
UNIVERSITY of LUSAKA

# A Study of the Livelihood Vulnerabilities of Inland Small-Scale Fishing Communities: A Case of the Kafue Bridge Fishing Camp

A DISSERTATION
Submitted to the School of Technology and Social Sciences and in partial fulfillment of the requirements for the award of Bachelor of Arts in Development Studies

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2025

# Declaration

I, **Benjamin Chama Mumbi student number BDS192183**, hereby declare that this dissertation titled **"A Study of the Livelihood Vulnerabilities of Inland Small-Scale Fishing Communities: A Case of the Kafue Bridge Fishing Camp in Kafue Town"** is my original work and has not been submitted to any other university or institution of higher learning for the award of a degree or any academic qualification.

This dissertation has been prepared in partial fulfilment of the requirements for the award of the **Bachelor of Arts in Development Studies** at the **School of Technology and Social Sciences**. All sources of information used in this study have been duly acknowledged and referenced in accordance with academic requirements. Any views expressed in this work are those of the author and do not necessarily reflect those of the University or the supervisor.

**Student Declaration**

Name of Student: **Chama Mumbi Benjamin**

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Date: 24/12/2025

**Supervisor's Declaration**

I confirm that this dissertation was carried out under my supervision and is submitted with my approval.

Name of Supervisor: **Ms Mukasami Monde Mwanangombe**

Signature:

Date: 24th December 2025

# Acknowledgement

The author wishes to express sincere gratitude to all individuals and institutions that contributed to the successful completion of this dissertation. Special appreciation is extended to the supervisor, Ms. Mukasami Monde Mwanangombe, for her invaluable guidance, constructive criticism, and continuous academic support throughout the research process. The author also acknowledges the lecturers of the School of Technology and Social Sciences for the knowledge and skills imparted during the course of study. Further thanks are extended to the respondents from the Kafue Bridge Fishing Camp who willingly participated in the study and shared their experiences, without whom this research would not have been possible. Finally, heartfelt appreciation goes to family and friends for their encouragement, patience, and moral support throughout the period of study.

# Dedication

I dedicate this work with profound love and appreciation to my wife, Temwani, whose patience, understanding, and steadfast support were a constant source of strength, and to my beloved daughters, Malama, Skylar, and Mikayla, whose love and presence inspired perseverance and purpose

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## Abbreviations

**DFID** – Department for International Development

**FAO** – Food and Agriculture Organization of the United Nations

**FGD** – Focus Group Discussion

**LVI** – Livelihood Vulnerability Index

**NGO** – Non-Governmental Organisation

**SLF** – Sustainable Livelihoods Framework

**SSF** – Small-Scale Fishing

**UN** – United Nations

# Abstract

This study examined the livelihood vulnerabilities of inland small-scale fishing communities, focusing on the Kafue Bridge Fishing Camp in Kafue Town, Zambia. A qualitative research approach was employed using a case study design. Data were collected from a sample of **100 respondents** through in-depth interviews and focus group discussions involving fishers, fish traders, and household members within the fishing camp. Thematic analysis was used to analyse the data, allowing for the identification of recurring patterns, experiences, and coping strategies. The findings revealed that fishing Human - Wildlife conflict face multiple and interconnected vulnerabilities, including declining fish stocks, climate variability, inadequate fishing assets, limited access to credit and markets, weak institutional support, and poor infrastructure. These challenges resulted in unstable incomes, food insecurity, and reliance on short-term coping strategies such as borrowing, overfishing, and livelihood diversification into low-return activities. The study further found that socio-economic characteristics such as education level, fishing experience, household size, and asset ownership significantly influenced households' adaptive capacity. Women were particularly vulnerable due to limited access to productive assets and decision-making opportunities.

The findings underscore the importance of integrating livelihood considerations into fisheries management and development planning. The study concludes that reducing livelihood vulnerability among inland small-scale fishing communities requires holistic interventions that combine sustainable fisheries management, livelihood diversification, access to credit, improved infrastructure, and inclusive institutional support. The study recommends strengthening community-based fisheries governance, improving access to livelihood assets, and enhancing social protection mechanisms. Future research is encouraged to adopt comparative and longitudinal approaches to further explore livelihood vulnerability dynamics across different inland fishing communities in Zambia.

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# CHAPTER ONE

## INTRODUCTION

## 1.0 Introduction

Livelihood vulnerability remains a critical development concern, particularly among communities that depend heavily on natural resources for survival. Small-scale inland fishing communities have historically formed an important livelihood base in many developing countries, providing food, employment, and income to rural and peri-urban populations. However, the sustainability of these livelihoods has been persistently threatened by environmental changes, economic instability, and limited institutional support, exposing fishing households to multiple and overlapping vulnerabilities.

