

BINDURA UNIVERSITY OF SCIENCE EDUCATION



Faculty of Agriculture and Environmental Science

Department of Agricultural Economics, Education and Extension

**AN ANALYSIS OF THE RESILIENCE BUILDING PROGRAMME ON
HOUSEHOLD FOOD SECURITY AMONG VULNERABLE COMMUNITIES IN
MATABELELAND SOUTH, ZIMBABWE.**

JANET MKOMBONI

(B202503B)

**A dissertation submitted in partial fulfilment of the requirements for the Bachelor of
Science Honors Degree in Agricultural Economics and Management.**

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RELEASE FORM.

Name of Candidate: Mkomboni Janet

Reg Number: B202503B

Degree Title: Bachelor of Science Honours Degree in Agricultural Economics and Management.

Project Title: An Analysis of the Resilience Building Programme on Household Food Security Among Vulnerable Communities In Matabeleland South, Zimbabwe.

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The undersigned certified that they have supervised and recommended to Bindura University of Science Education for acceptance of dissertation entitled: An analysis of the resilience building programme on household food security among vulnerable communities in Matebeleland South, Zimbabwe.

Submitted in partial fulfilment of the Bachelor of Agricultural Science Honours Degree in Agricultural Economics and Management.

Name of supervisor: Dr V.T Munyati.

Signed:.....

Date:.....

DECLARATION.

I Janet Mkomboni hereby declare that the contents of this dissertation submitted at the Bindura University of Science Education for the BSc. Degree in Agricultural Economics and Management is my original work, and has not been submitted previously for academic examination towards any qualification at this University or another. Furthermore, it is original in design and in execution, and all reference material contained therein has been duly acknowledged.

Signature:.....

Date: May 2024

As the Supervisor, I agree to the submission of this dissertation for examination.

Supervisor

Dr V.T Munyati

Signature.....

Date: May 2024

DEDICATION.

I dedicate this dissertation to my two sons, Kingsley and Moriel, source of my daily joy and happiness during my studies.

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ABSTRACT.

Rural households around the globe are facing an escalating food insecurity accelerated by the changing climatic conditions. The Matabeleland, southern region of Zimbabwe where this study was located is not spared from this threat, specifically Beitbridge, Bulilima, and Gwanda Districts. Traditionally economic and climate change shock used to be responded to through food relief and social support, but recently it is now through a resilience programme. The Enhanced Resilience for Vulnerable Households in Zimbabwe (ERVHIZ) project is one such project which this study seeks to test whether its interventions are improving household food security. The study's main objective is to assess the effectiveness and impact of the resilience-building project on household food security in Matabeleland South. Survey data were collected from 183 households via multistage and purposive sampling across 3 districts, using the structured questionnaire. The study employed the Household Food Insecurity Access Scale (HFIAS) to assess the food security status, and a multinomial regression analysis was employed to identify the factors influencing the prevalence rates among the sampled household beneficiaries. The key findings indicated that 61% of the household beneficiaries were food insecure, while 12% were severely food insecure and 39% were food secure. Further analysis using the Household Food Insecurity Access Prevalence (HFIAP), revealed that only 3% of the households were severely affected by shocks and still required traditional food relief approaches. The multinomial regression analysis revealed that the household head's age, livestock ownership, and household size had a positive relationship with household well-being and food security among the project beneficiaries. The study concludes that despite the resilience interventions, 12% of the sampled beneficiaries were still severely food insecure. This is supported by the Coping Strategy Index (CSI) which showed that 66.67% of the sampled population were adopting severe to mildly severe coping strategies. The study recommends that vulnerability resilience should be fully supported and adopted as a policy to address the 21st biggest threat of climate change and economic shock, as the ERVHIZ project has shown promising results under the influence of the right factors.

Keywords: Household food security, Household Food Insecurity Access Scale (HFIAS), Household Food Insecurity Access Prevalence (HFIAP), Enhanced Resilience for Vulnerable Household in Zimbabwe (ERVHIZ), Multinomial regression analysis, Coping Strategy Index.

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LIST OF ACRONYMS AND ABBREVIATIONS.

CSI	Coping Strategy Index
ERVHIZ	Enhanced Resilience for Vulnerable Households in Zimbabwe
FAO	Food Agriculture Organisation
FDGs	Focus Group Discussion
HDDS	Household Dietary Diversity Score
HFIAP	Household Food Insecurity Access Prevalence
HFIAS	Household Food Insecurity Access Scale
ICRC	International Committee of the Red Cross
LFSP	Livelihood and Food Security Project
NCE	No Cost Extension
NGOs	Non-Governmental Organisation
SAT	Sustainable Agriculture Technology
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WFP	World Food Programme
ZIMVAC	Zimbabwe Vulnerable Assessment Committee
ZIRP	Zimbabwe Idai Recovery Project

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CHAPTER ONE

INTRODUCTION

1.1. Background of the study.

Food insecurity is a pressing global issue, with the World Bank (2022) indicating that 140 million people in Africa suffer from food insecurity. Africa, a region characterized by drought and the challenges of climate change, has seen reduced food crop production and impacts on domestic livestock, exacerbating factors leading to food insecurity (ICRC, 2022). Zimbabwe, a landlocked country in Southern Africa, is particularly affected, with over 3.8 million rural residents being the most vulnerable (World Food Programme (WFP), 2023). The country has faced numerous challenges, including widespread poverty, economic hardship, and recurrent climate-induced shocks, contributing to limited access to food (WFP, 2017).

According to the Food and Agriculture Organization (FAO, 2017), food security encompasses the availability, accessibility, and utilization of food to lead a healthy and active life. In Zimbabwe, food insecurity has been classified as 'serious', ranking 13th worst on the global index (WFP, 2022). This situation has resulted in a rise in chronic malnutrition and child stunting, the most prevalent form of malnutrition throughout the country (USAID, n.d.).

The regions of Zimbabwe that fall under natural regions four and five, such as Matabeleland South, are particularly food insecure due to the dry climate, economic instability, and social vulnerability (WFP, 2012). The agriculture sector in this region is further aggravated by the poorly performing livestock sector, a result of the prevalent drought conditions (ZimVAC, 2020). Approximately 2.1 million farmers in these areas require support to rebuild their ability and improve their productive capacity (FAO, 2023).

In response to the widespread food insecurity, the Zimbabwean government, with the support of the FAO and its partners, including UNICEF, has implemented the Enhanced Resilience for Vulnerable Households in Zimbabwe (ERVHIZ) program. This integrated program aims to build resilience for vulnerable households in six districts of Matabeleland South (FAO, 2023). The project was initially planned to be implemented from January 2021 to August 2023, but due to challenges and delays, a No Cost Extension (NCE) was requested until 31 August 2024 (Machisvo, 2023). The overall objective of the ERVHIZ project is to contribute to the well-being of households in vulnerable situations, facing economic hardships and climate-induced shocks (Machisvo, 2023).

Given the significant food security challenges in Matabeleland South and the implementation of the ERVHIZ project as a strategy to address food insecurity, this research aims to analyse the impact of the resilience-building project on household food security in Matabeleland South. This analysis will help ascertain the extent to which the ERVHIZ project has achieved its objectives of ensuring improved agricultural productivity and food security for vulnerable households in the region.

1.2. Statement of the problem.

Despite the efforts by non-governmental organizations (NGOs) and the government to address food insecurity through the implementation of various development projects and food distribution schemes, the issue persists, particularly in African countries, and remains a threat to rural development (Maruve and Chitongo, 2017). In Zimbabwe, even with the implementation of resilience-building programs aimed at enhancing household food security, there have been minimal improvements or changes in livelihoods. According to the World Food Programme (WFP), the Hunger Map Live remote monitoring in 2023 showed a deteriorating food security situation in Zimbabwe, with the number of people facing insufficient food consumption estimated at 5 million during the first week of December, an increase from 4.1 million during the first week of September 2023. Matabeleland South is home to vulnerable communities facing significant challenges in achieving food security. According to the Integrated Food Security Phase Classification (IPC) in 2020, 24% of the rural population in Matabeleland South was projected to be in crisis or emergency and severely food insecure, classified in phases 3 and 4 of the IPC, which is far from the desired 0% severe food insecurity required for every given population. Against this backdrop, there exists a gap in understanding the direct impact of resilience-building interventions on household food security within the region. Moreover, the specific mechanisms through which the resilience-building program contributes to improving food security, as well as the challenges and opportunities to its effectiveness, have not been comprehensively examined. Therefore, there is a need to conduct a detailed analysis to evaluate the effectiveness of the resilience-building program on improved agriculture through various activities, such as input distribution, production support, animal feed processing, fodder production, and others, and its influence on household food security to inform and enhance future interventions in similar settings. The study, therefore, attempted to answer the following research questions.

1.3. Research Questions.

To help to attain research objectives, the research questions are:

1. What is the current food security status of the beneficiary of the ERVHIZ project in Matabeleland South
2. What are the key factors that influence the food security status of the beneficiaries of the ERVHIZ project?
3. What coping strategies do the beneficiaries of the ERVHIZ project employ when faced with problems of food insecurity?
4. What are the challenges that affect the implementation of the ERVHIZ project on household food security?

1.4 Research Objectives.

The main objective of the study is to assess the effectiveness and impact of the resilience-building program on household food security in Matabeleland South. Given this, the deliberated research objectives are:

1. To analyse the food security status of the beneficiary of the ERVHIZ project.
2. To assess the factors affecting the food security status of the beneficiaries.
3. To assess the coping strategies of the resilience-building project beneficiary when faced with problems of food insecurity
4. To assess the challenges that affect the implementation of the resilience-building project on household food security.

1.5 Significance of the study.

This research will help the government to make effective policies and approaches regarding resilience-building projects on household food security in Zimbabwe. Findings from this study can inform policymakers, development practitioners, and stakeholders about the impact of such interventions, thereby facilitating evidence-based decision-making and program design.

Stakeholders for example the NGOs involved in resilience-building programs and food security initiatives will benefit from the research by gaining insights into the effectiveness of such programs and using the research findings to enhance their strategies and interventions, leading to, more impactful outcomes for vulnerable communities.

The community members, specifically the vulnerable households in Matabeleland South will be benefited from improved food security as a result of the findings and recommendations of

the research. More so, by identifying the factors affecting food security and analysing the coping strategies, the research will help empower the community to better address food insecurity issues.

This study is also significant as it aims to contribute to the existing body of knowledge by providing empirical evidence on the effectiveness of resilience-building programs in improving household food security among vulnerable communities. Understanding the mechanisms through which resilience-building programs influence food security can lead to the development of more targeted and tailored interventions to address the specific needs of vulnerable communities in Matabeleland South and similar settings.

Through engaging in this comprehensive research project, the researcher will improve skills in data analysis, and research methodology and this will strengthen the academic understanding, and these skills can be applied to future research endeavours and professionals.

Lastly, the study further aims at bringing out realistic literature to students of project management as room for further research and also helping to add up knowledge.

1.6 Scope/Delimitations and limitations of the study.

1.6.1 Scope/ Delimitations of the study.

The research study under consideration adopts a targeted approach by concentrating its efforts on the Matabeleland South province of Zimbabwe. This strategic decision is well-justified, as the region has been the focus of numerous development projects targeting various sectors, and previous researchers have often examined specific areas within the country. By honing in on Matabeleland South, the study can provide more in-depth and context-specific insights, offering a valuable contribution to the existing body of knowledge. The researchers have further narrowed their focus by selecting the ERVHIZ project as the subject of their analysis. Implemented in 3 out of the 6 districts within Matabeleland South, namely Gwanda, Beitbridge, and Bulilima, this project-specific approach allows the study to delve into the nuanced impacts of the ERVHIZ initiative. Understanding the targeted outputs of the ERVHIZ project, which include Agriculture, Nutrition, and WASH, the researchers have chosen to concentrate their efforts on the agriculture output, aiming to assess the project's influence on enhancing food security through improved crop production and livestock management. The geographic context of Matabeleland South is crucial for the analysis, as the region falls within natural regions IV and V, characterized by low rainfall and high temperatures. These environmental factors make crop production particularly challenging, underscoring the importance of soil and water support

interventions. By recognizing this contextual understanding, the researchers can develop a more informed and comprehensive assessment of the resilience-building efforts in the area.

Beyond the geographic and project-specific focus, the study also delves into the food security status of the beneficiaries of the resilience-building project in Matabeleland South. This holistic approach allows the researchers to understand the real-world impact of the interventions, as well as the factors affecting the food security of the targeted communities. By exploring these nuances, the study can provide valuable insights to policymakers, development practitioners, and other stakeholders, empowering them to design more effective and tailored strategies.

Finally, the study aims to build knowledge on the existing gaps in resilience-building projects, their impact on enhancing food security, and the challenges for effective implementation. This broader examination encompasses cultural, political, and economic factors, acknowledging the multifaceted nature of development initiatives. The temporal scope of the study, covering the period from January 2021 to August 2023 with references to earlier years, further enhances the analysis by providing a comprehensive understanding of the project's evolution and the broader contextual factors.

In conclusion, this research study's targeted approach, project-specific focus, geographic context, assessment of beneficiary food security, and exploration of implementation challenges collectively contribute to a robust and insightful analysis of the resilience-building efforts in Matabeleland South, Zimbabwe. The findings from this study have the potential to inform policymakers, development practitioners, and other stakeholders, ultimately leading to more effective and impactful interventions that address the complex challenges of food security in the region.

1.6.2 Limitations of the study.

The major limitation of the study was the researcher's failure to gather all the necessary data, particularly from the communities, due to a language barrier. The researcher spoke in Shona while the project was conducted in a Ndebele-speaking community. However, for the data collected, the researcher sought an interpreter's assistance to translate the questions from English to Ndebele. Secondly, another challenge was the lack of funding, which limited the project to only 3 districts instead of all 6 ERVHIZ district beneficiaries. Another limitation stemmed from the difficulty of getting project team members to fill out the questionnaire due to their busy schedules. To handle this, the researcher scheduled virtual meetings after office hours.

The researcher needed to minimize the data collection through broad networking to ensure the level of response required for data analysis was met because the resilience building project in Matabeleland South is widely spread with various components targeting various outputs. Therefore, the researcher only managed to sample three districts that had more wards benefiting from the agriculture component of the project. The province has numerous development projects, but the topography in most areas was not conducive for researchers. The researcher mainly used motorbikes to navigate through the challenging terrains with poor roads network in some districts to collect data. Also, the province is characterised by high temperatures, which limits the areas covered during data collection.

1.7 Organisation of the Study

The study is grouped into five (5) chapters which are presented in the following

Chapter 1: the first chapter of the study is the “General Introduction to the Research” which involves the background to the research, the problem identified, the research questions, aim and objectives of the study.

Chapter 2: The second chapter comprises a review of the literature relevant to the research, it presents a literature review of the study, identifies the gaps in the literature that the research seeks to address, and also concludes the results obtained from the literature. The source of information for literature was mainly from the internet, journal publications, and books. This chapter includes the definition of key terms, theoretical framework, empirical reviews of household food security outlook; factors affecting food security status; household coping strategies, empirical review on opportunities and challenges in implementing the resilience building project, insights from literature, and the conclusion.

