initiatives can contribute to strengthening the livelihoods of smallholder farmers facing climate-related challenges.

The results highlight the importance of integrating economic strategies such as value chain development and agro-processing into climate adaptation frameworks. While climate adaptation programs often focus primarily on improving agricultural production systems, the findings of this study suggest that strengthening rural market systems can also play a critical role in improving farmer resilience.

10.2 Climate Change and Economic Vulnerability of Smallholder Farmers

The findings confirm that climate variability is increasingly affecting agricultural livelihoods in rural Zambia. Farmers in Mwembeshi area reported experiencing irregular rainfall patterns, prolonged dry spells, and occasional livestock disease outbreaks, all of which affect agricultural productivity and household income.

These results are consistent with previous research indicating that smallholder farmers in Sub-Saharan Africa are highly vulnerable to climate-related production risks due to their dependence on rain-fed agriculture and limited access to risk management tools.
Climate shocks not only affect agricultural production but also create broader economic instability for rural households. When crop yields or livestock productivity decline, farmers often have limited alternative income sources, making it difficult to absorb financial losses.

Strengthening economic resilience is therefore a critical component of climate adaptation for smallholder farmers.

10.3 Market Structures and Farmer Vulnerability

The research findings highlight that market structures play an important role in shaping the economic outcomes of smallholder farmers. Prior to the establishment of the Mwembeshi processing facility, most farmers sold live animals to traders or middlemen who controlled access to urban markets.

This system limited the ability of farmers to negotiate fair prices and capture greater value from their agricultural products. As a result, even when farmers successfully raised livestock, their incomes remained relatively low due to inefficiencies within the agricultural value chain.

The results demonstrate that improving market access and strengthening value chains can significantly improve the economic opportunities available to rural farmers.
Local processing infrastructure can help address market inefficiencies by enabling farmers to participate in higher-value markets and reduce dependence on intermediaries.

10.4 Value Addition and Farmer Income Stability

The study found that farmers participating in the livestock processing value chain experienced improvements in income stability. Processed livestock products attracted higher prices in local markets compared to live animals sold through traditional trading systems.

This finding supports existing literature indicating that value addition can increase farmer incomes by enabling farmers to capture a greater share of value within agricultural supply chains.

In addition to increasing income levels, value addition can also reduce income volatility by providing farmers with more stable market opportunities.
From a climate adaptation perspective, increased income stability can help farmers better cope with climate-related shocks such as droughts, livestock losses, or reduced crop production.

Farmers with more stable income sources are generally better positioned to invest in improved agricultural practices and diversify their livelihoods.

10.5 Value Addition as a Climate Adaptation Strategy

The results of the Mwembeshi case study suggest that value addition can play an important role in strengthening the economic resilience of smallholder farmers.
While climate adaptation efforts often focus on improving agricultural production systems, strengthening rural value chains can also contribute to climate resilience by improving the economic stability of farming households.

By enabling farmers to process and market higher-value agricultural products, value addition initiatives can increase income levels, reduce market vulnerability, and stimulate rural economic development.

The project demonstrated that local agro-processing initiatives can create new economic opportunities within rural communities, including employment in processing, packaging, and distribution activities.

These opportunities can help diversify rural livelihoods and reduce the dependence of households on climate-sensitive primary agricultural production.

10.6 Gender and Youth Participation in Value Chains

The study also highlighted the participation of women and youth farmers in the livestock value chain. Women represented a significant proportion of farmers participating in the value addition initiative.

This finding reflects the important role that women play in small-scale livestock production in many rural communities.

However, women farmers often face barriers in accessing formal markets, financial services, and productive resources. Local value addition initiatives can help address some of these challenges by creating more accessible market opportunities within rural areas.

Similarly, the participation of youth farmers in the initiative suggests that value chain development can create new opportunities for young people to engage in agricultural enterprises.

Promoting youth participation in agricultural value chains may help address rural unemployment challenges while strengthening agricultural productivity.