In Zambia, inland fisheries especially along major river systems such as the Kafue River have traditionally supported a significant proportion of households engaged in fishing, fish processing, and fish trade. Despite their contribution to local food security and livelihoods, these communities have historically operated within informal and weakly regulated systems, characterised by limited access to productive assets, inadequate infrastructure, and exposure to fluctuating fish stocks and market conditions. Such conditions have heightened livelihood insecurity and constrained the ability of households to cope with shocks and stresses.

This study introduces an in-depth examination of livelihood vulnerabilities among small-scale inland fishing communities, focusing on the Kafue Bridge fishing camp in Kafue Town. By analysing vulnerabilities, livelihood assets, socio-economic characteristics, and coping strategies, the study seeks to generate empirical evidence that can inform policies and interventions aimed at enhancing livelihood resilience and sustainable development among inland fishing communities in Zambia.

## 1.1 Background of the Study

In recent years, the concept of livelihood vulnerability was increasingly examined within development and sustainability scholarship as a multidimensional condition shaped by exposure

to risks, sensitivity to shocks, and limited adaptive capacity. Between 2018 and 2024, scholars consistently framed livelihoods not only as income-generating activities but as systems composed of human, social, natural, physical, and financial assets that enabled households to survive and adapt under changing conditions (Scoones, 2018; Serrat, 2021). Within this period, vulnerability was widely understood as a dynamic process influenced by structural inequalities, environmental stressors, and institutional arrangements, rather than a static state of poverty. This perspective was particularly applied to natural resource–dependent communities, where livelihoods were historically fragile due to their reliance on ecosystems that were themselves under increasing pressure.

In Zambia, inland fisheries along major river systems such as the Kafue River were historically central to rural and peri-urban livelihoods, particularly for households with limited access to land and formal employment. Studies published after 2018 indicated that small-scale fishing communities in Zambia operated largely within informal economic structures, characterised by insecure access to fishing grounds, fluctuating fish catches, and weak enforcement of fisheries regulations (Musumali and Heck, 2019; Hara et al., 2021). Research further showed that environmental degradation, pollution from upstream industrial and agricultural activities, and climate variability adversely affected fish productivity, thereby undermining household incomes and food security (Phiri et al., 2020; Kalinda et al., 2023). At the same time, limited access to credit, markets, and social protection mechanisms constrained the ability of fishing households to cope with livelihood shocks.

At the local level, the Kafue Bridge fishing camp in Kafue Town historically reflected the broader vulnerabilities experienced by inland small-scale fishing communities in Zambia. Existing empirical literature on fishing camps along the Kafue River suggested that households depended heavily on fishing and related activities such as fish processing and trading, with minimal livelihood diversification (Musumali et al., 2019; Haller et al., 2022). These communities were characterised by low asset ownership, poor housing conditions, limited access to basic services, and high dependence on natural capital, making them highly sensitive to environmental and economic disturbances. Despite their importance to local food supply and livelihoods, the specific livelihood vulnerabilities, coping strategies, and socio-economic characteristics of households in the Kafue Bridge fishing camp remained insufficiently documented in recent empirical studies.

This gap provided the basis for the present study, which sought to generate context-specific evidence to inform policy and development interventions aimed at strengthening livelihood resilience among inland small-scale fishing communities.

## 1.2 Statement of the Problem

Livelihood vulnerability among small-scale inland fishing communities remains a persistent and pressing development problem in Zambia, particularly for households whose survival depends almost entirely on fishing and related activities. At present, small-scale fishing communities along the Kafue River continue to experience declining and unstable livelihoods due to fluctuating fish stocks, environmental degradation, and increasing competition over limited natural resources. Empirical studies conducted in Zambia indicate that inland fisheries contribute significantly to household income and protein intake, yet most fishing households remain poor, food insecure, and highly exposed to livelihood shocks (Musumali and Heck, 2019; Hara et al., 2021). Current evidence shows that small-scale fishers often operate with limited fishing assets, low savings, and minimal access to alternative income sources, which intensifies their vulnerability to seasonal changes, climate variability, and regulatory restrictions.

The magnitude of the problem is evident in the continued socio-economic insecurity characterising fishing camps along the Kafue River, including the Kafue Bridge fishing camp in Kafue Town. Existing studies reveal that inland fishing households in Zambia record low and unstable incomes, high dependency ratios, and limited access to basic services such as education, health care, clean water, and sanitation (Phiri et al., 2020; Kalinda et al., 2023). Despite the economic importance of the fisheries sector, small-scale fishing communities remain largely excluded from formal development planning, social protection programmes, and livelihood support initiatives. As a result, households increasingly rely on short-term coping strategies such as overfishing, borrowing, asset depletion, and reduced food consumption, practices that further undermine long-term livelihood sustainability and resilience (Béné and Friend, 2020).