Chapter 3: The third chapter outlines an in-depth discussion of the procedure accepted for the research. This includes the research design for the study where both quantitative and qualitative (mixed approach was used), the sample size, sampling methods, population, and data analysis methods for the study were all discussed these include data collection methods such as survey, structured interviews and observation and the analytical tools such as HFIAS, BINARY, and Coping Strategy Index.

Chapter 4: The fourth chapter constitutes the results analysis and presentation using the specified analytical tools these include frequency distribution, logistic regression

Chapter 5: The final chapter summarizes the findings of the research, and draws conclusions and recommendations based on the main results of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter is visualized to achieve a certain purpose which includes, defining and explaining certain terms that are relevant to the background of this study, evaluation, and review of previous empirical studies on household food security, factors affecting food security status, household coping strategies, opportunities and challenges that affect the implementation of the resilience building projects, insights from the findings of the literature and conclusion making evidence-based recommendations that contribute to a positive outcome and sustainability of best practices.

2.2. Definitions of key terms

2.2.1 Food security

According to the Food and Agriculture Organization (FAO), the concept of food security has evolved over time. In 1974, it was first defined at the National Assembly Summit on World Food Security Conference in terms of food supply, ensuring the availability and price stability of basic food items at the national and international levels (FAO, 1974). After several revisions, the FAO (2006) finally defined food security as a state where "all people at all times have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and preferences for an active and healthy life." This definition encompasses three main dimensions of food security: food availability, food access, and food utilization (FAO, 2015). The FAO further refined the definition in 2017, describing food security as the "availability of food to everyone at all times in a safe quantity and quality to satisfy their dietary needs and tastes" (FAO, 2017). This definition emphasizes the importance of food availability, social status, and safety in facilitating a robust and dynamic existence. This conceptualization of food security is also supported by the definition provided by Austin (2022), who describes it as an individual's ability to obtain food that is both sufficient and nutrient-dense.

2.2.2 Vulnerability

Mthethwa et al. (2021), defined vulnerability as a consequence of a household's ability to manage the welfare effects of shocks, as well as their exposure to those shocks. This perspective is supported by Delmotte et al. (2021), who define vulnerability as the predisposition to be negatively impacted by weather-related or environmental risks or exposure, which includes aspects of sensitivity and the ability, or lack thereof, to cope. The

Elsevier (2014) publication further elucidates the concept of vulnerability, describing it as the degree to which a system, or part of it, may react adversely during the occurrence of a hazardous event. This notion of vulnerability implies a measure of risk associated with the physical, social, and economic aspects and implications resulting from the system's ability to cope with the resulting event. In essence, the concept of vulnerability to food insecurity encompasses the risk and level of social and economic liability faced by households, as well as their ability to cope with the adverse effects of shocks and hazardous events. Vulnerability can be understood as the probability of a household becoming food and nutrition insecure in the aftermath of a shock, such as a food price spike (Elsevier, 2014).

2.2.3 Resilience

The concept of resilience to food insecurity has been defined by various scholars. According to Pasteur (2011), resilience refers to the capacity of individuals, households, or communities to withstand, deal with, and bounce back from the impacts of hazards, as well as to adjust to long-term changes in a timely and effective manner without compromising food security or well-being. This notion of resilience encompasses the time needed for a household to return to its previous food and nutrition status after experiencing a shock. Folke (2016) supports Pasteur's definition, describing resilience as the capacity of individuals, groups, civilizations, and traditions to adapt and thrive in constantly changing environments. In the context of food and nutrition security, Folke's definition of resilience can be understood as the time needed for a household to achieve or surpass its pre-shock status of well-being. This conceptualization of resilience is further supported by Smith and Frankenberger (2018), who define it as the capability of individuals and households to maintain their welfare and bounce back from shocks and stressors. The most recent definition of resilience, according to the Food and Agriculture Organization (FAO, 2021), is the ability to prevent disasters and crises, as well as to anticipate, absorb, accommodate, or recover from them in a timely, effective, and long-lasting manner. This involves protecting, restoring, and enhancing livelihoods in the face of threats that impact agriculture and food security. Building community or household resilience, as suggested by Frankenberger and Nelson (2013), requires helping members cope with change, adapt to different conditions, and facilitate institutional and governance changes that support positive plans, policies, and programs to promote broader development over a sustained period.

2.2.4 ERVHIZ project

According to the Food and Agriculture Organization (FAO, 2020), the Enhanced Resilience for Vulnerable Households in Zimbabwe (ERVHIZ) project is an integrated resilience-building

initiative aimed at contributing to the well-being of households in Zimbabwe that are vulnerable to climate-induced shocks and stresses. The project is designed to assist in the recovery of farming and livestock activities by addressing the vulnerabilities faced by rural households through integrated interventions in the areas of Nutrition, Food Security (Dryland Crop Production, Irrigation, and Livestock support), and WASH (Water, Sanitation, and Hygiene). The ERVHIZ project is a 44-month initiative funded by the European Union, with the overall objective of increasing the resilience of rural households in Zimbabwe to food crises and climate change. This is achieved by enhancing agroecological dryland/irrigated crop and livestock production, while also improving practices of healthy eating and access to better water supply, sanitation, and hygiene (FAO, 2020). The project is jointly implemented by the Food and Agriculture Organization (FAO) and the United Nations Children's Fund (UNICEF), in collaboration with the Government of Zimbabwe's Ministries, Departments, and Agencies (MDAs). The project is being carried out in six districts of Matabeleland South province, namely Beitbridge, Bulilima, Gwanda, Insiza, Mangwe, and Matobo. The original timeframe for the ERVHIZ project was from January 2021 to August 2023. However, the project has obtained a No Cost Extension (NCE) until August 2024 to ensure the completion of all planned activities (FAO, 2020).

2.3 Conceptual Framework

The Béné et al. (2012) framework provides a useful starting point for understanding and implementing resilience from a food security perspective. This framework focuses specifically on household food security and examines the various strategies through which resilience can impact food security. At the core of this framework is the household, which is the primary unit of decision-making for food security. The decisions made by households determine their overall level of food security (FAO, 2016). This aligns with the view that household-level factors are critical in shaping food security outcomes (Vaitla et al, 2017).

According to the framework, three essential components of resilience demonstrate a household's capabilities to respond to shocks affecting food security: adaptability, absorptive capacity, and transformative ability (Béné et al., 2012). These resilience capacities are also recognized in the literature as key factors in determining households' responses to various stressors (Bahadur et al, 2013). Program interventions, such as the ERVHIZ initiative which targets livelihood outcomes, and policy changes can impact the resilience-building strategies employed by households (Béné et al, 2012; Frankenberger et al, 2014). This, in turn, influences

the resilience capacity of the household, which is crucial for maintaining food security (Alinovi et al, 2010).

By understanding how program and policy interventions affect resilience and its key attributes, the framework helps to appreciate how these interventions can support long-term food security at the household, national, and global levels (Béné et al., 2012; Frankenberger et al., 2014). The framework is illustrated below.

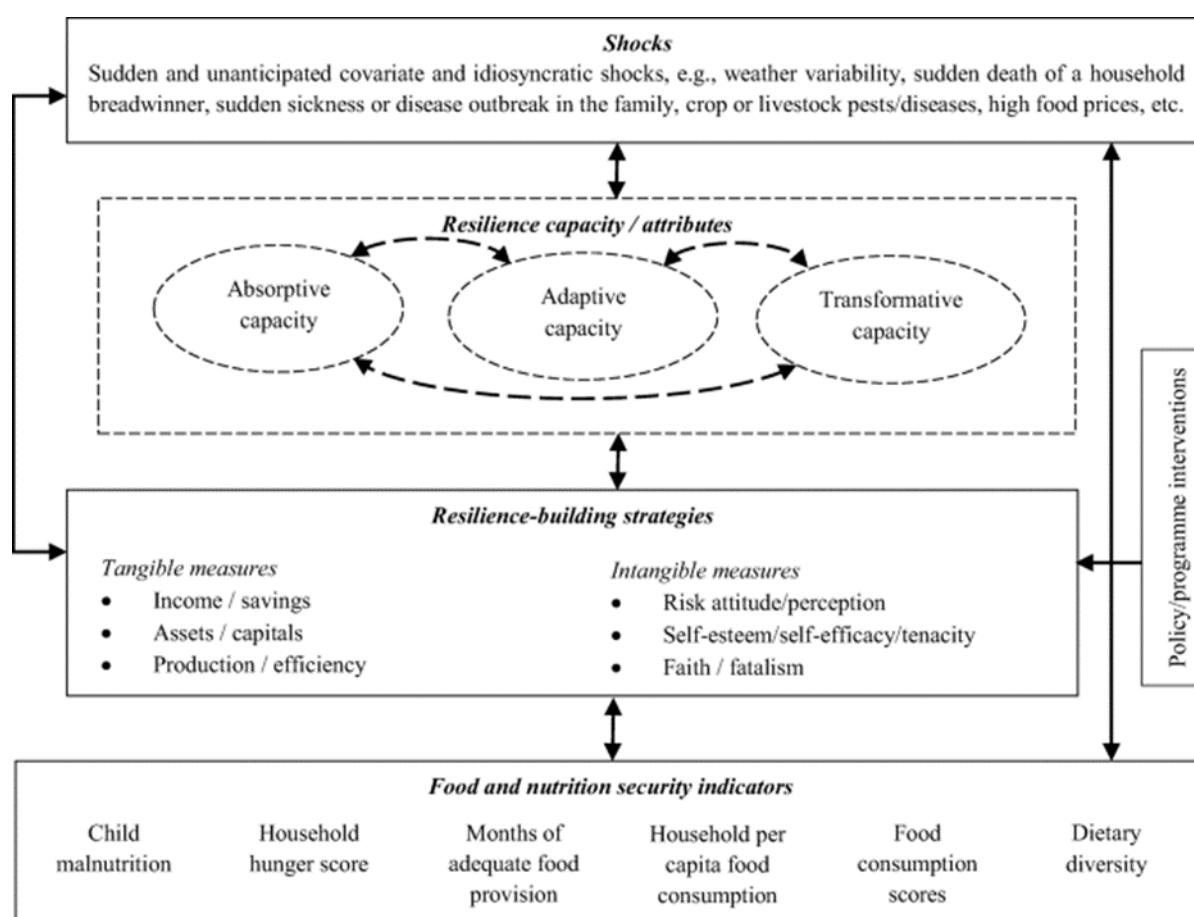


Figure 2.1: Conceptual Framework for the Links between Resilience and Household Food Security.

Source: Modified based on Béné et al, (2012).

The above framework suggests that households with improved agro-economic practices, like diversification better post-harvest management, and efficient production systems are likely to be more resilient and better able to withstand shocks to food security (Béné et al, 2012). This is supported by research indicating that livelihood diversification and on-farm practices can enhance households' resilience to food insecurity (Coates, 2013). Research has shown that climate change impacts nearly every aspect of food security, with low productivity having the

biggest effect on supply, particularly through droughts negatively affecting crop productivity (World Bank, 2018).

2.4. Empirical Literature Studies.

2.4.1. Household Food Security Status Outlook.

Africa is a region characterized by drought and it faces climate change. The drought and climate led to a decrease in food crops, and most creatures were affected. According to the Food and Agriculture Organization (FAO) and the African Union (AU), (2022), approximately 346 million Africans are affected by food insecurity. Food security issues have become a critical concern and top priority for African Countries, particularly Zimbabwe, with food security at the household level remaining a major key. The demand for it is at the topmost in the hierarchy of human needs (Irohibe, and Agwu, 2014). Hence, achieving food security is crucial for every nation, country, or household.

As a means of ensuring food security in Africa various food security intervention programmes were launched, nonetheless food security remains an issue in the continent. There are a number of studies carried out to measure the household food security specifically in Africa and their results shows that achieving food security is a major issue. Measuring food security is the main prominent issue in food security studies

A study by Sani and Kemaw (2019) to analyse the rural household food security in Western Ethiopia employed descriptive statistics (such as mean, frequency, range and percentage) and binary logit model (BLM). The finding of the study revealed that, in the study area, 59.06% of the sampled households were food insecure and 40.94% of them were food secure revealed that 59.06% of the sampled households were food insecure, while 40.94% were food secure. The study also found that 86.87% of the households were vulnerable to different shocks, risks, and seasonality, and 41.67% faced a shortage of food. Additionally, only 31.88% of the households were food self-sufficient from their production, with low productivity, climate-related problems, and inadequacy of cultivable land identified as the top three causes of food shortage.

A similar study by Samim et al. (2021) in the Takhar region of Afghanistan indicated that improved food security remains a major challenge for policymakers in Afghanistan. The Household Food Insecurity Access Scale (HFIAS) was constructed to assess the prevalence of food insecurity among farming families. The results found that 66.79% of the farming

households were food insecure, and 30.53% were severely food insecure. The study indicated that farming households with higher levels of household head education, farm income, access to non-agricultural income, and larger livestock units were less likely to be food insecure.

In South Africa, a study by Ningi et al. (2021) assessed the food security status in the Melani-inland and Hamburg-coastal communities. Using the HFAS to assess household food insecurity access score for the Melani-inland and Hamburg-coastal communities. Results revealed that, in Melani-inland, 39.7% of the households were food secure, 33.3% were mildly food secure, 21.3% were moderately food insecure, and 5.7% were severely food insecure. In the Hamburg coastal community, 34.5% were food secure, 43.7% had mild food insecurity, 18.3% had moderate food insecurity, and 3.5% had severe food insecurity. The differences were attributed to the geographical variation between the coastal and inland communities.

A more recent study by Nkoko et al. (2024) in Lesotho employed the Household Food Access Scale (HFAS) to collect information about the food security status of the farming households. The HFAS results of the study found that 40% of the farming households were food secure, 18% were mildly food insecure, 32% were moderately food insecure, and 10% were severely food insecure, with the majority being in the highlands. The study also assessed the Household Dietary Diversity Score (HDDS), which indicated that the farming households had consumed 8 to 12 food groups in the 7 days before data collection, with a mean HDDS of 9.68. Households involved in commercial farming had more diverse diets (9.98) than those in subsistence farming (8.67), and households in the highlands had the lowest diet diversity (9.0) among the four agroecological zones.

These studies highlight the persistent and widespread nature of food insecurity in various African countries, with a significant proportion of households experiencing varying degrees of food insecurity. Factors such as low productivity, climate-related problems, inadequate cultivable land, household characteristics, and geographical variations have been identified as key drivers of food insecurity in the region.

2.4.2 Key factors that influence Food Security.

Determinants of food insecurity in several emerging economies, particularly in Africa, have been well-documented in the existing literature (Birara et al, 2015). Various factors are considered determinants of food security, and these factors tend to be context-specific (Birara et al, 2015).

A study conducted in Zimbabwe's Mudzi district by Mango et al, (2014) used descriptive statistics and linear regression analysis to examine the factors affecting both household dietary diversity and food insecurity. The researchers found that the age and education of the household head were major determinants. As the household head grew older, their increased farming experience led to greater knowledge about food security issues. Additionally, the education level of the household head was shown to influence the household's access to and utilization of information to build food security capacity (Makombe et al, 2010). Beyond the characteristics of the household head, other factors were also identified as playing a significant role, such as livestock ownership, access to market information, household size, and remittances (Mango et al., 2014).