10.7 Policy Implications

The findings of this study have several important implications for climate adaptation and rural development policy in Zambia.

First, climate adaptation strategies should not focus exclusively on improving agricultural production systems. Strengthening rural market systems and value chains can also play a critical role in improving farmer resilience.

Second, investment in rural agro-processing infrastructure can help improve the profitability of smallholder farming and support rural economic development.
Third, promoting local value addition initiatives can create employment opportunities and stimulate economic activity within rural communities.

Fourth, policies aimed at strengthening agricultural value chains should incorporate gender-sensitive approaches that ensure women farmers have equal access to markets and resources.

Finally, partnerships between financial institutions, development organizations, and rural communities can play an important role in supporting the development of value-added agricultural enterprises.

The Mwembeshi initiative provides a practical example of how collaboration between financial institutions and community organizations can support rural economic innovation.

10.8 Lessons for Climate Adaptation Programs

The research demonstrates that climate adaptation strategies can benefit from integrating economic interventions that strengthen rural market systems.
Programs that support value chain development, agro-processing infrastructure, and farmer market access can complement traditional climate adaptation initiatives focused on agricultural production.

The Mwembeshi case study illustrates how practical development initiatives can generate valuable insights into the economic dimensions of climate adaptation.
Such initiatives can serve as demonstration models for scaling up value addition programs in other rural areas facing similar challenges.

11. Outcomes and Impact of the Research

11.1 Introduction

This section outlines the outcomes and broader impacts of the research project “Local Value Addition as a Climate Adaptation Strategy for Smallholder Farmers.” The study combined infrastructure development with field-based research to assess how local value addition initiatives can strengthen the economic resilience of smallholder farmers.
The project produced several important outcomes at the community, economic, and policy levels. These outcomes demonstrate how localized agro-processing initiatives can contribute to rural development while also supporting climate adaptation objectives.

11.2 Economic Impact on Smallholder Farmers

One of the most significant outcomes of the project was the improvement in economic opportunities for smallholder farmers participating in the livestock value chain.
The establishment of the livestock processing facility provided farmers with access to a structured market where they could supply chickens and goats for processing. This reduced their dependence on informal livestock traders and enabled them to participate in a more organized value chain.
Farmers reported receiving higher and more stable prices for livestock products processed through the facility compared to traditional livestock markets. This contributed to increased income stability for many participating households.
Improved income stability is particularly important in the context of climate variability, as it helps farmers cope with periods of reduced agricultural productivity.

11.3 Improved Market Access

Prior to the project, many farmers in Mwembeshi area relied on local traders to sell livestock products. These traders often determined prices and controlled access to urban markets.

Through the establishment of the processing facility, farmers were able to participate in a more structured marketing system that connected them to retail outlets and food vendors.

Improved market access enabled farmers to capture greater value from their livestock production and strengthened their participation in agricultural value chains.
The project therefore demonstrated the potential of localized value chain development to address market inefficiencies that limit rural farmer incomes.

11.4 Strengthening Rural Economic Activity

In addition to supporting farmer incomes, the livestock processing facility contributed to broader economic activity within the Mwembeshi area.

The facility created opportunities for employment in several areas including:

- livestock processing operations
- product packaging
- transportation and distribution
- facility maintenance and management.
-

These activities contributed to local economic development by creating new income opportunities within the community.

The presence of the facility also stimulated increased livestock production among farmers who were motivated by improved market opportunities.

11.5 Participation of Women and Youth

The project created opportunities for women and youth farmers to participate more actively in agricultural value chains.

Women represented a significant proportion of farmers participating in the livestock supply chain. Many women farmers reported that the project provided a more accessible and reliable market for their livestock products.
The initiative also encouraged youth participation in livestock production and value chain activities. Young people were involved in several aspects of the project including livestock supply, facility operations, and product distribution.