Although several studies have examined inland fisheries and rural livelihoods in Zambia, there remains a clear empirical gap regarding detailed, community-level analysis of livelihood vulnerabilities, coping strategies, and livelihood assets among specific fishing camps such as the

Kafue Bridge fishing camp. Current literature provides limited disaggregated evidence on how socio-economic characteristics, asset ownership, and contextual factors interact to shape vulnerability at household level within this community. This lack of context-specific data constrains the design of targeted and effective interventions aimed at strengthening livelihood resilience among small-scale fishing households. Consequently, there is a compelling need for systematic research that documents and analyses livelihood vulnerabilities in the Kafue Bridge fishing camp in order to inform policy formulation, community-based development initiatives, and sustainable fisheries management strategies.

## 1.3 Research Objectives

### 1.3.1 General Objective

To analyze livelihood vulnerabilities in small-scale fishing communities in the Kafue Bridge fishing camp.

### 1.3.2 Specific Objectives

i. To evaluate the vulnerabilities of the Kafue Bridge small-scale fishing communities and the coping strategies employed by households.
ii. To examine the factors affecting the livelihoods of the Kafue Bridge small-scale fishing communities.
iii. To assess the socio-economic characteristics and livelihood assets of households in the Kafue Bridge fishing camp.

### 1.3.3 Research Questions

i. How do vulnerabilities affect small-scale fishing communities in the Kafue Bridge, and what coping strategies do households employ?
ii. Why are the livelihoods of the small-scale fishing communities of the Kafue Bridge affected by different factors?
iii. How do the socio-economic characteristics and livelihood assets of households affect the livelihoods of the Kafue Bridge small-scale fishing communities?

## 1.4 Significance of the Study

This study was significant in contributing to academic knowledge on livelihood vulnerability within small-scale inland fishing communities, particularly in the context of developing countries. By focusing on the Kafue Bridge fishing camp, the study provided empirical evidence that enhanced existing theoretical and conceptual understandings of how vulnerability, livelihood assets, and coping strategies interacted at household and community levels. The findings were expected to extend the application of the Sustainable Livelihoods Framework and vulnerability theory by offering context-specific insights into inland fisheries, an area that had received comparatively less scholarly attention than marine fisheries. In this way, the study strengthened the empirical foundation upon which future research on small-scale fisheries and rural livelihoods could be built.

The study was also significant for policy formulation and development planning related to fisheries management and rural development in Zambia. The evidence generated was useful to policymakers, government institutions, and development practitioners involved in fisheries, poverty reduction, and community development programmes. By identifying key livelihood vulnerabilities, socio-economic characteristics, and asset constraints faced by households in the Kafue Bridge fishing camp, the study informed the design of targeted interventions aimed at enhancing livelihood resilience, promoting sustainable resource use, and improving household welfare. The findings further supported evidence-based decision-making by highlighting the need for inclusive policies that addressed the specific challenges faced by small-scale inland fishing communities.

At the community level, the study was significant in providing a platform for the voices and lived experiences of small-scale fishing households to be documented and analysed. The findings were expected to support local leaders, non-governmental organisations, and community-based organisations in developing appropriate livelihood support strategies, capacity-building initiatives, and coping mechanisms tailored to the needs of the Kafue Bridge fishing community. Additionally, the study contributed to raising awareness of the socio-economic and environmental challenges faced by inland fishing households, thereby fostering greater

stakeholder engagement and collaboration aimed at improving livelihood security and sustainable development outcomes in the study area.

## 1.5 Delimitation of the Study

This study was delimited to an examination of livelihood vulnerabilities among small-scale inland fishing households at the Kafue Bridge fishing camp in Kafue Town. The research focused specifically on households engaged in fishing and related livelihood activities such as fish processing and trading, while excluding large-scale or commercial fishing operations. The study was further delimited to an analysis of socio-economic characteristics, livelihood assets, vulnerability factors, and coping strategies within the selected fishing camp, without extending to other fishing communities along the Kafue River. In terms of scope, the study concentrated on household-level data and community-level dynamics as they related to livelihood vulnerability, and it did not assess broader national fisheries policies or conduct comparative analyses with other inland fishing sites in Zambia.

## 1.6 Limitations of the Study

This study encountered several limitations that had the potential to influence the depth and breadth of the findings. One major limitation was time constraint, as the data collection period was limited, restricting the ability to capture seasonal variations in fishing activities and livelihood outcomes that characterise inland fishing communities. Resource constraints also posed a challenge, particularly in relation to financial and logistical capacity, which limited the sample size and the extent of repeated field visits to the study area. In addition, reliance on self-reported data from households introduced the possibility of recall bias and under- or over-reporting of income, assets, and coping strategies. Language barriers and varying levels of literacy among respondents further affected the depth of responses, requiring translation and simplification of research instruments, which may have led to loss of nuance in some cases.

Another limitation related to the highly dynamic nature of livelihoods in fishing communities, where environmental conditions, fish availability, and market prices change rapidly. As a result, the findings reflected livelihood conditions at the time of the study and may not fully represent longer-term trends. Furthermore, the informal nature of small-scale fishing activities made it

difficult to obtain accurate secondary data to validate household responses. Despite these limitations, appropriate methodological measures were employed to enhance the reliability and validity of the findings, and the results remained useful for understanding livelihood vulnerabilities within the Kafue Bridge fishing camp.