Similar findings have been reported in studies conducted in other emerging economies. For instance, research in Pakistan and South Africa used the binary logistic regression model to determine the factors that influence food security status. The findings have shown that the education and marital status of the household head are critical factors in achieving food security status, with female-headed households being more food insecure than male-headed ones (Abdullah et al, 2017; Ngema et al, 2018). Additionally, these studies have emphasized the importance of household size, with larger households generally experiencing increased food insecurity due to the higher demand for household resources.

Further studies revealed the vulnerability to shocks as another key determinant of household food security. Zehra et al, (2022) conducted a study in Malawi to assess the determinants of food insecurity before and during the COVID-19 pandemic. The results using the Binary Logit model revealed that exposure and vulnerability to covariate shocks, such as disasters including landslides, droughts, floods, earthquakes, and crop pest damage, are important drivers of food insecurity among Malawian households. Households exposed to these covariate shocks were 28.2% and 18.4%, respectively, more likely to be food insecure than households not exposed to such disasters and shocks.

A recent study in Lesotho by Nkoko et al, (2024) using Binary Regression Analysis highlighted household income, household size, marital status, and education status of the respondents as significant socio-economic factors associated with the food security of farming households. This underscores the multifaceted nature of the determinants of food insecurity, with both household-level and external factors playing a crucial role.

The existing literature has identified a range of factors that influence household food security in emerging economies, including the characteristics of the household head, household-level factors, access to resources and information, and vulnerability to shocks (Birara et al, 2015; Mango et al, 2014; Abdullah et al, 2017; Ngema et al, 2018; Zehra et al, 2022; Nkoko et al, 2024).

2.4.3 Coping Strategies to Food Insecurity.

Food insecurity remains a pressing development challenge, with complex and interrelated factors contributing to its persistence at the global, regional, national, and local levels (Degnew, 1993). Despite numerous efforts to address this issue, the problem continues to prevail and even worsen in contemporary society (Tuyisenge et al., 2020; Berhanu et al., 2022). As such, food insecurity must be tackled through comprehensive and well-informed approaches. Household food security is a dynamic and multifaceted concept, subject to change over time. Consequently, it is crucial to investigate the determinants of household food security to anticipate future shocks and understand how households respond to food insecurity (Degnew, 1993). When faced with declining food availability, households often adopt and develop diversified coping strategies and sequential responses to mitigate the impacts of food insecurity (Regassa, 2011; Icheria, 2015; Dunga et al., 2017). These coping strategies can vary widely, depending on the household's resources, vulnerability, and socio-economic context (Regassa, 2011).

Regassa (2011) conducted a study to assess the coping strategies of smallholder farmers in addressing household food insecurity and hunger in the Sidama region of Southern Ethiopia. The results revealed that households utilized various strategies, including minimizing the number of meals and the amount of food consumption, using buffer stocks, diversifying livelihood sources, cultivating more crops, seeking wage labour, engaging in seasonal migration, and practicing intercropping (Regassa, 2011).

Icheria (2015) conducted a complementary study in Tharaka Central Division of Tharaka South District, Kenya, which found that the reduction in the size of meals had the highest score, followed by a reduction in the number of meals per day and the consumption of immature crops. The findings suggest that the primary coping strategy adopted by the small-scale farmers was the reduction in the size of meals (Icheria, 2015).

Dunga et al. (2017) assessed the coping strategies employed by food-insecure households in Malawi, with a specific focus on the differences between female-headed and male-headed

households. The results indicated that relying on less preferred food was the coping strategy with the highest coefficient correlation, and reducing the number of meals was also a frequently used strategy (Dunga et al., 2017). In contrast, a study by Woleba (2023) conducted in the Kedida Gamela district of Southern Ethiopia argued that the sale of livestock and the sale of productive assets were the most significant coping strategies employed by the rural households, followed by receiving remittances, participating in small businesses, and reducing the number of meals (Woleba, 2023).

These studies collectively highlight the diverse range of coping strategies used by food-insecure households in different regions of Africa, with some commonalities, such as reducing meal sizes and frequency, as well as differences in the relative importance of certain strategies, such as the sale of assets and seeking alternative income sources.

2.4.4 Challenges and Opportunities affect the implementation of food security resilience projects.

In recent academic and policy discourses, the concept of 'resilience' has become a prominent guiding principle in rural development planning, replacing the earlier foci on 'vulnerability' and 'sustainability' (Weichselgartner, 2013). However, this shift in emphasis raises a critical concern – the chronic needs and root causes of vulnerability will remain unaddressed, and vulnerable groups will continue to emerge, as long as efforts to build resilience fail to engage with the preconditions and underlying social and political drivers of vulnerability. Building resilience in rural, vulnerable communities provides an important opportunity to address understudied elements, gain a deeper understanding of the historical and socio-political processes that create and perpetuate social vulnerabilities, and develop interventions and leverage points for positive change. In this context, several studies have been conducted to explore the challenges and opportunities associated with food security resilience-building projects, particularly in Africa.

According to the end-of-project evaluation report drafted by Dengu et al. (2010) for the Food Security and Livelihoods Independence Programme in Zimbabwe, the main challenges that contributed to delays in the irrigation rehabilitation project were: difficulty in procuring project materials due to the hyperinflationary environment as well as navigating the bureaucratic procurement requirements of the contract, the project being implemented during an election year which brought associated challenges, hyperinflation peaking before the introduction of a multicurrency system in early 2009, poor communication between key stakeholders at the

scheme level, unexpected costs, and issues with appropriate storage solutions due to disruptions in the electricity supply (Dengu et al., 2010).

A workshop conducted by the World Food Programme in 2011 identified the interlinked themes of risk management, climate adaptation, and food security as fundamental to achieving resilience. One of the programs analysed was "Enhancing Resilience of Communities to the adverse effects of climate change on food security in Ecuador." The opportunities identified in this project included alignment with the government's food security and adaptation priorities, strong alignment with national and local level priorities in climate, development, and the environment, alignment with the government's decentralization policy, and integration of environmental and community aspects in risk reduction. However, the project also faced several challenges, including corruption, the complexity of implementing a project in an environment of conflict, and difficulties in applying global climate change models to the local context (World Food Programme, 2011).

The World Food Programme (WFP) also conducted a program named "Enhancing Resilience to Disasters and the Effects of Climate Change" in Bangladesh from 2008 to 2011. Some of the challenges that affected or limited the implementation of the project were poor maintenance of some schemes due to a lack of community ownership, low wages during certain periods, and the need for gender-sensitive provisions on project sites (World Food Programme, 2008-2011).

According to Louis (2023), the COVID-19 pandemic has posed another challenge that affects and continues to affect the implementation of projects and the achievement of food security. The pandemic has increased debt levels in African countries, and poor governance and inflation are other challenges that can hinder the implementation of projects. Additionally, the Ukraine war has had significant economic repercussions in terms of global food systems, agricultural inputs, and energy prices, affecting many African countries (Louis, 2023; FAO, 2023).

Despite these challenges, the implementation of the projects also brought opportunities, such as increased productivity through the production of maize from bartering vegetables for grain, and farmers benefiting from food consumption and income earning through the sale of vegetables (FAO, 2023; Louis, 2023; Béné et al., 2012, 2014, 2016).

2.4.5 Insights from Literature

This section covers the main findings obtained from the analysis of past empirical studies to answer the research objectives. The main aim of the study was to assess the impact of the ERVHIZ project on household food security in Matabeleland South. The first objective was to

analyse the food security status of the ERVHIZ project. The third objective was to assess the factors affecting the food security of the beneficiaries. The fourth and last chapter was to assess the opportunities and challenges that affect the implementation of the ERVHIZ project. The studies used a set of analytical tools to analyse their data. The summary findings obtained for each objective are described below.

From the empirical review of the first objective, the findings indicated that achieving food security is a major concern in Africa. Most of the results indicated that African countries (Ethiopia, Afghanistan, South Africa, Lesotho) found high levels of food insecurity, ranging from 59% to 66% of households being food insecure. Food insecurity was more prevalent in rural and inland areas compared to urban and coastal regions.

The second objective assessed the factors affecting household food security among the project beneficiaries. The most significant factors noted by various authors were the education level of the household head, size of the households, age of the households, marital status, farm and non-farm income, and livestock ownership were associated with food security. Geographical variations, with households in highlands and inland areas being more food insecure compared to coastal regions. The empirical studies further identified the Binary regression model as a major analytical tool used by numerous studies.

On the third objective, households employed various coping strategies with the most being used by many, including reducing meal sizes, skipping meals, and relying on less preferred foods. Some households also resorted to selling assets, borrowing money, and seeking support from family and friends. The Coping Strategy Index is used as an analytical tool by many studies. However, the existing literature is not clear on the stages at which the household prefers to use different types of coping measures and the significance of each measure adopted.

Lastly, on the last objective, various challenges hinder the implementation of many resilience building on food security and these are poor governance mostly in African countries. Despite the implementation of various food security intervention programs, food insecurity persists as a major challenge in the region delays in procurement, economic hardships such as inflation, disasters such as COVID-19, and the war in Ukraine affecting most current projects. Achieving food security remains a critical priority for African countries, as it is a fundamental human need. The objective further reviews the opportunities in the implementation of food security projects and these are not limited to improved agricultural production, income earning, and reduction of the vulnerability of farmers to disasters and climate-induced shocks.

2.4.6 Conclusion

In conclusion, the literature highlights the widespread and persistent nature of food insecurity in Africa, driven by a combination of environmental, socioeconomic, and geographical factors. Addressing these challenges through targeted policies and interventions remains a crucial undertaking for African nations. The next chapter describes the methodology used for the study and describes the data-gathering process.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview.

This chapter outlines the sources of the description of the study area, research population, sampling techniques, and sample size. It also outlines the data, data collection and description of data variables, data collection tools, and data analytical tools used in the study.

3.2 Description of the study area.

Zimbabwe is currently facing key macroeconomic challenges, including high inflation, volatile exchange rates, and electricity shortages that have limited agricultural production (UNICEF, 2023). These economic challenges, coupled with the impacts of climate change and the after-effects of the COVID-19 pandemic, have negatively impacted the country's economy, reducing spending on social services and eroding the purchasing power of vulnerable households, particularly in rural areas (UNICEF, 2023). Matabeleland South, located in the southern part of Zimbabwe, is one of the country's provinces. The province is divided into seven districts: Beitbridge, Mangwe, Matobo, Insiza, Gwanda, Umzingwane, and Bulilima (Zimstat, 2022). According to the 2022 Zimstat report, Matabeleland South has a total population of 760,345 people, with 193,328 households and an average household size of 4 members (Zimstat, 2022).

3.2.1 Map of Matabeleland South, Zimbabwe

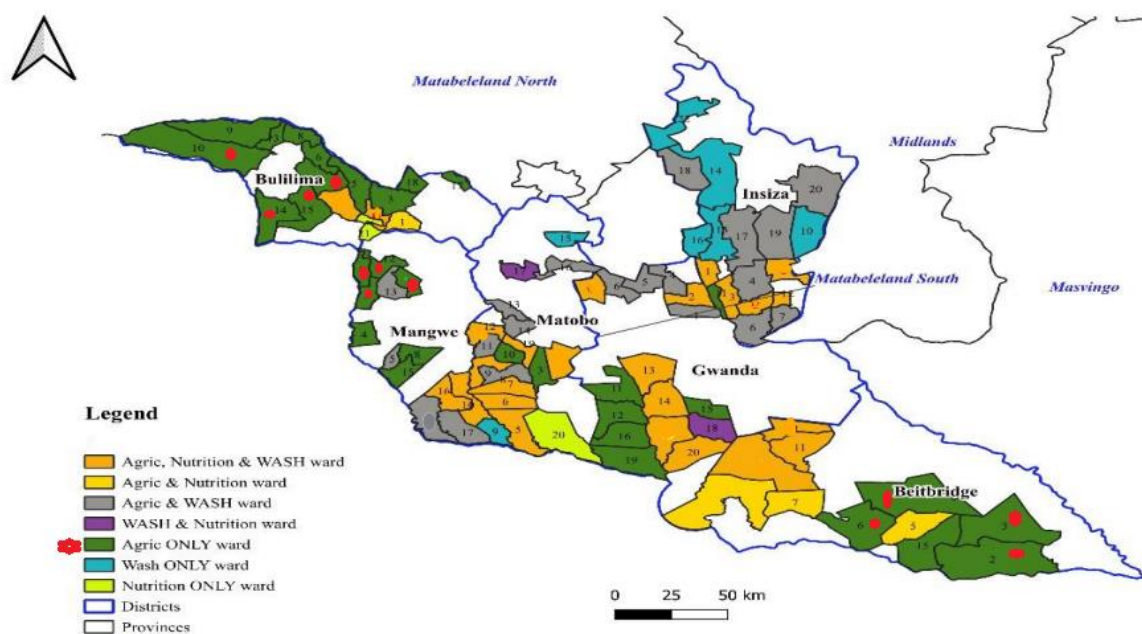
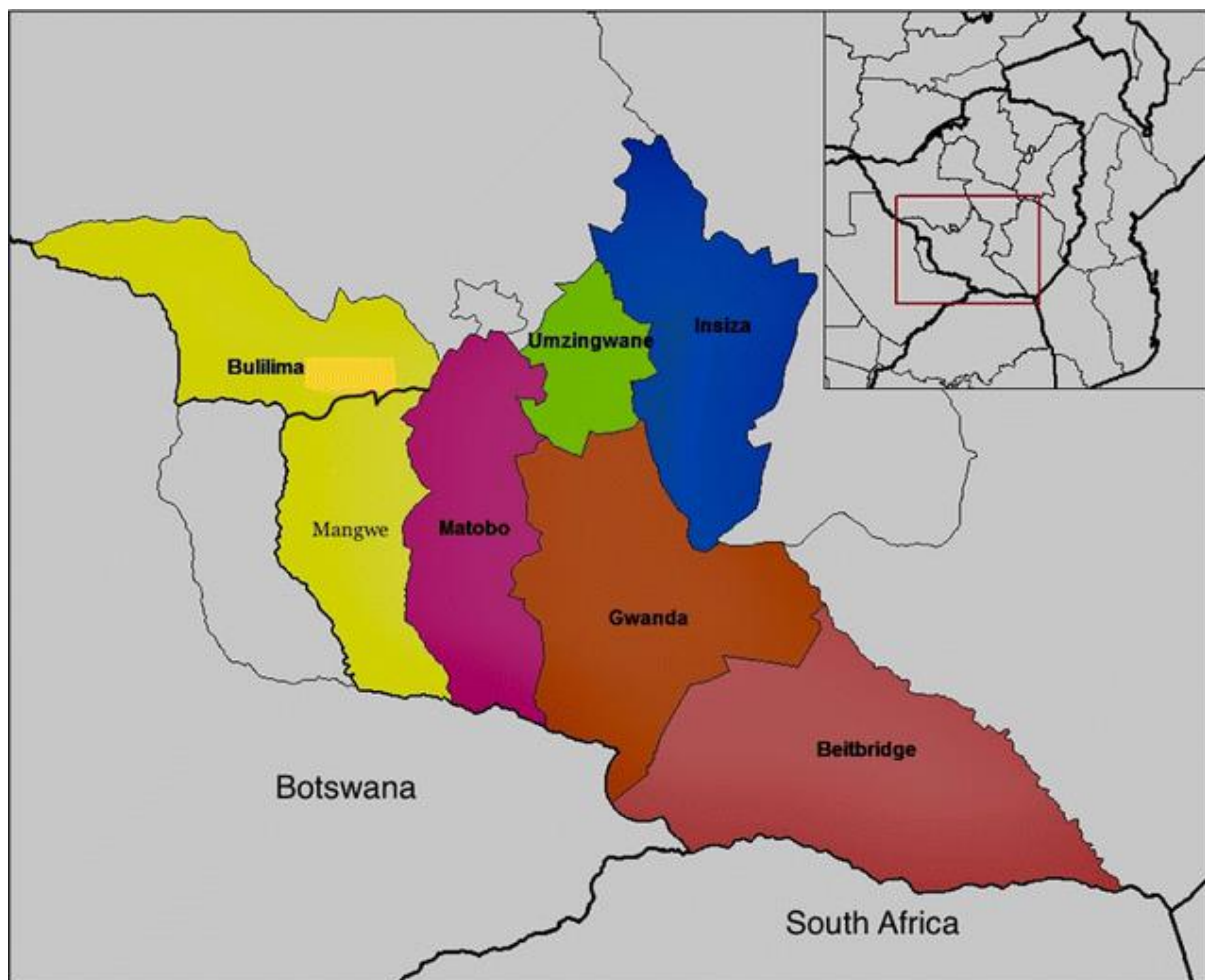