These outcomes suggest that value addition initiatives can support inclusive rural economic development by creating opportunities for groups that often face barriers in traditional agricultural markets.

11.6 Climate Adaptation Outcomes

The project demonstrated that local value addition initiatives can contribute to climate adaptation by improving the economic resilience of smallholder farmers.
Farmers with more stable incomes are better able to manage climate-related risks and invest in improved agricultural practices. For example, farmers participating in the project reported increased willingness to invest in livestock production because they had greater confidence in market opportunities.

By strengthening economic stability, value addition initiatives can help rural households cope with climate variability and maintain sustainable livelihoods.
The findings therefore highlight the importance of integrating economic resilience strategies into climate adaptation programs.

11.7 Institutional and Partnership Outcomes

The research also strengthened partnerships between financial institutions, community organizations, and rural farmers.

The collaboration between Mumbwabile Youth Multi-Purpose Society and ZANACO demonstrated how financial institutions can play a constructive role in supporting rural economic development initiatives.

The project also generated valuable insights that can inform future partnerships aimed at promoting value chain development and climate adaptation strategies for smallholder farmers.

11.8 Knowledge Generation and Policy Relevance

The project generated important evidence on the relationship between agricultural value chains and climate adaptation.

The findings contribute to broader policy discussions on how rural economic systems can be strengthened to support climate resilience.

In particular, the study demonstrates that investment in rural processing infrastructure can improve farmer incomes while also contributing to climate adaptation objectives.
These insights may be useful for policymakers, development organizations, and financial institutions interested in supporting sustainable agricultural development.

11.9 Replication Potential

One of the most important impacts of the Mwembeshi initiative is its potential for replication in other rural areas.

Many smallholder farming communities in Zambia face similar challenges related to market access, limited processing infrastructure, and climate-related production risks.
The project provides a practical model for how local value addition initiatives can be implemented to strengthen farmer livelihoods and promote rural economic development.
Scaling similar initiatives in other regions could contribute to broader national efforts aimed at improving climate resilience and strengthening agricultural value chains.

12. Research Outputs and Deliverables

12.1 Introduction

This section outlines the key outputs and deliverables generated through the research project “Local Value Addition as a Climate Adaptation Strategy for Smallholder Farmers.” The project was designed not only to implement a practical development intervention but also to generate knowledge and evidence that could inform policy discussions on rural economic resilience and climate adaptation.
The research produced several important outputs including technical reports, policy briefs, stakeholder engagement activities, and practical demonstration models that illustrate how value addition initiatives can support the livelihoods of smallholder farmers.

These outputs contribute to broader knowledge on agricultural value chains, rural development, and climate adaptation strategies in Zambia.

12.2 Research Report

The primary output of the project is the comprehensive research report documenting the design, implementation, and outcomes of the Mwembeshi livestock value addition initiative.

The report provides detailed analysis of the economic effects of local value addition on smallholder farmers, including changes in income stability, market access, and participation in agricultural value chains.
This report serves as a reference document for policymakers, financial institutions, researchers, and development practitioners interested in understanding how local agro-processing initiatives can strengthen rural livelihoods and contribute to climate adaptation strategies.

The report will be published on the Mumbwabile Youth Multi-Purpose Society website as part of the organization's efforts to promote evidence-based research on sustainable development and climate resilience.

12.3 Policy Brief

In addition to the full research report, the project produced a policy brief summarizing the key findings and policy implications of the study.

The policy brief highlights the importance of integrating local value addition initiatives into climate adaptation strategies for smallholder farmers.
It also provides policy recommendations aimed at strengthening rural value chains, promoting agro-processing infrastructure, and supporting inclusive participation of women and youth in agricultural markets.

The policy brief was developed as a concise document designed to support engagement with government institutions, development partners, and financial institutions interested in rural economic development.

12.4 Stakeholder Engagement and Dissemination

The project included stakeholder engagement activities aimed at sharing research findings with key institutions involved in agricultural development, rural economic policy, and climate adaptation.