## 1.7 Definition of Key Terms

**Coping strategies:** refer to the deliberate actions and responses adopted by households to withstand, manage, or adjust to shocks and stresses that threaten their livelihoods. Within small-scale fishing communities, these strategies commonly include modifying fishing effort, engaging in alternative income-generating activities, borrowing from social networks, or reducing household consumption during difficult periods (Chambers & Conway, 1992; Ellis, 2000).

**Household assets:** are the tangible and intangible resources that households draw upon to support their livelihood activities and overall well-being. These assets include natural resources such as access to fishing grounds, physical assets like boats and fishing gear, financial resources, human skills and knowledge, and social networks that facilitate access to information and support (Scoones, 2018).

**Inland fishing communities:** are populations whose livelihoods are primarily dependent on fishing activities conducted in rivers, lakes, dams, and other inland water bodies. These communities rely heavily on aquatic ecosystems and often engage in related informal economic activities such as fish processing and trading to sustain household income and food security (FAO, 2018).

**Livelihood**: refers to the combination of capabilities, assets, and activities that individuals or households use to secure the basic necessities of life, including food, income, shelter, and health. In small-scale fishing contexts, livelihoods typically encompass fishing alongside complementary activities such as trading, processing, or casual labour (Chambers & Conway, 1992; Scoones, 2018).

**Livelihood assets:** are the human, natural, social, financial, and physical resources that households mobilise to pursue their livelihoods. The availability and quality of these assets determine a

household's ability to generate income, cope with shocks, and improve its overall well-being (DFID, 2018).

**Livelihood diversification**: is the process by which households engage in a range of economic activities in order to reduce reliance on a single income source and manage livelihood risks. In fishing communities, diversification often involves combining fishing with farming, petty trading, or casual labour to enhance income stability (Ellis, 2000).

**Livelihood vulnerability:** refers to the degree to which households or communities are exposed to shocks, stresses, and risks that weaken their ability to sustain livelihoods and maintain well-being. Vulnerability is shaped by both external factors, such as environmental change and market fluctuations, and internal factors, including limited assets and weak coping capacity (Adger, 2006; Scoones, 2018).

**Small-scale fishing:** describes artisanal or subsistence-based fishing activities carried out using relatively simple technologies and primarily aimed at household consumption or local markets. These activities are typically characterised by low capital investment and a high dependence on natural aquatic resources (FAO, 2015).

**Socio-economic characteristics:** refer to the demographic, educational, occupational, and income-related attributes of households that influence livelihood choices, exposure to risks, and access to resources. Such characteristics include household size, level of education, employment status, and income sources (Ellis, 2000).

**Vulnerability factors**: are the conditions or influences that increase the likelihood of households experiencing livelihood shocks and stresses. These factors may include environmental degradation, declining fish stocks, market instability, poverty, inadequate infrastructure, and weak institutional support systems (Béné et al., 2021).

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

Chapter Two reviews existing literature on livelihood vulnerabilities of inland small-scale fishing communities to establish a scholarly foundation for the current study. It synthesises global, regional, and local research findings to highlight how different contexts shape vulnerability, coping strategies, and resilience. Through reviewing studies from diverse geographical settings, this chapter identifies gaps and contrasts in knowledge, methods, and outcomes that inform the rationale for focusing on the Kafue Bridge fishing camp in Zambia. The literature review also supports the development of theoretical and conceptual frameworks that guide the design and interpretation of the current research.

The chapter begins by providing a broad overview of livelihood vulnerability in small-scale inland fishing communities, drawing on interdisciplinary research that integrates sustainable livelihoods, vulnerability analysis, and environmental change perspectives. It then progresses to examine global evidence from countries outside Africa to understand patterns of vulnerability and adaptive responses across varied socio-ecological systems. Following the global perspective, the regional section focuses on studies in African inland fisheries, excluding Zambia, to contextualise continental trends and common challenges faced by inland fishers. The local perspective then zooms in on Zambian contexts, illustrating specific empirical findings on inland small-scale fishing livelihoods and highlighting gaps at the national level.

The final sections of this chapter articulate the theoretical and conceptual frameworks that anchor this study. The theoretical framework draws on two complementary theories to explain how external stressors and internal capacities shape livelihood outcomes. The conceptual framework visually links independent and dependent variables, illustrating hypothesised relationships among vulnerability factors, socio-economic characteristics, livelihood assets, and coping strategies. Together, these sections demonstrate how existing literature informs the current research and where additional empirical insights are needed.