Figure 3.2: Map of Matabeleland South, Zimbabwe showing ERVHIZ wards

Source: Zimstat, (2022), ERVHIZ MTR, (2023)

Matabeleland South province lies in natural region 5, characterized by an average annual rainfall of less than 650mm and highly erratic rainfall patterns (ZimVAC, 2022). The region also experiences high temperatures, with a mean annual temperature range of 21-25°C (ZimVAC, 2022). These climatic conditions make the region more suitable for extensive cattle production and game ranching rather than crop production. As a result, farmers in the province primarily grow small grains such as maize, sorghum, finger millet, and groundnuts (ZimVAC, 2022). The ERVHIZ project, implemented by the Food and Agriculture Organization (FAO, 2024), operates in six rural districts of Matabeleland South: Gwanda, Bulilima, Mangwe, Insiza, Matobo, and Beitbridge. According to the Sustainable Agriculture Trust (SAT, 2024), these six districts had 69,132 registered beneficiaries of the ERVHIZ project as of June 2023. For this study, the researcher collected data from three rural districts within Matabeleland South - Gwanda, Bulilima, and Beitbridge - which have been recipients of the ERVHIZ project aimed at improving household food security and benefiting from agricultural output improvements in crop and livestock production (FAO, 2024; SAT, 2024).

3.3 Research Design

This study employed a descriptive research design, which involved the collection and analysis of both qualitative and quantitative data (Creswell and Creswell, 2017). The purpose was to measure the opinions, views, and quantifiable data on the impact of the ERVHIZ project on household food security. The quantitative nature of the study involved the use of numerical values in the analysis (Babbie, 2020). The descriptive research design is commonly used in applied sciences, such as agriculture, where it is challenging to manipulate variables to determine cause-and-effect relationships (Saunders et al, 2019). This design ensured that all relevant data for the study was accommodated and improved the way the research questions, data collection, and data analysis were carried out (Creswell and Creswell, 2017). The approach ensured that no relevant information was left out and that the conclusions drawn from the sample were representative of the population (Babbie, 2020).

3.4 Sampling Procedure and Sample Size

This study employed a multi-stage sampling approach. First, the researcher used purposive sampling to select Matabeleland South province as the study area, as this is the region where the ERVHIZ project was implemented and where the researcher was based (Etikan et al., 2016). Purposive sampling was also used to select three districts (Beitbridge, Bulilima, and Gwanda) out of the six districts that benefited from the agriculture component of the ERVHIZ project, as these were considered representative of the province (Etikan et al., 2016).

The study then used probability sampling techniques to draw the sample. The ERVHIZ project provided the sampling frame of the project beneficiaries. Simple random sampling was used to select 12 wards out of the 32 ERVHIZ (Agriculture) crop and livestock wards, ensuring that all the benefited agriculture wards had an equal chance of participating in the survey (Babbie, 2020). The sample size achieved was 192 households, with an average of 16 households drawn per ward, which resulted in a margin of error of 7.2% in the estimation of indicator values (Yamane, 1967).

The research interviewed 183 out of the sample of 192 households, with 64 from Beitbridge, 62 from Gwanda, and 57 from Bulilima. Qualitative data was collected from the same 12 wards through 8 community focus group discussions (FGDs). Additionally, key informant interviews were conducted at the district and provincial levels to gather information on project implementation, multi-sectoral planning and coordination, and governance (Creswell & Creswell, 2017). The sample size was obtained using the Slovin formula below

$$n = \frac{N}{(1 + N(e^2))}$$

Where n =sample size

N=Population size,

e=margin of error as a decimal

Thus, applying this formula as illustrated in the equation below will give a minimum sample size of 192 respondents from the 12 selected wards.

$$n = \frac{69\ 132}{(1 + 69\ 132(0.072^2))}$$

$$n=192$$

3.5 Data collection

The primary data for this study was collected through various methods, including face-to-face interviews with beneficiaries and key informants, group discussions with implementing partners, and focus group discussions with communities (Bell, 2014; Creswell & Creswell, 2017). A pre-tested semi-structured questionnaire was used to gather information on household demographics, socioeconomic characteristics, Household Food Insecurity Access Score, coping strategies, and challenges affecting the implementation of the ERVHIZ project (Bell,

2014). The questionnaire included both close-ended and open-ended questions to provide direct answers and in-depth explanations (Hancock, 2016). The community focus group discussions were held in the wards sampled for the household survey to facilitate general discussions (Creswell & Creswell, 2017). Observation was also employed during the primary data collection, where the researcher made general observations on the household status and building conditions to provide additional insights on the food security status (Hancock, 2016).

Key informant interviews were conducted with project coordinators to gather information about the project's outcomes, opportunities, and challenges, as they had extensive knowledge of the project's implementation (Creswell & Creswell, 2017). Pretesting of the questionnaire was done in Gwanda District Ward 11 to assess the validity and accuracy of the questions, and necessary changes were made (Bell, 2014). Secondary data was obtained through a desk review of existing project documents, including monitoring data and studies conducted by the project (Bowen, 2009). The review process started with documents provided by the Food and Agriculture Organization (FAO) and provided critical background and baseline information for the researcher to understand the project, the food security baseline, interventions, and partnerships (Bowen, 2009). The progress reports also provided information on the project's implementation progress and challenges (Bowen, 2009).

Table 3.1: Summary of Objectives and Data Collection Methods.

Objective	Data to be collected	Data gathering tool	Respondents
To analyse the food security status of the beneficiary of the ERVHIZ project.	Social position of the beneficiaries (food insecure, food secure).	Questionnaires. Interviews,	Heads of household of the project beneficiaries
To assess the factors affecting the food security status of the beneficiaries.	Social-economic and political characteristics affecting food security (Age, gender, income, education, size, input cost, market access).	Questionnaires. Interviews,	Heads of household of the project beneficiaries
To assess the coping strategies of the resilience-building project beneficiary when faced with problems of food insecurity.	List of coping strategies used by beneficiaries of the ERVHIZ project (reduced the number of meals, relying on less expensive food, sale of livestock, remittances)	Questionnaires. Interviews,	Heads of household of the project beneficiaries
To assess challenges that affect the implementation of the resilience-building project on household food security.	Economic variables (economic hardships (inflation, poverty, access to information, storage, income), Political, economic and social variables, election year, wars, conflicts) Social variables (culture, level of education, religion)	Questionnaires. Interviews, Key informant guide	Project coordinators, government officials, and implementors.

Source: Survey Data, 2024.

3.6 Data Analytical Tools

The analytical tools used in data analysis are the Household Food Insecurity Access Scale (HFIAS), the multinomial regression model, and the Coping Strategy Index. Data was also analysed by using quantitative analysis techniques using analytical tools from Excel.

Table 3.2: Summary of Objectives and Data Analytical Tool.

Objectives	Data to be collected	Analytical tool
To analyse the food security status of the beneficiary of the ERVHIZ project.	Social position of the beneficiaries (food insecure, food secure).	Household Food Insecurity Access Scale (HFIAS)
To assess the factors affecting the food security status of the beneficiaries.	Social-economic and political characteristics affecting food security (Age, gender, income, education, size, input cost, market access).	Multinomial Regression Model
To assess the coping strategies of the resilience-building project beneficiary when faced with problems of food insecurity.	List of coping strategies used by beneficiaries of the ERVHIZ project (reduced the number of meals, relying on less expensive food, sale of livestock, remittances)	Coping Strategy Index
To assess challenges and opportunities that affect the implementation of the resilience-building project on household food security.	Economic variables (economic hardships (inflation, poverty, access to information, storage, income), Political variables (poor governance, election year, wars, conflicts) Social variables (culture, level of education, religion)	Impact Assessment

Source: Survey Data 2024.

The first objective was analysed using the HFIAS. The second objective was analysed using the Ordered Probit Logistic Regression Model to determine the factors that affect the food security status of the ERVHIZ project beneficiaries and the third objective was analysed using the Coping strategy index. The HFIAS equation and the regression model are estimated as follows

$$1) \text{ HFIAS} = Q1a + Q2a + Q3a + Q4a + Q5a + Q6a + Q7a + Q8a + Q9a$$

Where Q is the occurrence of the question. The total expected score ranges are as follows; 0 for the lowest and the highest is 27. Thus, a higher score indicates a food-ensured household (Maziya et al, 2017). According to Mango et al, (2014), the HFIAS is the perfect method because it includes all four areas of food security, namely access, anxiety, inadequate quality, and quantity of food supply. The study categorized the HFIAS into four ordered groups as defined below:

- (a) HFIAS 0 – 6 Food secure
- (b) HFIAS 7 – 13 Mildly food insecure
- (c) HFIAS 14 – 20 Moderately food insecure
- (d) HFIAS 21 – 27 Severely food insecure

2) The multinomial regression model is estimated as follows:

Food Security Status (Food Insecurity Access) = $\beta_0 + \beta_1 (ms) + \beta_2(gen) + \beta_3(age) + \beta_4(edu) + \beta_5(rem) + \beta_6(own) + \beta_7(train) + \beta_8(hhsize)$.

$$Food\ Insecurity\ Access = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \dots \dots + \beta_8 X_8 + \mu$$

Where:

- Food Insecurity Access is the dependent variable
- β_0 is the intercept term
- β_1 to β_7 are the coefficients for each predictor variable
- X_1 to X_8 are the independent or predictor variables of the model
- μ are all other factors that affect the food security status among the project beneficiaries.

edu = level of education of household head

age = Age of the household head

hhsize = Household size

gen = Gender of the household head

ms = Marital Status

own = Livestock ownership

rem = Remittances

train= Trainings

μ = Error term which captures

3.7 Description of variables

3.8 Data presentation

The education level of the household head is an important factor influencing the household's access to and use of information to build food security capacity (Makombe et al., 2010). Studies have shown that low education attainment among household heads makes the use of advanced technology, skills, and tools difficult, and have advocated for the extension of education for household heads in this regard (Mango et al., 2014). The age of the household head, measured in years, is also considered an important determinant of experience in farming (Okojie et al., 2010). It is assumed that as the household head grows older, there will be an increase in education on food security issues due to more experience in farming within the family. Older farmers are more likely to be experienced in production and are food secure (Mango, 2014). However, Kuwenyi (2014) argues that as the household head grows older, their ability to execute agricultural tasks weakens, thereby reducing productivity and hurting food security. The size of the family also affects food security status. As the family grows, the demand for more food increases, which requires more capital to meet their food consumption (Kuwenyi, 2014). However, other studies have discovered that larger families possess a larger labor force, thereby increasing the productivity of the household and positively affecting food security status (Kuwenyi, 2014). Farmers with livestock herds are more likely to sell their livestock to buy inputs and meet family spending on consumption goods than to borrow and repay at a cost (interest). Farmers without livestock herds are expected to be food insecure, and herd ownership has a negative effect on food security status (Kuwenyi, 2014). The results of the study will be presented using visual aids for easy understanding by others who might want to use the information generated. The pie charts, frequencies, and graphs will be used where necessary in data presentation and interpretation.

3.9 Summary

The chapter outlined the study area, population, data collection, and analysis tools. The HFIAS, Binary logistic regression model, and Coping Strategy Index were used to analyse the results. The research findings will be presented and explained in the next chapter.

CHAPTER FOUR.

PRESENTATION OF RESULTS AND DISCUSSION.

4.1 Introduction.

This chapter shows data presentation and discussion of the major findings obtained from the primary and secondary data triangulation. Tables and graphs were used to help interpret the results. The households' heads successfully surveyed are 183 group representatives made up of 81 females and 102 males out of the targeted sample size of 192 households.

4.2 Summary of Household Demographics.

The demographic data was collected from 183 respondents in the three wards. Some of the demographic data that was collected included age, gender marital status, and the level of education. The results of the demographics are presented in Table 4.3.

Table 4.3: Demographic Characteristics of ERVHIZ beneficiaries.

District				Beitbridge		Gwanda		Bulilima	
		Total	%		%		%		%
Number of HH per District surveyed		183		64		62		57	
Gender of Principal Beneficiaries	Female	81	44,26	35	53,85	19	31,15	27	47,37
	Male	102	55,74	30	46,15	42	68,85	30	52,63
Age of HH Principal Beneficiary	Mean Age	56		54		56		58	
Principal Beneficiary. Status	Single	9	4,92	1	3,08	3	3,28	5	8,77
	Married	134	73,22	52	80,00	43	70,49	39	68,42
	Widowed	24	13,11	5	7,69	12	19,67	7	12,28
	Divorced	19	10,38	9	13,85	4	6,56	6	10,53
Highest Education level Of Principal Beneficiary	Primary	81	44,26	34	53,85	27	42,62	20	35,09
	Secondary	29	15,85	4	6,15	11	18,03	14	24,56
	Tertiary	28	15,30	7	10,77	9	14,75	12	21,05
	Informal	45	24,59	19	29,23	15	24,59	11	19,30

Source: Survey Data, 2024.

From the data on table 4.3, The project has achieved much in the empowerment of women indicated by the almost equal participation of 44.26% of beneficiaries being females, with men taking the remainder 55.74% of the total 183 surveyed households. The large number of males is due to the patriarchal nature of communities, in which most of the households are male-headed. The result aligns with the report by the UN Food and Agriculture Organization, (2019) which found that across sub-Saharan Africa, women typically made up only around 30-40% of the participants in community-based agricultural and natural resource management projects. However, the ERVHIZ project appears to have overcome these systemic challenges and achieved a much more balanced gender representation among its beneficiaries. This suggests the project has effectively engaged with and empowered women in the target communities. This is shown by the relatively high female representation in Beitbridge with women beneficiaries taking the lead at 53.85% mainly due to most men opting to cross into South Africa for search of formal employment. The credit goes to the project intervention of Gender Action and Learning Systems (GALs) and strong advocacy on women's participation and recognition on the income generating projects during the same project period by the Ministry of Women Affairs, Community, Small and Medium Enterprises. (MoWACSME). This gives women an opportunity to head and make decisions for the household, whilst men are away.