Stakeholder engagement sessions were organized to present the research findings and policy recommendations to relevant stakeholders including:

- financial institutions supporting rural enterprise development

- agricultural extension officials
- local government representatives
- farmer cooperatives and community leaders.

These engagement activities provided an opportunity for stakeholders to discuss the implications of the research findings and explore opportunities for scaling value addition initiatives in other rural areas.

12.5 Farmer Training and Capacity Building

The project delivered a series of training workshops for smallholder farmers participating in the livestock value chain.

These training sessions focused on improving farmer knowledge and skills related to livestock management, product quality standards, and participation in agricultural value chains.

The training activities contributed to strengthening farmer capacity to engage in value-added agricultural enterprises and access improved market opportunities.
Capacity building activities also encouraged farmers to adopt improved production practices that can support long-term agricultural sustainability.

12.6 Demonstration of a Local Value Addition Model

One of the most significant deliverables of the project was the establishment of a demonstration model for local livestock value addition.

The Mwembeshi processing facility provided a practical example of how rural agro-processing initiatives can be implemented to support smallholder farmers.
This demonstration model illustrates how infrastructure investment, farmer mobilization, and market linkage development can be combined to create functioning agricultural value chains.

The demonstration model can serve as a reference for development organizations, policymakers, and financial institutions interested in supporting similar initiatives in other rural communities.

12.7 Knowledge Sharing and Public Awareness

The project also contributed to broader knowledge sharing on climate adaptation and rural economic development.

Research findings generated through the project are intended to support discussions on how climate adaptation strategies can incorporate economic interventions that strengthen rural livelihoods.

By documenting the outcomes of the Mwembeshi initiative, the project contributes to the growing body of knowledge on how agricultural value chains and local value addition can support climate-resilient rural economies.

12.8 Summary of Key Deliverables

The key deliverables produced by the project include:

- a comprehensive research report documenting the project and its findings
- a policy brief summarizing the research results and policy recommendations
- stakeholder engagement sessions presenting research findings
- training workshops for smallholder farmers
- a demonstration model of local livestock value addition.

Together, these outputs contribute to improving understanding of how local value addition initiatives can support climate adaptation and strengthen rural economic resilience.

13. Limitations of the Study

13.1 Introduction

While the research project “Local Value Addition as a Climate Adaptation Strategy for Smallholder Farmers” generated valuable insights into the relationship between agro-processing, market access, and farmer resilience, it is important to recognize several limitations that may influence the interpretation and generalization of the findings.

These limitations relate to the scope of the study, the geographic focus of the research, data constraints, and the time frame within which the project was implemented. Acknowledging these limitations helps provide a balanced understanding of the study outcomes and highlights areas for future research.

13.2 Geographic Scope of the Study

One limitation of the research is that the study was conducted in a single geographic location, namely Mwembeshi area of Chibombo District in Central Province of Zambia.
Although Mwembeshi represents a typical rural farming environment, agricultural systems and market structures can vary significantly across different regions of Zambia. Factors such as climate conditions, infrastructure availability, and access to markets may differ from one region to another.
As a result, the findings of this study may not fully capture the diversity of experiences faced by smallholder farmers in other parts of the country.
Further research conducted in multiple regions would provide a broader understanding of how local value addition initiatives function under different environmental and economic conditions.

13.3 Sample Size and Farmer Participation

The study focused on a sample of farmers participating in the livestock value chain associated with the Mwembeshi processing facility. Although this sample provided valuable insights into the experiences of farmers involved in the initiative, the number of participants represents only a portion of the farming population in the area.

Additionally, participation in the value addition initiative was voluntary. Farmers who chose to participate may have been more motivated to engage in new market opportunities compared to those who did not participate.

This factor may influence the observed outcomes, as participating farmers may have different characteristics or levels of entrepreneurial initiative compared to the broader farming population.