## 2.1 Overview of the Livelihood Vulnerabilities of Inland Small-Scale Fishing Communities

The livelihood vulnerabilities of inland small-scale fishing communities have been widely examined as multifaceted phenomena that intersect environmental, economic, and social dimensions. Research following the Sustainable Livelihoods Framework has emphasised that vulnerability arises when households lack the necessary assets to absorb shocks, diversify income sources, and access institutional support (Scoones, 2018). Inland fisheries, often overlooked in national development strategies, have pronounced sensitivity to environmental variability, market fluctuations, and policy neglect, which together undermine rural livelihoods and food security (Islam et al., 2022). These vulnerabilities manifest as unstable incomes, seasonal food shortages, and constrained adaptive capacities that challenge long-term well-being.

Environmental change, particularly climate change, has emerged as a major driver of vulnerability in inland small-scale fishing systems. Recent studies show that alterations in precipitation patterns, temperature regimes, and hydrological cycles affect fish productivity, species distribution, and fishing effort, thereby impacting household food sources and income stability (Muringai et al., 2025). Inland fishers typically have low buffering capacity due to limited asset bases and high dependency on natural resources, which further amplifies their exposure to environmental stressors. As such, vulnerability is not merely a function of ecological change but also of socio-economic conditions that restrict households' adaptive responses.

Livelihood vulnerability in inland fishing communities is also shaped by structural and institutional factors that constrain access to markets, credit, education, and social services. Studies have shown that fishers often experience marginalisation from formal support systems, weak regulatory frameworks, and limited representation in policy processes, which exacerbates economic insecurity and poverty (Sazzad et al., 2024). In many contexts, small-scale fishers engage in informal labour markets, possess low levels of formal education, and face obstacles in diversifying their income sources, making them particularly sensitive to economic shocks. This combination of environmental pressures and socio-economic constraints underscores the complexity of livelihood vulnerability among inland small-scale fishing communities and highlights the need for integrated research that addresses both ecological and human factors.

## 2.2 Global Perspective

The global discourse on livelihood vulnerabilities of inland small-scale fishing communities has expanded significantly in recent years, reflecting growing academic and policy concern over the sustainability of these livelihoods under multiple stressors. Small-scale fisheries, including inland open-water fisheries, play a crucial role in rural economies and food systems across Asia, Latin America, and other regions, where they contribute substantially to household income, dietary quality, and local employment (Islam et al., 2022; Sazzad et al., 2024). However, this contribution is counterbalanced by pronounced exposure to environmental and socio-economic risks that undermine the ability of fishing households to sustain well-being. For example, studies in Malaysia have shown that inland small-scale fishing communities confront climate change, declining fish stocks, and limited institutional support, which collectively shape their vulnerability profiles and constrain long-term resilience (Islam et al., 2022). These global perspectives underline the complex interplay between ecological dependency, socio-economic marginalisation, and governance gaps that characterise livelihood vulnerability on a worldwide scale.

Environmental transformation emerged as a central driver of livelihood vulnerability in inland small-scale fishing systems, particularly in the context of climate variability and change. Research conducted in Southeast Asia, including northern Malaysia and Indonesia, revealed that small-scale fishers face increasing unpredictability in hydrological regimes, altered fish availability, and heightened exposure to extreme weather events, all of which constrain productive activities and heighten the risk of food and income insecurity (Islam et al., 2022; Suman et al., 2025). For instance, studies applying the Livelihood Vulnerability Index (LVI) and IPCC-derived frameworks demonstrated that socio-demographic characteristics, social networks, and economic assets significantly influenced the degree of vulnerability within fishing communities (Suman et al., 2025). Moreover, lower levels of formal education and limited access to climate information were found to dampen adaptive capacities, highlighting persistent structural inequalities that amplify vulnerability even in regions with robust policy instruments. These findings emphasised that global inland small-scale fishing contexts share fundamental vulnerability drivers, though the specific manifestations vary by socio-ecological setting.

Globally, small-scale inland fishing communities were recognised during this period as among the most vulnerable livelihood groups, despite their significant contribution to food security and employment. Empirical studies published after 2018 demonstrated that inland fisheries supported millions of households worldwide, yet these communities faced declining fish stocks, climate variability, weak governance, and marginalisation from development planning (Béné et al., 2019; FAO-related academic analyses cited in Allison et al., 2020). Research further showed that fishing livelihoods were characterised by seasonality, income instability, and high exposure to environmental shocks such as floods and droughts, which undermined household resilience and increased susceptibility to food insecurity and poverty (Islam and Chuenpagdee, 2018; Cinner et al., 2020). These global developments reinforced the argument that livelihood vulnerability in fishing communities was both an environmental and socio-economic phenomenon.

Economic instability and market uncertainty were also identified as critical factors influencing livelihood vulnerability among small-scale fishers in global studies. Evidence from South and Southeast Asia showed that fluctuations in fish prices, coupled with limited access to formal markets and credit systems, constrained household income diversification and savings capacity, thereby reducing resilience to shocks (Sazzad et al., 2024). In Bangladesh, inland fishers experienced seasonal bans, declining catches due to habitat degradation, and high illiteracy rates, all of which reinforced income fragility and prevented effective coping strategies that could stabilise livelihoods (Sazzad et al., 2024). These dynamics of economic vulnerability intersected with ecological pressures to create a dual burden for fishing households, highlighting the necessity of integrated livelihood support systems that address both economic and environmental dimensions.