The mean age of the beneficiaries of the ERVHIZ project was 56 years, with an average age of 54 years from Beitbridge, 56 years from Gwanda, and 58 years from Bulilima. This is supported by the work done by Smith et al, (2021) in sub-Saharan South Africa, which highlighted that the average age of participants tended to be 56 years, with a range of 54-59 years depending on the specific location and project. The mean age of 56 in most rural project beneficiaries is because the older individuals are often more established within rural communities and have a deeper understanding of local needs and dynamics. They are better positioned to participate in and support development projects. More so, younger adults in rural areas are more likely to migrate to urban centers in search of employment opportunities, leaving a higher proportion of older residents in the communities served by these initiatives. The majority of the principal beneficiaries are married with the single, widowed, and divorced constituting 28.42% in total.

According to table 4.3, Education levels are relatively low, with primary school being the most common highest level attained with 44.26% of the total sampled beneficiaries. while 24.59% had no formal education, 15.85% percent went to secondary, and 15.30% having attained tertiary education. The results is supported by the study of the African Development Bank,

(2018) which found that in many rural communities, a significant proportion of the population - often over 50% - had only completed primary education or had no formal schooling at all. This is because limited access to resources in remote, rural areas and household-level poverty forces children to prioritize economic activities such as farming over continued schooling. Education level in the sampled three districts indicated a positive correlation to the expected outcomes of the project, whereby the ERVHIZ project's managed to reach and engage a significant number of beneficiaries with only primary-level education or less which are the most vulnerable to different shocks. This is also against the research results of Deverux and Sabates-Wheeler, (2015) indicated that development projects often struggle to reach the most marginalized populations, who tend to have lower levels of education. The relatively high rates of informal education, however, suggest the project is engaging with traditional knowledge and community-based approaches.

4.2.1 Household size.

The household size variable is a significant explanatory variable of the household's ability to cope well in times of shocks, as the family size has a negative relationship with the household food security status. Table 4.4 shows the results of the household sizes among the project beneficiaries.

Table 4.4: Household Size*Household Head Cross Tabulation.

		Male Headed		Female Headed		Total	
			% Of Total		% Of Total		
Household Size	1to3 members	20	11%	17	9%	37	20%
	4to 6 members	55	30%	29	16%	84	46%
	7 and above	27	15%	35	19%	62	34%
	Total	102	56%	81	44%	183	100%

Source: Survey Data, 2024.

The sampled farmers had household sizes varying from a minimum of 1 to a maximum of 9 with 46% of households having families of more than 3 members. The average household size was 4, which is quite similar to the recent 2022 census findings by the Zimbabwe National Statistics Agency (Zimstat, 2023). Their data showed the average household size in rural

communities is 3.9 members. The results is supported by Smith et al, (2021) reported an almost similar average household size of 4.2. Similarly, Sharma et al, (2020) found an almost similar average household size of 4.1. This household size distribution is because rural populations in developing regions often have higher birth rates compared to urban areas, leading to larger family sizes on average. More so, in agricultural communities, having a larger household provides more labour for farming activities, which is an important economic consideration. Larger households provide additional labour and resources, which can be beneficial for agricultural production and food security. However, they also face greater demands on limited resources, potentially leading to higher vulnerability (Salami et al, 2010).

4.3 Household Well-being.

Unlike traditional approaches whereby economic and climate change shock were addressed by food relief support and social protection, the ERVHIZ project is taking a resilience-building stance, hence the food security is now based on the well-being of a household, about its preparedness to be adaptive to shocks. Therefore, it was noted that farming households' priorities have shifted to three major determinants of resilience-building capacity: access to drinking water, access to drought resistance means of farming production, and access to income-generating projects Machisvo, A. (2023).

4.3.1 Livestock Herd and Crop Ownership.

The surveyed districts are dominated by households practicing mixed farming, and the data on the table shows a notable improvement in traditional crop yields since the implementation of the ERVHIZ project. The baseline figures, drawn from a desk review of project documents, are compared to the peak production figures from the 2022/23 farming season, as the previous season was severely impacted by an El Niño-induced drought. Figure 4.3 below shows the changes in livestock and crop yields.

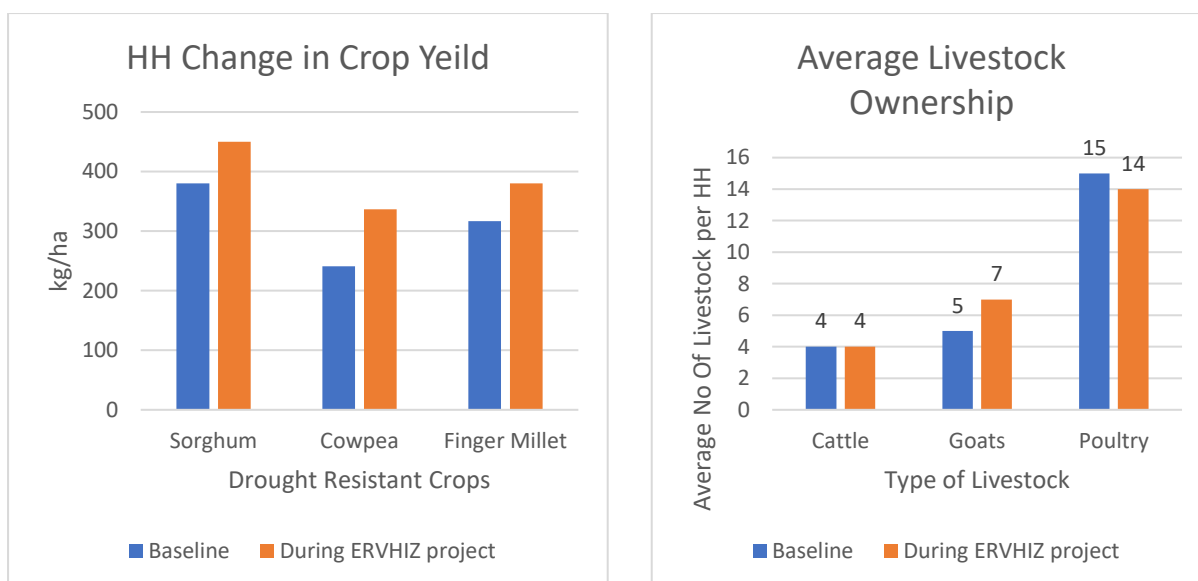


Figure 4.3: Household Change in Livestock Ownership and Crop Yields.

Source: Survey Data, 2024.

The data in figure 4.3 shows a clear increase in the yields of three key drought-resistant crops - sorghum, cowpea, and finger millet - among the project beneficiaries. For sorghum, the yields rose from around 380 kg/ha at baseline to over 450 kg/ha during the project implementation, representing a significant 18% improvement. Similarly, cowpea yields increased from 250 kg/ha to nearly 400 kg/ha, a 60% jump. Finally, finger millet yields went up from 320 kg/ha to over 390 kg/ha, a 22% gain. These findings align with studies that have highlighted the potential for drought-resistant crops to boost agricultural productivity in water-scarce regions. For instance, a study by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), (2021) examined sorghum and pearl millet yields across several countries in Sub-Saharan Africa. They found that adopting improved, drought-tolerant varieties led to average yield increases of 30-40%. Additionally, an assessment by the Food and Agriculture Organization (FAO) of finger millet cultivation in East Africa noted yield improvements of 20-30% when farmers used certified drought-resistant seeds (FAO, 2019).

The success in boosting these drought-resistant crop yields is likely due to the resilience-building interventions implemented through the project. These included providing access to improved, climate-adapted seed varieties, promoting sustainable farming practices like water harvesting, and offering extension support to help farmers optimize cultivation techniques. By enhancing the ability of these crops to withstand drought, the project was able to significantly improve agricultural productivity and food security among the beneficiary communities. The

observed increases in sorghum, cowpea, and finger millet yields demonstrate the potential for targeted efforts to build resilience and support the adoption of climate-smart agriculture.

According to figure 4.3, the average ownership of cattle remained constant at 4 both at baseline and during the implementation of the project, indicating no significant change. For goats, the average ownership increased from 5 at baseline to 7 during the research project, representing a 40% increase. For poultry, the average ownership increased from 15 at baseline to 14 during the research project, a slight decrease of around 7%. The relatively small increase in goat ownership is due to the greater resilience of goats to harsh environmental conditions compared to cattle and poultry. Goats are known to be more adaptable to droughts, feed scarcity, and other climate-related stresses, making them a more suitable livestock choice in the context of the resilience-building program. These findings align with a study by Shapiro et al, (2020) International who found that while livestock interventions could improve herd health and productivity, they had a modest effect on overall herd size with a study that has observed the limited impact of resilience-building programs on livestock ownership, particularly for cattle and poultry. Similarly, a study by the FAO, (2019) noted that poultry production is often constrained by factors beyond just access to livestock, such as disease, predation, and market access. Despite the above finding household heads appreciated that livestock ownership is a significant variable that has a positive relationship with the household's resilience-building capacity and they wish to own as much as possible. Larger livestock holdings can provide multiple benefits, such as increased food production, income generation, and asset diversification, which are important for building household resilience (Alinovi et al, and Salami et al, 2010).

4.4. Analysis of Household Food Security using the Household Food Insecurity Access Scale (HFIAS)

The HFIAS module populates information on food insecurity (access) at the household level. According to Coates et al, (2007), up to four types of indicators can be calculated to understand the characteristics of and changes in household food security. These indicators are related to Conditions, Domains, Scale score, and Prevalence. This study used two indicators namely related conditions and Prevalence as they are most suitable to measure changes in household food security under such conditions where a program is being implemented in different geographic locations.

4.4.1. Household Food Insecurity Access.

This specifically provides disaggregated information about behaviours and perceptions of the three districts surveyed regarding each condition of the Household Food Insecurity Access Scale. Figure 4.4 shows the conditions of Household Food Insecurity Access.

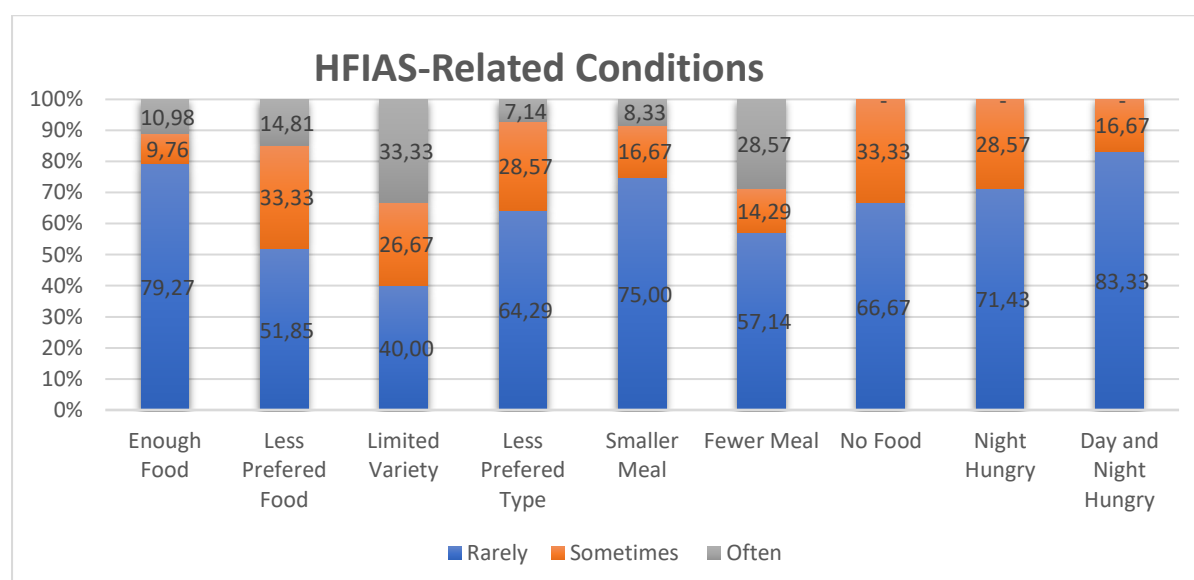


Figure 4.4: HFIAS-Related Conditions.

Source: Survey Data, 2024.

The indicator measures the percentage to which a household is experiencing conditions 1 to 9 from those that responded a “Yes” to part 1 of each question. Each condition has been further disaggregated to understand the frequency of experience of the condition across each household that affirmatively responded to a condition. Figure 4.2 above illustrates that generally most households are not severely experiencing food insecurity conditions but rather fall in the rare category. There is a notable culture of eating fewer meals across the districts, indicated by a 28.3% often family member cut on the number of meals consumed per day. This is well-moving together with a lack of variety of meals, illustrated by 33.3% of families often experiencing a lack of resources to eat unlimited variety. This indicates that while the overall quantity of food may be sufficient, there are still challenges in terms of the diversity and quality of the food available to these households. These findings is supported by a WFP study, (2020) in Sub-Saharan Africa which found that while the prevalence of severe food insecurity was relatively low, many households experienced moderate forms of food insecurity, such as reducing meal sizes and consuming less diverse diets studies that have observed similar patterns of food insecurity in developing contexts. Similarly, a review by the FAO, 2019 noted

that even in food-secure regions, households may still face challenges in accessing a nutritious and varied diet, leading to micronutrient deficiencies and associated health issues.

The results on figure 4.4 suggest that while the overall food quantity may be sufficient, there are still significant barriers to households accessing a diverse and nutritious diet. This could be due to a range of factors, such as limited access to markets, lack of agricultural diversity, and socioeconomic constraints that prevent households from purchasing a wider variety of foods. Addressing these underlying drivers of food insecurity, beyond just focusing on increasing overall food production, is crucial for ensuring sustainable improvements in food and nutrition security.

However, the level of household experience with conditions indicates some food of positive impact of resilience-building project interventions as the conditions shows avoidance of the extreme condition of going a day or night without food. The study analyses the HFIAS data through the HFIAP to further understand how common households experience extreme conditions. The literature on the application of HFIAS and its related indicators, such as the Household Food Insecurity Access Prevalence (HFIAP), highlights the importance of these tools in providing a multidimensional understanding of food security (Ballard et al, 2011).

4.4.2 Household Food Insecurity Access Scale (HFIAS)

To have a clear picture of the project impact the researcher combines the baseline report from the ERVHIZ project documents with the current survey results. Figure 4.5 shows the baseline in HFIAS results.