13.4 Time Frame of the Research

The research was conducted over a two-year implementation period from 2023 to 2025. While this time frame allowed the research team to observe early outcomes associated with the value addition initiative, longer-term impacts may take additional time to fully materialize.

For example, sustained improvements in farmer income, changes in livestock production patterns, and broader economic effects within the community may require several years to develop.

Long-term monitoring of the Mwembeshi initiative would provide further insights into the sustainability and scalability of the value addition model.

13.5 Market Dynamics and External Factors

Agricultural markets are influenced by many external factors including national economic conditions, transportation costs, demand fluctuations, and broader supply chain dynamics.

Changes in these external factors may influence the profitability and sustainability of local value addition initiatives.
For example, fluctuations in feed prices, changes in consumer demand for livestock products, or transportation challenges can affect the economic performance of processing facilities.

While the research examined the functioning of the Mwembeshi value chain within the context of the project period, future studies could explore how value addition initiatives respond to broader market fluctuations over time.

13.6 Data Availability and Measurement Challenges

Some aspects of rural economic activities are difficult to measure precisely. For example, farmers may not always maintain detailed financial records of livestock sales, household income, or production costs.

As a result, some data collected during the study relied on farmer recall and self-reported information obtained through surveys and interviews.

Although the research team took steps to verify information through cross-checking and triangulation with operational data from the processing facility, the possibility of minor inaccuracies in self-reported data cannot be completely excluded.

13.7 Scope of Climate Adaptation Analysis

The study focused primarily on the economic dimensions of climate adaptation by examining how value addition initiatives affect farmer income stability and market participation.

However, climate adaptation is a multidimensional process that also involves environmental management practices, agricultural technologies, and social resilience mechanisms.

Future research could explore how value addition initiatives interact with other climate adaptation strategies such as climate-smart agriculture, irrigation systems, and improved livestock management practices.

13.8 Opportunities for Future Research

Despite these limitations, the study provides a valuable foundation for further research on agricultural value chains and climate adaptation.

Future research could explore several areas including:

- comparative studies of value addition initiatives in different regions of Zambia
- long-term economic impacts of agro-processing initiatives on rural livelihoods
- integration of value addition with climate-smart agricultural technologies
- the role of financial institutions in supporting rural value chain development.

Expanding research in these areas would contribute to a deeper understanding of how agricultural value chains can support climate-resilient rural economies.

14. Recommendations and Future Policy Directions

14.1 Introduction

The findings from the Mwembeshi research project highlight the potential of local value addition initiatives to strengthen the economic resilience of smallholder farmers facing climate variability. By enabling farmers to participate in higher-value agricultural markets, value addition can contribute to improved income stability and reduced vulnerability to climate-related shocks.

Based on the evidence generated through the research, several policy recommendations emerge for strengthening agricultural value chains and promoting climate-resilient rural development in Zambia.

14.2 Promote Local Agro-Processing Infrastructure

One of the key lessons from the Mwembeshi initiative is the importance of local agro-processing infrastructure in supporting smallholder farmers.

The establishment of the livestock processing facility enabled farmers to participate in value-added markets and capture greater value from their agricultural production.
Government institutions and development partners should therefore consider expanding investments in rural agro-processing infrastructure. Supporting the development of small and medium-scale processing facilities in rural areas can improve market access for farmers and strengthen local agricultural value chains.
Such investments can also contribute to job creation and rural economic diversification.

14.3 Integrate Value Chain Development into Climate Adaptation Policies

Climate adaptation programs often focus on improving agricultural production systems through climate-smart farming practices. While these interventions are important, the research findings suggest that economic resilience strategies should also be incorporated into climate adaptation frameworks.

Policies addressing climate adaptation should therefore integrate value chain development initiatives that strengthen rural market systems.