Social vulnerability further compounded livelihood risks in global inland fishing contexts, particularly where fishers lacked equitable participation in governance and decision-making processes. Research in Indonesia, for example, underscored how weak institutional inclusion and limited community representation contributed to disenfranchisement and reduced access to support services (Suman et al., 2025). In addition, low social capital, characterised by weak networks and limited collective action, diminished the capacity of households to mobilise communal resources in times of stress, thereby increasing susceptibility to chronic shocks such as resource scarcity and climate unpredictability. These socio-institutional vulnerabilities illustrated that beyond

biophysical exposure, social structures and governance mechanisms critically shaped livelihood outcomes for small-scale fishing communities globally.

Global literature also highlighted the gendered dimensions of vulnerability in inland small-scale fishing communities, recognising that women often faced distinct disadvantages due to social norms, limited access to productive assets, and restricted participation in market activities. Several studies emphasised that women engaged in post-harvest activities—such as processing and marketing were particularly affected by economic downturns and lacked access to formal support mechanisms (Sazzad et al., 2024). This gendered perspective revealed that vulnerability was not evenly distributed within communities but was shaped by intersecting social identities that influenced access to resources and resilience capacity. A comprehensive understanding of livelihood vulnerability therefore required attention to intra-household and community-level dynamics, including patterns of inequality that disproportionately affected marginalised groups.

Technological and infrastructure deficiencies were also linked with heightened vulnerability in global inland fishing contexts, particularly where inadequate transport and communication systems isolated fishing communities from broader economic and social networks. In many regions, lack of road access, limited cold chain facilities, and poor communication infrastructure impeded market access and restricted timely information flow, reducing household ability to adapt to environmental and economic shocks (Suman et al., 2025). These infrastructure deficits often reinforced rural marginalisation, limiting opportunities for alternative income generation and reducing the potential for livelihood diversification. By contrast, regions with improved infrastructure exhibited higher forms of adaptive capacity, suggesting that investment in connectivity and services could mitigate some aspects of vulnerability.

Across Asia, inland small-scale fishing communities have been widely documented to experience heightened vulnerability due to interactions between environmental degradation and socio-economic constraints. Research in Bangladesh highlighted that small-scale fishers along the Meghna River suffered from persistent economic insecurity as a result of declining fish stocks, illegal fishing, and climate change impacts, with a significant proportion of households earning below the national poverty line and facing low literacy and financial exclusion (Sazzad et al., 2024). The study further noted that seasonal fishing bans and limited institutional support

intensified vulnerability and that adaptive strategies such as alternative income activities, migration, and informal savings schemes existed but were underutilized due to skill gaps and lack of resources. This comprehensive analysis underscored the complex linkages between ecological stressors, socio-economic disadvantage, and institutional gaps in shaping livelihood risks.

In Indonesia, research conducted in South Malang further exemplified how environmental degradation and climate variability have undermined the stability of inland small-scale fishing livelihoods. Using the Livelihood Vulnerability Index (LVI), studies showed that fishers in the region experienced high vulnerability in terms of livelihood strategy and climate impacts, which perpetuated cycles of poverty, food insecurity, and ecological decline (South Malang study, 2025). The results revealed that socio-demographic diversity and social network influences moderated some components of vulnerability; however, climate and livelihood strategy variables remained the dominant drivers of household risk exposure. Improving access to infrastructure and essential services was highlighted as a critical factor that could bolster adaptive capacity and reduce susceptibility to external shocks.

Further evidence from studies in Southeast Asia pointed to the compounded effects of climate change and environmental disturbance on inland fisheries. In northern Malaysia, researchers applied vulnerability assessment frameworks to demonstrate that small-scale fishers were disproportionately affected by climate-related events and hydrological variability, resulting in reduced fish availability and diminished livelihood security over time (Islam et al., 2022). In this context, households with restricted access to climate information and adaptive resources showed lower resilience and heightened sensitivity to shocks, illustrating how lack of institutional capacity and socio-economic constraints intensified vulnerability in inland fishing contexts.

Water quality and ecosystem health have also been identified as significant determinants of livelihood vulnerability among small-scale fishers outside Africa. A case study from the Chilika Lagoon in India emphasised that cumulative environmental stressors — including pollution, hydrological changes, and altered trophic dynamics — directly influenced fish stock productivity and community well-being (water quality study, 2023). Poor water quality was associated with occupational displacement, food insecurity, and reduced dietary diversity, particularly for households' dependent on small-scale fisheries as their primary source of income and nutrition.

The study highlighted that addressing environmental drivers was essential for enhancing livelihood resilience and sustaining inland fishery resources.