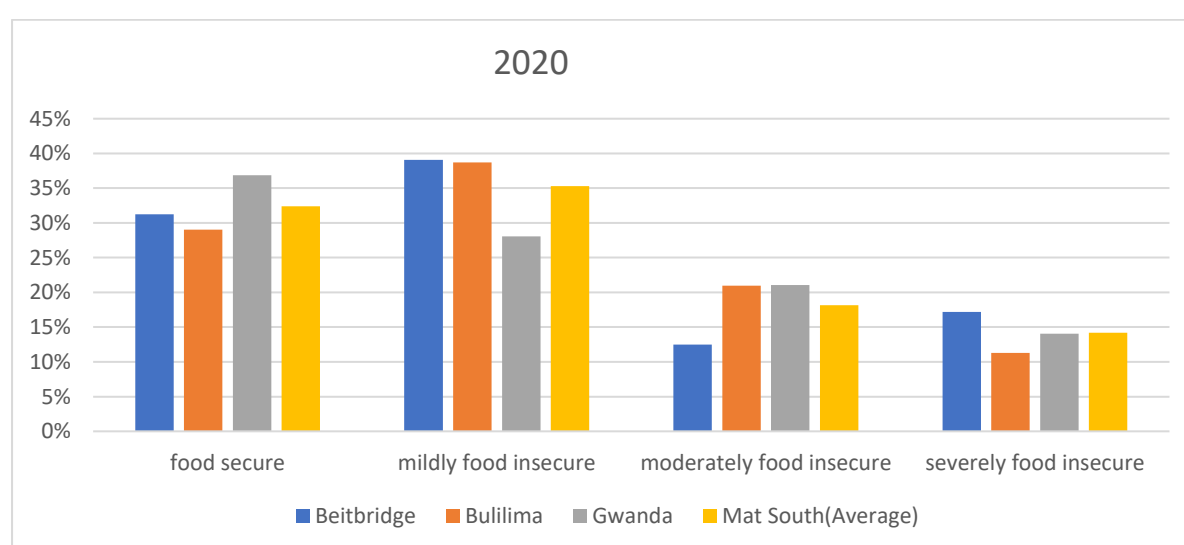


Figure 4.5: HFIAS Baseline Report.

Source: ERVHIZ Project MTR. (2023)

Figure 4.5 shows the food security status before the implementation of the ERVHIZ project for the three districts. Beitbridge appeared to be the most food secure, with around 30% of households classified as food safe. In contrast, Bulilima and Gwanda have significantly lower percentages of food-secure households, ranging between 20-25%. This suggests that families in these two wards faced greater challenges in accessing and utilizing adequate food supplies. When examining the mildly food insecure category, Beitbridge and Bulilima emerge as the most affected, with around 35-40% of households falling into this group. Gwanda, on the other hand, has a lower percentage of mildly food-insecure households, at around 30%. The most concerning disparities become evident in the moderately and severely food insecure categories. Gwanda stands out with the highest percentages in both groups, with around 30% of households classified as moderately food insecure and an alarming 15% as severely food insecure. This is considerably higher than the other wards, where moderate and severe food insecurity ranged from 15-20% and 5-10%, respectively. This was the food security status shown by HFIAS before the project, and after the project was implemented, the researcher analysed the food security status among the selected beneficiaries in three districts and Figure 4.6 presents the current food security status in the three sampled districts. The results show a positive yield for the projects with some changes in the categories of food security to better.

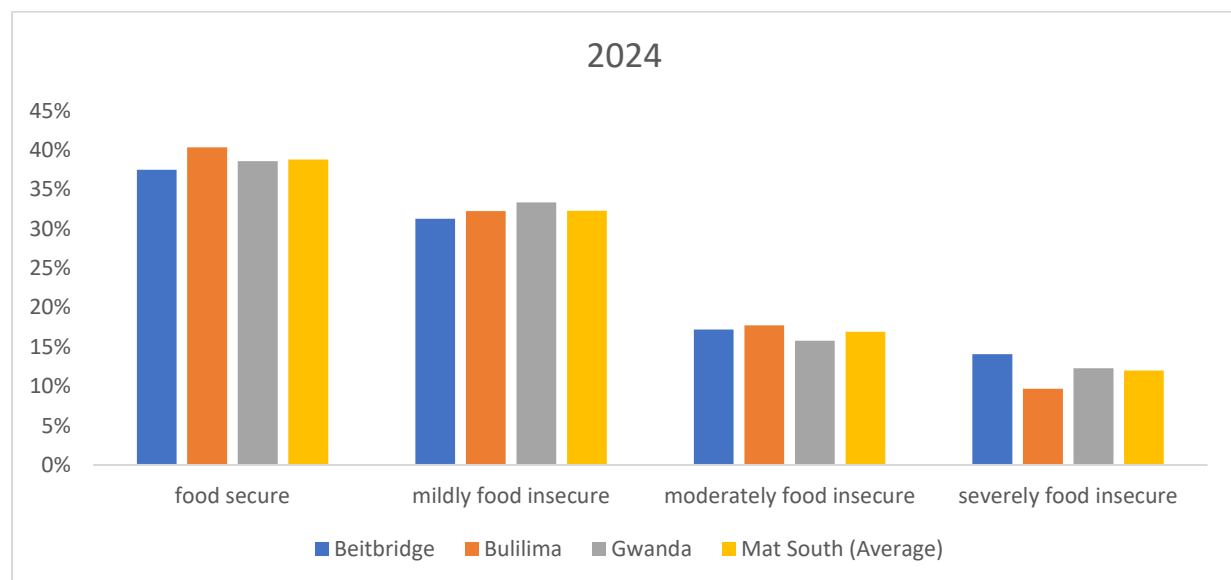


Figure 4.5: HFIAS Categories per District (2024).

Source: Survey Data 2024

The 2024 HFIAS data shows some notable changes in the food security status across the three wards compared to 2020. Beitbridge continues to have the highest percentage of food secure households at around 35%, a slight increase from 2020. This suggests that the interventions implemented in this district were somewhat effective in improving overall food access and availability. In Bulilima, the proportion of food-secure households has increased to around 35%, bridging the gap with Beitbridge. This indicates that the efforts to strengthen food security in this district have yielded positive results. Gwanda, however, still lags behind the other districts, with only around 25% of households classified as food secure. While this represents an improvement from the previous year, the ward remains the most food insecure of the three. The patterns observed in the mildly and moderately food insecure categories also show signs of improvement. Beitbridge and Bulilima have seen declines in the percentage of mildly and moderately food-insecure households, suggesting that interventions have helped move some households into higher food security categories. Gwanda, on the other hand, still exhibits the highest levels of moderate food insecurity at around 30%, although this is down from the previous year. The proportion of severely food-insecure households in Gwanda has also decreased but remains the highest among the districts. These findings align with a study by Masset et al, (2012) who highlighted the effectiveness of community-based resilience-building programs in improving food security outcomes. The improvements observed across the different food security categories are due to the comprehensive and context-specific nature of the ERVHIZ project.

Table 4.5: Summary of HFIAS Categories for the Province.

FOOD SECURITY STATUS	Number of Total Household	Percentage
FOOD SECURE	72	39
MILD FOOD INSECURE	59	32
MODERATE FOOD INSECURE	30	17
SEVERE FOOD INSECURE	22	12
TOTALS	183	100,00

Source: Survey Data, 2024.

According to Table 4.5, of the households in Matabeleland South are food insecure to some extent, comprising 12% severely food insecure, 32% mildly food insecure, and 17% moderately food insecure indicates a considerable number of the project beneficiaries are still facing challenges in maintaining consistent access to sufficient and nutritious food. The remaining 39% were considered food secure in terms of their food security status, indicating that they have consistent access to adequate food. The findings are supported by the International Food Policy Research Institute (IFPRI) in sub-Saharan Africa which found that while development interventions can improve overall food security indicators, a substantial proportion of households often remain food insecure due to factors such as limited livelihood diversification, climate shocks, and entrenched poverty. Similarly, a review by FAO, (2021) on the impact of development projects in Latin America and the Caribbean noted that while projects can enhance agricultural productivity and household incomes, they may not always result in significant improvements in dietary diversity and nutritional outcomes. The review emphasized the importance of integrating nutrition education, social protection measures, and gender-sensitive approaches to ensure more sustainable food and nutrition security outcomes.

The persistent level of food insecurity is due to structural poverty and limited livelihood diversification: Even with interventions, some households may still face underlying challenges in generating sufficient and stable incomes to consistently access diverse and nutritious foods. Tesfaye et al, (2018) showed that the implementation of resilience-building interventions, such as the introduction of drought resistance crops, has a positive impact on household food security (HFIAS), with the degree of improvement varies with the specific context, multifaceted nature of food security and complementary interventions implemented alongside the primary agricultural activities. , there is a need to further understand the household level of experience of each condition especially regarding the adaptive intervention efforts being implemented by the ERVHIZ project in the province.

4.4.3 Household Food Insecurity Access -Prevalence.

This is a categorical indicator used to report a household food insecurity prevalence and is suitable to make geographically targeted decisions (Coates et al, 2007). The indicator categorizes households into four levels of households' food insecurity: food secure and mild,

moderately, and severely food insecure. At the upper-end food food-secure households experience none of the conditions or just rarely worry while at the bottom end, severely food-insecure households cut back on meal size or number of meals often, or experience the most severe condition of running out of food. Table 4.4 illustrates the Household food Insecurity access prevalence among the sampled three districts of Matabeleland South. The data shows that the majority of households fall into the "Food Secure" category, which is a positive indication that the project interventions have been effective in improving the overall food security of the beneficiaries.

Table 4.6: Household Food Insecurity Access Prevalence (HFIAP).

Frequency (No of YES respondents)			
	1=Rarely	2=Sometimes	3=Often
Question	0-2 times	3-10 times	more than 10 times
1a	39%	4%	5%
2a	8%	4%	2%
3a	3%	2%	3%
4a	5%	2%	1%
5a	5%	1%	1%
6a	2%	1%	1%
7a	2%	1%	0%
8a	5%	1%	0%
9a	3%	1%	0%

Source: Survey Data 2024.

KEY:

	Food Secure		Mild food insecure
	Moderate food insecure		Severe food insecure

From the analysis, it appears that a small but significant proportion of households 3% were experiencing severe food insecurity, even after the implementation of the project. This subset

of households may have been particularly hard hit by shocks and could benefit from emergency response interventions, such as the Crisis Modifier component of the ERVHIZ project. Specifically, the HFIAP data in Table 4.4 shows that 1% of households reported going a whole day without eating (question 7a) and 1% reported going to sleep hungry (question 8a) sometimes. Additionally, 1% of households reported going a whole day without eating more than 10 times (question 9a). These severe food insecurity experiences indicate a need for urgent, targeted assistance to address the immediate food and nutrition needs of these vulnerable households.

The Crisis Modifier component of the ERVHIZ project, which aims to provide food or cash assistance, livestock support, nutrition interventions, and access to sanitary services, could be critical in supporting these hard-hit households. The findings are supported by FAO, (2019) which found that while many households experienced improvements in overall food security after project implementation, a small proportion continued to face severe food shortages due to factors such as drought, conflict, and limited access to productive assets. Furthermore, a review by the Consultative Group on International Agricultural Research (CGIAR), (2021) highlighted that while these interventions can increase food production and incomes, they may not always translate into consistent access to diverse and nutritious foods, especially for the most vulnerable households (CGIAR, 2021).

The continued presence of severe food insecurity in the community, even after the implementation of the development project, underscores the need for a multifaceted and targeted approach to address the complex and interconnected challenges faced by rural households. While broader development interventions can contribute to overall improvements, the findings suggest that additional, more specialized support is required to reach the most vulnerable and ensure no one is left behind.

4.5 Factors that affect Household Food Security (HFIAS) of the project beneficiaries.

Various factors are responsible for food security including supply-side factors, demand-side factors, market-related factors, and many more. However, this study focuses more on the socio-economic characteristics of the household because these are crucial in determining household food security. The most vulnerable groups to food security are rural households; they do not produce food by themselves and are net purchasers of food items. The multinomial logistic regression model was applied to assess whether the social-economic independent variables were associated with the likelihood of HFIAS scores (food security status) or not among the

surveyed beneficiaries of the ERVHIZ project). At the conventional level of significance ($P=0.05$), Three explanatory variables (Table 4.7) were found to be significant in influencing food security, while the remaining 5 were statistically insignificant in explaining the food security in the study area. As a result, household size, household age, and several livestock had a positive and significant impact on household food security as shown in Table 4.7

Table 4.7: multinomial regression for factors affecting the household beneficiaries' food insecurity prevalence.

HFAIS Category	B	S.E	Wald	Sig	Exp(B)
Mildly Food Insecure					
Intercept	.794	.223	.002	.966	
Household size	-.169	.084	.025	.043	.845
Household Age	-.034	.016	.712	.030	.034
Marital Status	.773	.001	.001	.970	.667
Level of Education	.478	.300	.073	.784	.339
Training	-.364	.422	.920	.337	.256
Number of livestock	-.90	.019	.295	.069	.768
Remittances	.530	.184	.001	.979	.570
Household Gender	-.962	.422	.003	.954	.000

Moderately Food Insecure

Intercept	.539	.080	.005	.945	
Household size	-.159	.093	.013	.056	.980
Household Age	-.024	.016	.629	.059	.040
Marital Status	.765	.004	.012	.670	.668
Level of Education	.478	.209	.076	.547	.229

Training	-.321	.234	.920	.478	.345
Number of livestock	-.40	.027	.295	.052	.234
Remittances	.469	.156	.004	.657	.670
Household Gender	-.876	.322	.005	.560	.006
Severely Food Insecure					
Intercept	.908	.681	.019	.890	
Household size	-.231	.076	.015	.057	.645
Household Age	-.045	.012	.654	.066	.021
Marital Status	.987	.000	.000	.980	.667
Level of Education	.233	.178	.042	.990	.477
Training	-.115	.324	.560	.658	.234
Number of livestock	-.76	-.40	.120	.038	.961
Remittances	.456	.098	.008	.564	.460
Household Gender	-.992	.234	.017	.234	.090

The reference category is Food Secure.

Source: Survey Data, 2024

Table 4.7 presents the coefficient estimates and p-values from the multinomial regression techniques as marginal effects of food insecurity. The table provides information comparing each food insecurity status to the reference category (Food Secure). The regression coefficient, in particular, indicates which predictors significantly discriminate between respondents in the mild food insecurity category and those in the food secure category, between the respondents in the moderate food insecure and those in the food security, and between the severe food insecure and those in the food secure category.

Household Size:

The first set of coefficients (Table 4.7) compares Food Secure and mildly Food Insecure. The results indicate a positive and significant relationship between household size and the likelihood of a household being mildly food insecure ($B = -0.169$, $p = 0.043$). This means that as the household size increases, the odds of being mildly food insecure decrease by a factor of 0.845. This finding is supported by Bashir et al, 2012 highlighted that larger household sizes with increased labour availability and diversified income sources, leading to improved food security. However, these findings contradict with Gebrevesus et al, (2015) found a positive relationship between household size and food insecurity. This discrepancy could be attributed to contextual factors, such as the specific livelihood strategies, resource allocation patterns, and social support mechanisms within the ERVHIZ project communities.