Supporting value addition initiatives can help farmers generate more stable income streams and reduce dependence on climate-sensitive agricultural commodities.
Integrating economic and market-based approaches into climate adaptation strategies can significantly enhance the resilience of rural communities.

14.4 Improve Access to Finance for Rural Value Addition Enterprises

Access to financial resources remains a major barrier to the establishment of agro-processing enterprises in rural areas.

Financial institutions, development banks, and government programs should expand financing opportunities for small and medium-scale agro-processing initiatives that support smallholder farmers.

Innovative financing mechanisms such as blended finance, concessional loans, and public-private partnerships can help reduce investment risks and encourage the development of rural value chains.

Financial institutions such as commercial banks can play a critical role in supporting rural enterprise development by financing infrastructure and supporting value chain entrepreneurs.

14.5 Strengthen Farmer Cooperatives and Producer Organizations

Farmer cooperatives and producer organizations can play an important role in facilitating farmer participation in agricultural value chains.

Collective marketing systems can help farmers improve bargaining power, coordinate supply, and negotiate better prices for their products.

Supporting the formation and strengthening of farmer cooperatives can therefore improve the effectiveness of value addition initiatives.
Training programs aimed at strengthening cooperative governance, financial management, and marketing strategies can further enhance the capacity of farmer organizations to participate in value-added markets.

14.6 Promote Gender-Inclusive Agricultural Value Chains

The research findings indicate that women play a significant role in smallholder livestock production. However, women farmers often face structural barriers limiting their participation in formal agricultural markets.

Policies promoting agricultural value chains should therefore incorporate gender-inclusive approaches that ensure women have equal access to market opportunities, financial resources, and training programs.

Supporting women-led agricultural enterprises can contribute to inclusive rural economic development and improve household livelihoods.

14.7 Encourage Youth Participation in Agricultural Value Chains

Youth unemployment remains a significant challenge in many rural areas of Zambia. Agricultural value chains offer important opportunities for youth employment and entrepreneurship.

Programs supporting agro-processing initiatives can create new employment opportunities for young people in areas such as food processing, packaging, logistics, and marketing.

Encouraging youth participation in agricultural value chains can contribute to rural economic development while addressing youth unemployment challenges.

14.8 Support Research and Evidence-Based Policy Development

The Mwembeshi research initiative demonstrates the importance of generating evidence on how agricultural value chains influence rural livelihoods and climate resilience.

Government agencies, academic institutions, and development organizations should continue supporting research that examines innovative approaches to strengthening rural economic systems.

Evidence generated through field-based research can inform policy development and help identify effective strategies for promoting climate-resilient agricultural systems.

14.9 Scaling Value Addition Initiatives

The results of the Mwembeshi project suggest that local value addition initiatives have significant potential for replication in other rural areas.
Scaling such initiatives could contribute to broader national efforts aimed at strengthening agricultural value chains and improving rural economic resilience.
Future programs could explore establishing similar processing facilities in other agricultural regions of Zambia where farmers face similar market constraints.
Scaling value addition initiatives should involve collaboration between government institutions, financial institutions, community organizations, and private sector actors.

14.10 Conclusion

The research findings highlight the important role that local value addition initiatives can play in supporting climate adaptation and rural economic development.
By improving market access and increasing the value of agricultural products, value addition can strengthen the livelihoods of smallholder farmers and reduce their vulnerability to climate-related shocks.

Integrating value chain development into climate adaptation strategies represents an important opportunity for promoting sustainable and inclusive rural development in Zambia.

15. Conclusion of the Research Report

15.1 Introduction

This research examined local value addition as a climate adaptation strategy for smallholder farmers, using the Mwembeshi livestock processing initiative in Chibombo District as a case study. The study was implemented by Mumbwabile Youth Multi-Purpose Society with financial support from the Zambia National Commercial Bank (ZANACO).

The project combined practical development intervention with field-based research to explore how strengthening agricultural value chains can improve the economic resilience of rural farmers facing climate variability.