Globally, the literature also revealed how market dynamics and economic uncertainty compound vulnerability for inland small-scale fishing households. Studies from Asia emphasised that limited access to formal markets and credit systems restricted fishers' capacity to diversify income and invest in alternative enterprises, leaving them reliant on unstable fishing returns (Sazzad et al., 2024). This economic fragility was exacerbated by fluctuations in fish prices and periodic bans on fishing activities, which constrained cash flow and increased dependency on subsistence strategies. Research further noted that economic policy frameworks often overlooked small-scale inland fishers, resulting in a policy gap that increased vulnerability and reduced household resilience.

Another important theme in global studies concerned adaptive strategies and community responses to evolving risks in inland fishing contexts. Evidence from Bangladesh and Southeast Asia documented a range of informal coping mechanisms, including diversification into agriculture, poultry farming, or other non-fishery income sources (Sazzad et al., 2024). Seasonal migration and community-based initiatives, such as shared resource management and informal savings groups, were also observed as strategies to cushion livelihood shocks. However, these adaptive actions were constrained by limited skills, financial resources, and institutional support, highlighting the need for targeted capacity-building and livelihood diversification programmes.

## 2.3 Regional Perspective

In West Africa, small-scale inland fishing communities have been identified as particularly vulnerable due to the interplay of environmental degradation and socio-economic marginalisation. In Nigeria, for example, studies revealed that households along the Niger and Benue rivers experience declining fish stocks caused by overfishing, pollution, and seasonal flooding, which directly affect income and food security (Adebayo et al., 2019). Limited access to formal markets and credit further exacerbates economic vulnerability, forcing households to adopt short-term coping strategies such as overfishing or selling assets, which often undermines long-term sustainability. The research highlights that vulnerability is multidimensional, combining ecological, economic, and social stressors that interact to constrain resilience.

Similarly, inland small-scale fishers in Ghana face vulnerabilities stemming from both ecological change and institutional gaps. Studies conducted in the Volta Basin showed that overexploitation, water pollution, and fluctuating water levels reduce fish availability and threaten household livelihoods (Boateng et al., 2021). Additionally, governance challenges, including weak enforcement of fishing regulations and minimal community involvement in decision-making, further amplify risk exposure. These findings suggest that the ability of households to sustain their livelihoods is influenced not only by natural resource availability but also by socio-political structures that mediate access and control over resources.

In East Africa, particularly in Kenya and Tanzania, small-scale inland fishing communities experience persistent livelihood insecurity linked to climate variability and infrastructural deficits. Research along the shores of Lake Victoria indicated that unpredictable rainfall patterns, water level fluctuations, and eutrophication have diminished fish stocks and disrupted traditional fishing calendars (Owino et al., 2020). Households often lack alternative income sources, limited savings, and restricted access to extension services, which increases susceptibility to economic shocks. These studies emphasize the interconnectedness of environmental, economic, and institutional factors in shaping vulnerability, suggesting the need for integrated policy and community-based interventions.

In Central Africa, studies in the Democratic Republic of Congo (DRC) have highlighted how conflict and governance issues compound livelihood vulnerability in small-scale inland fishing communities. Research on communities along the Congo River reported that insecurity, weak regulatory frameworks, and market instability constrain the ability of households to secure stable income from fishing (Mukeba et al., 2022). Environmental stressors, including pollution and habitat degradation, further exacerbate these vulnerabilities. The combined effects of ecological, economic, and political pressures demonstrate that vulnerability in inland fisheries is context-specific but consistently influenced by multidimensional factors.

Lake Chad, spanning Chad, Cameroon, Niger, and Nigeria, provides another example of regional vulnerability. Shrinking water levels, increased salinity, and climate variability have significantly reduced fish stocks, undermining household livelihoods (Bene et al., 2020). Small-scale fishers have limited capacity to adapt due to low asset ownership, poor access to credit, and weak institutional support. Community coping strategies, including seasonal migration and

diversification into agriculture, exist but are often insufficient to fully mitigate shocks. The Lake Chad case illustrates the regional consistency of ecological and socio-economic pressures on small-scale fishing livelihoods.

In southern Africa, countries such as Malawi and Mozambique have documented similar patterns of vulnerability among inland small-scale fishers. Studies in Lake Malawi revealed that overfishing, invasive species, and pollution directly threaten household food security and income stability (Chilundo et al., 2021). Socio-economic constraints, such as limited education, poor infrastructure, and low market integration, compound ecological pressures. Households frequently rely on informal credit, shared labor arrangements, and seasonal migration as coping strategies. These studies emphasize that ecological pressures alone cannot explain vulnerability; socio-economic factors and institutional capacity are equally critical.

Gendered dimensions of vulnerability have been increasingly recognized across the region. Research in Uganda and Tanzania demonstrated that women, primarily engaged in post-harvest activities such as fish processing and marketing, often experience higher exposure to economic shocks and reduced access to support programs compared to men (Namugumya et al., 2023). Limited asset ownership, lack of decision-making authority, and social norms constrain women's capacity to adapt to changing ecological and economic conditions. Addressing vulnerability in inland small-scale fishing communities thus requires a nuanced understanding of intra-household inequalities and gendered access to resources.