Household Age:

More so, for the first set of food secure and mild food insecure. The results indicate a positive and significant relationship between the age of the household head and the likelihood of a household being mildly food insecure ($B = -0.034$, $p = 0.030$). This means that as the age of the household head increases, the odds of being food insecure decrease by a factor of 0.034 and improve the chance of being food secure. This finding is contrary to the literature of Bashir et al, 2012 suggests that older household heads often have more experience and resources to manage food insecurity. According to Bashir, a member increase in household size increased the odds of being food secure by 3% in Rural Pakistan. Another report such as Stat, (2007) indicated that the economic group active group (15-64 years) in the study area constituted 57% of the population in the study area and this explains why food security improved the age of the household age. This supported the results of the ERVHIZ which had an average of 56 years old who are economically active and increased food security for the household beneficiaries of the project.

Number of Livestock:

For the second set, the coefficients compare household food security and the likelihood of being severely food insecure. The results indicate a positive and significant relationship between the number of livestock and the likelihood of a household being mildly food insecure ($B = -0.40$, $p = 0.038$) which is statistically significant as 5%. This means that as the number of livestock in a household increase, the odds of being food severely food insecure decrease by a factor of 0.961. This finding is supported by Coates et al, 2010 who associate livestock ownership with improved food security. An increase in livestock ownership may effectively provide milk,

meat, and other highly nutritious food available to the household. Moreover, the sale of livestock increases income by thereby increasing household buying power and the ability to cope in times of food shortages, this is supported by Ayele et al, (2020) in Northern Ethiopia. This is improved in the study Area due to the support from the ERVHIZ on livestock support through animal feed production, animal health management, and rangelands management.

All other variables such as education, marital status, and many others had not been found significant in determining food insecurity status for the ERVHIZ project beneficiaries.

4.6 Household Coping Strategies.

4.6.1 Household Coping Strategy Index.

First, the survey conducted a Focus group discussion in the strata of wards and identified a list of coping behaviours that apply in the province before scaling their severity. Grouping was done after moderating the focus group consensus, to match the level of severity that is applicable in the whole province. The identified behaviours are listed in table 4.7 below and grouped accordingly as consensually ranked.

Secondly, the survey results of household coping strategies indicated a positive movement of the ERVHIZ project towards achieving food security. There are however 4 out of sampled 12 wards that are showing less change impact of the resilience interventions. Bulilima ward 2 has the highest score of 69. This ward is mainly affected by the conflict between crop and wild animals, as well as wildlife attacks on livestock. Gwanda ward with the highest score of 58 measuring the same as the second food insecure ward in Bulilima is mainly affected by unregularised mining activities which are rampant in the ward leading to a lot of vandalism.

The Coping Strategy Index indicated that 66.7% of the sampled household are moving towards achieving less severe food security, with 33.3% of houses yet to realise the benefits of the household resilience intervention by the ERVHIZ Project. This is still a bigger figure that requires further analysis into factors that affect household food security and a well find out any barriers to the successful implementation of the resilience-building project. The researcher focuses on the 4 wards in assessing the barriers to ERVHIZ project intervention

Table 4.7: Focus Group Rankings of Coping Behaviour (Bulilima, Gwanda and Beitbridge)

Strategy		Focus Group Ranking of Each Coping Strategy Behaviour													
		G1	G2	G3	G4	BL1	BL2	BL3	BL4	BB1	BB2	BB3	BB4	Ave	Consensus Ranking
A	Less preferred	1	1	1	1	1	1	1	1	1	1	1	1	1,0	1
B	Remittances, Government or NGOs	3	2	3	2	2	3	2	3	2	3	3	2	2,5	3
C	Borrow	2	2	2	1	2	2	1	2	2	1	2	2	1,8	2
D	Credit	3	1	1	2	3	3	2	2	3	3	3	3	2,4	2
E	Hunt wild foods	4	3	4	4	3	4	4	3	4	4	4	4	3,8	4
F	Consume seed/ Livestock	4		4	4	4	4	4	4	0	0	4	4	3,0	3
G	Beg	4	4	2	2	4	4	3	4	4	4	3	4	3,5	4
H	Limit portions	1	1	2	2	1	1	2	1	2	1	1	1	1,3	1
I	Restrict Adults	3	3	3	3	3	2	2	3	4	4	3	3	3,0	3
J	Food for work	4	4	3	3	4	4	3	4	4	4	3	4	3,7	4
K	Reduce Meals	2	4	2	2	2	3	3	2	3	2	3	2	2,5	3
L	Skip Days	4	4	4	5	4	5	5	4	4	4	5	4	4,3	4

Source: Survey Data, 2024.

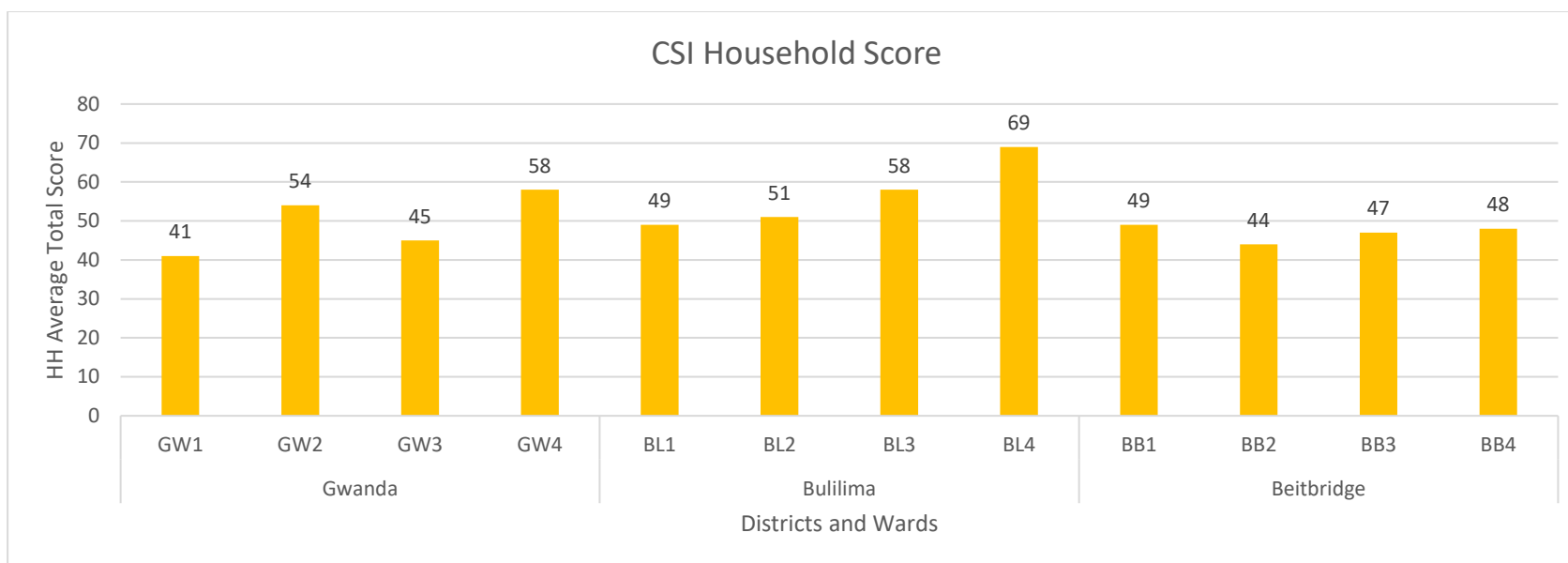


Figure 4.6: Wards and Coping Strategy Index.

Source Survey Data, 2024.

Limit portion and restrict adults are ranked as the most preferred, suggesting that the beneficiaries prioritize ensuring that their children have access to food, even if it means reducing their food intake. This finding is supported by Kumba and Chaminuka, (2020) reported that households in rural Zimbabwe relied on strategies such as reducing meal portions, skipping meals, and seeking remittances to cope with food insecurity. Furthermore, the prioritization of ensuring children's access to food, even at the expense of adult portions, is a common coping strategy observed in other studies (Roba et al., 2017). This reflects the importance placed on protecting the most vulnerable members of the household, even in the face of limited food resources.

4.7 Barriers to successful implementation of Resilience building project.

Table 4.8: Barriers Rankings.

Ranking	Broad Category	Constraints
1	Climatic Shocks	Too Little rain/Drought Shortage of Safe Drinking Water
2	Knowledge gap	Unaccepted farming practices. Environmental Degradation
3	Socio-Economic	Increased Food Prices Increased prices of Agric inputs Unavailability of agriculture inputs Russo-Ukraine War Procurement Delays
4	Conflict and Environmental	Crop-Livestock Wildlife

Source: Survey Data, 2024.

The qualitative data gathered through interviews with key project implementers and focus group discussions with household heads highlights several barriers that have affected resilience-building and the effective implementation of the project. Chief among the challenges identified was the issue of too little rain, leading to shortages of safe drinking water and ultimately impacting community well-being. Other barriers include disease outbreaks and broader socio-economic and environmental challenges.

An Agritex extension officer from Gwanda noted that climate-induced shocks, particularly recurrent droughts, are the greatest challenges facing Matabeleland South, leaving little room for farmers to adapt and build sustainable livelihoods. These climate-related impacts have resulted in reduced productivity in crop-livestock systems, undermining the effectiveness of various on-farm resilience-building strategies employed by households.

A lead farmer from Beitbridge highlighted the issue of limited water infrastructure, with the few rehabilitated dams not lasting long into the rainy season and boreholes facing high demand that exceeds their capacity. This lack of reliable water access limits people's ability to work, thereby increasing their vulnerability.

The Headman from Bulilima described the increased outbreak of livestock diseases, particularly foot and mouth, which has placed the area under a red zone for livestock transactions. This, combined with crop-livestock-wildlife conflicts due to the surrounding game parks, has jeopardized the security of resilience efforts.

Additionally, the increased prices of pest and disease control vaccines have excluded the poorer communities from managing their livestock sustainably, and the lack of readily available vaccines has made access to social services a top priority for resilience-building communities.

The quantitative data review revealed a close alignment between the challenges identified by key informants and those reported by household heads, including too little rain, lack of knowledge and skills for new agricultural practices, water scarcity, increased prices of agricultural inputs, and disease outbreaks.

Too Little water/ Recurrent Drought.

Households in Beitbridge, Bulilima, and Gwanda districts depend on rain-fed agriculture, and revealed that recurrent of too little rain farming seasons and recurrent drought are among the major barriers to the successful implementation of resilience-building projects. This affects the productivity of crop-livestock interventions, thereby lessening the efficiency and effectiveness of such on-farm resilience strategies that farmers are adopting to curtail vulnerability to food security. Studies conducted indicated that smallholder farmers in Zimbabwe account for 80% of agricultural land with the level of irrigation as small as only 2% of their cropland (Moyo et al, 2017). Pastures are becoming more and more poor, to the extent those farmers are required to purchase supplementally feed which is beyond the reach of many poor families. More so increased hot temperatures have led to quick loss of moisture from soil increases of crop failure even under such strategies as agro-ecology farming practices.

The recurrence of harsh climatic conditions such as the current El-Nino-induced drought has compromised all household resilience intervention efforts. This reflects the vulnerability of the project beneficiaries to climate-related shocks. The HFIAS and HFIAP results likely showed high levels of food insecurity due to the effects of these climatic factors, which undermine the availability and accessibility of food (Bene et al, 2015).

More so, coping strategies such as limiting portions, reducing meals, and skipping days may be less effective in the face of prolonged drought and water scarcity, highlighting the need for more resilient and sustainable solutions.

Inadequate Rainfall and Safe Drinking Water.

Rainfall irregularities in timing and fluctuations in the amount given its crucial role in agricultural life as a natural capital have resulted in adverse consequences for the rural Matabeleland South. A negligible amount of rainfall was recorded in Matabeleland South in the month of May 2022/23 rain season, resulting in low soil water reserves compared to last season, while remote sensing data has indicated that vegetation conditions are inferior to average levels (FAO, 2023). The rural communities in Matabeleland South are heavily dependent on rainfed agriculture for their livelihoods, and inadequate rainfall can severely impact crop production, leading to food insecurity and reduced household incomes (FAO, 2023). More so, the inferior vegetation conditions observed through remote sensing data indicate a decline in the availability of natural resources, such as grazing land and wild foods, further exacerbating the vulnerability of rural communities (FAO, 2023). In addition, a lack of reliable rainfall can make rural communities more susceptible to shocks, such as droughts, which can have cascading effects on their food security, livelihoods, and overall resilience (Bene et al., 2014). These findings confirm the importance of reliable rainfall to the household resilience-building strategies, in the respective study areas.

Not only rainfall but Safe clean drinking water is very key to achieving a healthy community, for a healthy community translates to a healthy means of production.

Inadequate farming knowledge and adaptive skills.

Although the population survey is largely literate, quite a larger percentage of the households have low levels of field-related knowledge and adaptive skills needed in resilience building. They possess limited capabilities to fully be agile in the face of harsh climatic conditions as far as employing available assets in the fight for vulnerability is concerned. For instance, land degradation is prevalent with the cultivation of stream banks, overgrazing, and deforestation, among other poor agricultural practices, are openly observed as one moves around the three districts. The level of ignorance is high in Gwanda wards where unregulated mining practices are rampant. This finding is supported by Umar et al, (2020) indicated the lack of access to agricultural services, and poor farming methods can contribute to food insecurity. Coping strategies like borrowing, credit, and seeking external support may be limited in their effectiveness if the underlying knowledge and environmental challenges are not addressed.

These practices typically work as an opposing force to resilience-building intervention, towards fighting vulnerability to food security

Outbreak of Qualia birds

The outbreak of qualia birds, particularly the red-billed qualia bird, in Matabeleland South, specifically in Beitbridge, poses a significant challenge to the effectiveness of the ERVHIZ project's resilience-building interventions which focus on drought-resistant small grain crops like millet and sorghum. The qualia birds' tendency to feed on the soft grain at the dough stage can cause extensive damage to the drought-resistant crops, which are a crucial component of the ERVHIZ project's resilience-building strategy. This damage can significantly reduce the yield and undermine the project's goal of enhancing food security in the region (Abadi et al, 2020). The loss of crop yields due to qualia bird damage can have negative economic consequences for the project beneficiaries, who may face reduced income and limited resources to cope with other challenges, such as increased food prices and the unavailability of agricultural inputs (Bene et al, 2014). Qualia birds, among other pests, curtail the effectiveness and efficiency of the growth of drought-resistant crops as a valuable resilience intervention strategy employed by ERVHIZ to enhance food security in Matabeleland South.

Delays in Procurement

Another significant challenge highlighted by the project coordinators was the delay in procurement. Disruption of Project Implementation: Procurement delays hinder the timely delivery of essential inputs, materials, and equipment required for the project's activities, such as construction materials, agricultural supplies, or specialized equipment. This disruption in the supply of resources leads to delays in the completion of project activities, affecting the overall implementation timeline and the ability to achieve the project's objectives within the planned timeframe and hence the project timeframe was extended from August 2023 to August 2024. This is supported by the study of Ika and Doney, (2017) on project implementation challenges in developing countries highlighted that procurement delays were a significant factor leading to project delays and disruptions. More so, delays in the provision of project resources, such as agricultural inputs or construction materials, dampen the community's enthusiasm and trust in the ERVHIZ project. This undermines the community's active participation and ownership of the resilience-building initiatives, as they may lose faith in the project's ability to deliver the promised benefits promptly. This is supported by Musa et al, (2015) examined the impact of procurement challenges on community engagement in rural development projects in Nigeria and found that delays in the delivery of project resources significantly affected community participation and ownership.