The findings provide important insights into the relationship between market access, value addition, and climate adaptation for smallholder farmers.

15.2 Climate Change and Rural Livelihoods

The study confirmed that climate variability continues to pose serious challenges for smallholder farmers in Zambia. Irregular rainfall patterns, prolonged dry spells, and livestock health challenges are affecting agricultural productivity and increasing the economic vulnerability of rural households.

For farmers who rely heavily on rain-fed agricultural systems, climate variability creates uncertainty in both production and income generation. Without adequate economic buffers, smallholder farmers often struggle to recover from climate-related shocks.
These challenges highlight the importance of strengthening the economic resilience of rural communities as part of broader climate adaptation strategies.

15.3 Role of Value Addition in Strengthening Farmer Livelihoods

One of the central findings of this study is that local value addition can significantly improve the economic opportunities available to smallholder farmers.
The establishment of the livestock processing facility in Mwembeshi enabled farmers to participate in a structured value chain where livestock products could be processed and sold as higher-value goods.

By enabling farmers to sell processed livestock products rather than live animals, the initiative improved price realization and market access. Farmers participating in the value chain reported increased income stability and improved market opportunities.
These outcomes demonstrate that value addition can help farmers capture a greater share of value within agricultural supply chains.

15.4 Economic Resilience and Climate Adaptation

Improved income stability is a critical component of climate adaptation. Farmers who are able to generate stable incomes are better positioned to cope with climate-related shocks such as droughts, livestock losses, or crop failures.

The Mwembeshi initiative demonstrated that strengthening agricultural value chains can contribute to improved economic resilience among smallholder farmers.

Value addition initiatives can help farmers diversify their economic activities, improve market participation, and reduce dependence on unstable commodity markets.

In this way, agro-processing and value chain development can complement traditional climate adaptation strategies focused on improving agricultural production systems.

15.5 Inclusive Rural Development

The research also highlighted the potential of value addition initiatives to promote inclusive rural economic development.
Women and youth farmers participated actively in the livestock value chain associated with the Mwembeshi processing facility. Access to organized markets created new opportunities for these groups to engage in agricultural enterprises and generate income.

Supporting inclusive participation in agricultural value chains can contribute to broader development goals such as poverty reduction, gender equality, and youth employment.

15.6 Policy and Development Implications

The findings of this study suggest that climate adaptation policies should consider integrating economic and market-based interventions alongside agricultural production improvements.

Investment in rural agro-processing infrastructure, support for farmer cooperatives, and improved access to finance for value addition enterprises can significantly strengthen rural economic systems.

Financial institutions, development organizations, and government agencies can play important roles in supporting these initiatives through financing, technical assistance, and policy support.

The collaboration between Mumbwabile Youth Multi-Purpose Society and ZANACO demonstrates how partnerships between financial institutions and community organizations can support innovative rural development initiatives.

15.7 Future Opportunities

The Mwembeshi initiative provides a practical example of how local value addition initiatives can contribute to climate-resilient rural development.
The model demonstrated through this project has the potential to be replicated in other agricultural regions where farmers face similar challenges related to market access and climate variability.

Future programs could explore expanding value addition initiatives across other livestock and agricultural value chains in Zambia.
Scaling such initiatives could contribute significantly to strengthening the resilience of rural agricultural systems and supporting sustainable rural development.

15.8 Final Reflection

Climate change continues to present complex challenges for rural farming communities. Addressing these challenges requires innovative approaches that strengthen both environmental sustainability and economic resilience.

The Mwembeshi research initiative demonstrates that local value addition can serve as a practical climate adaptation strategy by improving farmer incomes, strengthening market access, and promoting inclusive rural development.

By combining infrastructure investment with community-based research, the project contributes valuable insights into how agricultural value chains can support climate-resilient rural economies.

These insights can inform future policies and programs aimed at promoting sustainable agricultural development and strengthening the resilience of smallholder farmers in Zambia.

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