4.8 Conclusion

This Chapter focused on analyzing, presenting, and discussing the findings from primary and secondary data. Primary collected from twelve beneficiary agriculture wards of the selected 3 districts, namely Gwanda, Bulilima, and Beitbridge of Matabeleland South Province, Zimbabwe mainly through interviews, focus group discussion, and selected site visits of some projects and communities, helped in qualitative and quantitative analysis and presenting finding. By analysing the household food security status, factors affecting household resilience, barriers to the successful implementation of the resilience-building program, and coping strategy a conclusion was drawn that although there is a degree of change toward food security, most households are still vulnerable and food insecure.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction.

This chapter presents a summary of findings, conclusions drawn from findings, and recommendations. The chapter narrows down to the research topic: An analysis of the resilience-building program on Household food security among vulnerable communities in Matabeleland South Zimbabwe. The conclusion and recommendation broadly focus on resilience-building programs and ERVHIZ project intervention in Beitbridge, Bulilima, and Gwanda districts households in particular.

5.2. Conclusions

Despite the project's efforts, more than half of the interviewed households continue to experience varying levels of food insecurity, with 12% being the most severely food insecure. Socio-economic factors, such as livestock ownership, household size, and age, have been found to positively impact the mildly food insecure and the severely food insecure contribute to food security for some households. To cope with food insecurity, the beneficiaries have had to rely on strategies like borrowing, accessing credit, and seeking external support, while prioritizing children's access to food. However, these coping mechanisms highlight the vulnerability of households in the region, as they are trapped in a cycle of food insecurity characterized by reduced meal frequency and limited dietary diversity. The project's effectiveness and efficiency have been further challenged by a range of issues, including the periodicity of drought, water scarcity, inadequate knowledge and skills, the Russo-Ukraine war, procurement delays, and the outbreak of poultry diseases. These challenges have undermined the project's ability to build the long-term resilience of households and communities in the face of these shocks and stresses.

5.3. Recommendations.

- (1) There is a need for a comprehensive review of the project's targeted approach to ensure it effectively reaches the most vulnerable and food-insecure households, including the elderly, large families, and those with limited livelihood assets.
- (2) Due to the increasing frequency of climate change, it is increasingly becoming difficult to predict the amount and timing of rainfall. Therefore, early warning systems and improved climate information can assist farmers in taking appropriate actions promptly depending on expected weather conditions (UNDP, 2009). For example, early maturing varieties of drought tolerant crops can be planted when rains are expected to start late and commercial livestock feed can be bought and stored in advance if severe drought is expected such as Elnino which hit Zimbabwe this ear.
- (3) Provide targeted support, such as skills training, access to inputs, and market linkages, to help beneficiaries diversify their income sources and reduce their reliance on vulnerable agricultural activities.
- (4) Provide comprehensive training and extension services to help beneficiaries adapt their farming practices to the prevailing and anticipated climate conditions in the region.
- (5) Conduct a thorough review of the project's operational and institutional arrangements to identify and address the key challenges, such as procurement delays.
- (6) Policy-makers should reflect on the most suitable ways of supporting a diversity of food security programs. This needs to design policies that recognize the importance of resilience-building programs and beneficial strategies such as rangelands management, livestock health management, promotion of agroecological crop production such as drought tolerant input distribution, and farmer field schools' training.
- (7) Enhance community engagement strategies to better understand the diverse needs and concerns of beneficiaries, and incorporate their feedback in the design and implementation of project interventions.
- (8) More so, Climate information dissemination to all rural vulnerabilities should be facilitated and improved, so that even those without access to the common mass media such as newspapers, televisions, and radios will access the information and prepare upon it.
- (9) In a region like Matabeleland South, where droughts have grabbed to become surprises and are generally an expected phenomenon, stakeholders involved in rural development, including the government and NGOs must always be well-equipped to help people cope with

them. There must always be insurance that prevents the damage done in bad years from eliminating the gains made in better years (UNDP, 2009). This strategy would be expensive, but, if applied wisely and carefully, it can reduce the costs incurred when food insecurity is fought as it comes.

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APPENDICES

APPENDIX 1: Questionnaire

AN ANALYSIS OF THE RESILIENCE BUILDING PROGRAMME ON HOUSEHOLD FOOD SECURITY AMONG VULNERABLE COMMUNITIES IN MATEBELELAND SOUTH, ZIMBABWE.

BINDURA UNIVERSITY OF SCIENCE EDUCATION



My name is Janet Mkomboni a student at Bindura University of Science Education, studying for a BSc. Degree in Agricultural Economics and Management doing my final year. As part of my degree program, I'm required to carry out research and my research is on **ANALYSING THE RESILIENCE BUILDING PROGRAMME ON HOUSEHOLD FOOD SECURITY AMONG VULNERABLE COMMUNITIES IN MATEBELELAND SOUTH, ZIMBABWE**. Since Matabeleland South, Zimbabwe at large is greatly affected by climate change which results in food shortages within the country. Therefore, strategies and efforts are desperately needed to efficiently and effectively implement programs and interventions that improve the food security in the country, this research will help by analysing the food security for the project beneficiaries, identifying factors that influence food security, coping strategies to food challenges, challenges that affect the implementation of projects and therefore make evidence-based recommendations. Please NOTE that all information provided by the interviewee is **STRICTLY CONFIDENTIAL** and will only be used for academic research and your participation in this study is voluntary. Thank you.

Date of survey...../...../2024	Enumerator's name: _____
Location: Matebeleland South: _____	District: _____ Ward no: _____

SECTION A: HOUSEHOLD SOCIAL DEMOGRAPHICS.

A1. Gender HH Head: _____	A2. Age of HH Head: _____	A3. Marital Status: _____
A4. Highest level of Education of HH head: _____	A5. Highest level of education of Other HH Senior Member: _____	A6. Number of HH Members: _____

Codes: HH: Household; Q1: 1=Male and 0= Female; Q3: 0=Single, 1=Married, 2=Divorced, 3=Widowed; Q4 and Q5: 0=Primary, 1=Secondary, 2=A level, 3=Tertiary 4=Informal or No formal

SECTION B: HOUSEHOLD ECONOMIC DEMOGRAPHICS.

B1. Main source of HH income.....	B2. Does the HH practice crop farming?.....	If yes Q2, do the households use inputs?..... .	B3. Does HH practice livestock and poultry?.....
B4. How much income do you earn from farming (both crop and animal)?	B5. What is the level of agro-ecological practices in HH agriculture?.....	B6. Do you face any challenges in your farming activities?	
B7. If yes (B6), what kind of challenges do you face?			

Codes: B1=Farming and 2=non-farming (formal employment, informal employment, social grants, Business income/entrepreneurs, Remittances, Pensions, Others); B2:1 =Yes, 0=No; B3:1=Yes, 0=No; B4:1=1-60, 2=61-150, 3=151-350, 4= Above 350; B5: B6:1=Yes, 0=No, B7: 1= Plant pest and Animal Diseases, 2=Droughts, 3=Theft and vandalism, 4=wildlife and animal damage, 5= Lack of Agricultural knowledge, 6=Shortage of land.

B8. If Yes (B5) which livestock does the HH farm and how many are owned?				
Category	Cattle	Goats	Sheep	Pigs
Number				

B9. Do you have access to buy and sell agricultural outputs and inputs? (Yes/No)		
B10. If Yes (B9) is the market secure? (Yes/No)		
B11. If Yes (B10) how often do you access the market?		
B12. Do you have extension Services		

B13.If Yes (12) how often		
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Codes: B11: *How often (B11 and B13): 1. Rarely (accesses market once or twice a month, 2. Sometimes: (accesses market 3 to 10 times a month) and 3. Often: (accesses market more than 10 times a month).*

SECTION C: Resilience Building Programme

C1. Do you participate in the government/ NGO's agricultural programs?.....	C2. If Yes (Q1), in which of the following programs do you participate?.....	C3. If No (Q1) What are the reasons for not participating 1 2 3 4
C4. If Yes(Q1) Are you the beneficiary of the ERVHIZ project	C5. If yes(Q4) in which output of the project, are you benefited	C6. If 1(Q5), what are the benefits you getting from the project?.....
C7. If Yes (Q 4) Does benefiting in the project improve your household food security status?.....	C8. Were you consulted before the project was implemented?.....	C9. What problems is the project solving?.....

Codes: Q1: 1=Yes and 0=No; Q2: 1. Input distribution, 2. Food for work 3. Social grants;4. Loans; 5. Resilience building; 6. Others, Q3, Q4:1= Yes, 0= No; Q5: 1=Agriculture, 2= Wash and crisis modifier, 3= Nutrition Q6: 1=Agroecological crop production, 2=Post harvest management, 3=Cattle dip tanks, 4=Gender mainstreaming, 5= Pasture management for livestock, 6Inputs, 7=Trainings, 8=others; Q7:1=Strongly agree, 2=Agree, 3= Neutral, 4=Disagree and Strongly disagree; Q8:1=Yes, 0=No

10. If Yes (Q4), can you please describe your current agricultural production compared to before participating in the programs based on your above satisfaction (Q7)?

Production	A	B	C	D	E	F	G	H	I
Decreases									
Stagnates									

Doubled									
Tripled									
Total (Kgs)									

Codes: A: Maize; B: Groundnuts; C: Sorghum; D: Pearl millet; E: African finger millet; G: Fodder crops; H: Cattles; I: Goats;

SECTION D: HOUSEHOLD FOOD SECURITY STATUS

C2.1. Food availability in the past 24 months (1 year).	
Question	Answers
C1. How do you get the food you consume in your family?	(1) Livestock production
	(2) Crop production
	(3) Mixed farming
	(4) Food Aid
	(5) Other resources(specify)
C2. If Crop production, how do you obtain seeds for planting?	(1) Procure from the shops
	(2) from past harvest
	(3) From Government or NGOs
	(4) Other sources(specify)
If Livestock production, how do you access stock feeds and livestock health?	(1) Hire the Services from Service providers
	(2) Procure
	(3) From government and NGO social facilities
	(4) other means (specify)
C3. What is the source of labour for the production of food in your family?	(1) Family
	(2) Nhimbe (communal labour)
	(3) Hired labour
C4. What was your production last year (2023) on small grains and fodder (sorghum, millet, Rapoko)	(1) Normal
	(2) Above normal
	(3) Less than normal
C5. How was your production before receiving food production relief aid on small grain?	(1) Normal
	(2) Above normal

	(3) Less than normal
C6. How long do the food stocks for family consumption from the last harvest (2021) last?	(1) less than 3 months
	(2) 3-6 months
	(3) more than 6 months
C7. How long do the food stocks for family consumption from the current harvest think will last?	(1) less than 3 months
	(2) 3-6 months
	(3) more than 6 months
C8. Which Months do you usually experience food shortages?	(1) less than 3 months
	(2) 3-6 months
	(3) more than 6 months
C6. If output was not plenty within the previous year, please state the key causes	(1) Drought
	(2) shortage of labour
	(3) shortage of farming implements
	(4) Inadequate farmers advisory services
	(5) Lack of finances
	(6) Pest and diseases
	(7) Lack of infrastructure for example irrigation
	(8) Harvest loses
	(9) others(specify)
C7. Has your family ever benefited from food relief?	(1) Yes
	(2) No
C8. If yes, what type of food aid	(1) Food for work
	(2) Food Emergency
	(3) Food subsidized
	(4) Other(specify)
C9. How often did you collect the relief in the past?	(1) every week
	(2) Monthly
	(3) Quarterly
C10. How much does your household normally spend on food per month?	\$_____
C2. 2 FOOD ACCESSIBILITY IN THE PAST 4 WEEKS (1 MONTH): HFIAS Measurement Tool	
For each of the following questions consider what has happened in the past 30 days. Please answer whether this happened, if yes to the following questions, how often did this happen?	

	Yes= 1 No=0	How Often Did It Happen? 1,2,3.
1. Did you worry that your household would not have enough food?		
2. Were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?		
3. Did you or any household member have to eat a limited variety of foods due to a lack of resources?		
4. Did you or any household member have to eat some foods that you did not want because of a lack of resources to obtain other types of food?		
5. Did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?		
6. Did you or any household member have to eat fewer meals in a day because there was not enough food?		
7. Was there ever no food to eat of any kind in your household because of a lack of resources to get food?		
8. Did you or any household member go to sleep at night hungry because there was not enough food?		
9. Did you or any household member go a whole day and night without eating anything because there was not enough food?		

Code: 0=Never, 1=rarely (once or twice), 2=sometimes (3-10 times), 3=Often (more than 10 times)

SECTION E: COPING STRATEGIES.

D1. What are your coping strategies in times of food shortages?

NB: This Section is completed in discussion with the respondent so that he/she is aware of all possible available answers. It is preferred that the mother of the household/person responsible for food preparation for the family is interviewed. However not ruling out men to respond to this section.

In the past 7 days have there been times when you did not have enough food or money to buy food? How many days has your household relied on each of the following coping behaviours?

	Coping Behaviours: Did You (Reading coping strategy) during the last month?	Raw Score (Frequency)	Severity weight	Weighted Score (Frequency X Weight)
1	Least Severe			
A	Rely on Less preferred			
B	Limit portions sizes at mealtimes			
2	Severe			

C	Borrow food, or rely on help from friend or relative			
D	Purchase food on credit			
3	Very Severe			
G	Rely on Remittances, Government or NGOs			
	Restrict intake by adults for kids to eat			
	Consume seed/ Livestock held for the next season.			
H	Reduce the number of meals consumed in a day			
4	Most Severe			
I	Send out household members to beg			
J	Work for food in neighbour food secure families			
K	Gather wild food, hunt, or harvest immature crops.			
L	Skip entire days without eating			

SECTION F: What are the challenges you encounter in the implementation of the project

E1. CHALLENGES THAT HINDER THE SUCCESSFUL IMPLEMENTATION OF THE RESILIENCE-BUILDING PROJECTS ON HOUSEHOLD FOOD SECURITY AND POSSIBLE OPPORTUNITIES.	
<i>NB This section, information to be gathered from implementing agencies and partners, (FAO, UNICEF, or Government Officers)</i>	
According to your understanding, what are the factors affecting the resilience-building project of ERVHIZ to achieve a sustainable household food security status? (Tick Appropriate in the box provided)	
	Rank
Challenges.	
A Inflation	
B Pests and Diseases	
C Wildlife-cropping conflict	
D Low provision of monitoring and extension services.	
E Economic	
F Inflation	
G Low government support for food security policies	
H Corruption	
I Cultural Challenges	
J An unappropriated Definition of the most vulnerable	

K	Climatic Conditions (specify: Drought, Cyclones, floods, siltation.	
L	lack of Maintenances and community ownership	
M	Inadequate social services (water, sanitation hygiene)	
N	Gender balance	
O	Debt level amongst Households	
P	Ukraine/Russia war.	

Thank you for your cooperation in answering this questionnaire.

End of document.