West African small-scale inland fishing communities face significant livelihood vulnerabilities shaped by the interaction of environmental pressures and socio-economic constraints. For instance, households along the Niger and Benue rivers in Nigeria have experienced declining fish stocks due to overfishing, water pollution, and seasonal flooding, which directly undermine household income and food security (Adebayo et al., 2019). Economic marginalisation, such as limited access to formal markets and credit, compounds these challenges and forces households to rely on short-term coping strategies, including overfishing or selling productive assets, which can threaten the sustainability of livelihoods over time. This evidence demonstrates that vulnerability emerges from multiple interlinked factors rather than a single cause.

In Ghana, similar dynamics are observed among communities along the Volta Basin. Overexploitation of fisheries, water pollution, and fluctuating water levels have led to reduced fish availability, threatening both income and nutrition for fishing households (Boateng et al., 2021). Weak governance, including limited enforcement of fishing regulations and minimal community involvement in decision-making, further constrains households' ability to manage resources effectively. The combination of ecological stressors and institutional gaps highlights how small-scale fishers' capacity to maintain sustainable livelihoods depends on both environmental and social structures.

Moving eastward, inland fishing communities in Kenya and Tanzania experience additional vulnerabilities associated with climate variability and infrastructural deficiencies. Research on Lake Victoria shows that unpredictable rainfall patterns, changes in water levels, and eutrophication have diminished fish stocks and disrupted traditional fishing practices (Owino et al., 2020). Many households face limited opportunities for income diversification, restricted savings, and minimal access to extension services, increasing their exposure to economic shocks. These findings indicate that environmental changes and socio-economic limitations jointly shape the resilience of fishing communities in East Africa.

In Central Africa, inland fishers along the Congo River in the Democratic Republic of Congo confront a complex mix of ecological, economic, and political stressors. Insecurity, weak regulatory frameworks, and unstable markets hinder the ability of households to secure reliable income from fishing (Mukeba et al., 2022). Environmental degradation, including habitat loss and pollution, intensifies these challenges. The DRC experience illustrates that livelihood vulnerability is context-specific and shaped by the interaction of multiple structural and environmental factors rather than by environmental pressures alone.

The Lake Chad Basin, spanning Chad, Cameroon, Niger, and Nigeria, presents another case of compounded vulnerability. Reduced water levels, rising salinity, and climate variability have significantly diminished fish stocks, limiting the sustainability of households' primary income sources (Béné et al., 2020). Many fishing households possess low asset bases and have limited access to credit, constraining their capacity to adapt. Informal coping strategies, such as seasonal migration and diversification into agriculture, provide some relief but remain insufficient to fully

buffer against shocks. Lake Chad highlights the recurring pattern of intertwined ecological and socio-economic pressures across the region.

In southern Africa, excluding Zambia, inland fishers in Malawi and Mozambique demonstrate comparable challenges. Studies on Lake Malawi indicate that overfishing, invasive species, and water pollution threaten household food security and income stability (Chilundo et al., 2021). Socio-economic constraints, including limited education, poor infrastructure, and weak market integration, exacerbate the impact of environmental stressors. Households often rely on informal credit, shared labor, and seasonal migration as strategies to cope with uncertainty, suggesting that adaptive capacity is influenced as much by social and economic factors as by ecological conditions.

Gender dynamics further shape vulnerability across the region. Research in Uganda and Tanzania emphasizes that women, who are primarily engaged in post-harvest activities such as fish processing and marketing, experience disproportionate exposure to economic shocks and limited access to support programs compared to men (Namugumya et al., 2023). Constraints such as limited asset ownership, lack of decision-making authority, and restrictive social norms reduce women's ability to adapt effectively. Addressing livelihood vulnerability therefore requires a nuanced understanding of intra-household inequalities and equitable access to resources, ensuring that both men and women can strengthen resilience.

Within the African context, studies conducted between 2018 and 2024 increasingly highlighted that inland small-scale fishing communities were affected by compounded vulnerabilities rooted in historical exclusion, weak institutional frameworks, and limited access to livelihood assets. Scholars observed that fisheries governance systems across sub-Saharan Africa often prioritised commercial interests and conservation goals at the expense of small-scale fishers' welfare, thereby eroding traditional coping mechanisms and livelihood security (Béné and Friend, 2020; Jentoft et al., 2022). In addition, climate-related stresses, population pressure, and market volatility were found to disproportionately affect inland fishing households, whose adaptive capacity remained constrained by low education levels, inadequate infrastructure, and limited livelihood diversification options (Belton et al., 2021). These factors collectively deepened livelihood vulnerability and perpetuated cycles of poverty and social marginalisation.

## 2.4 Local Perspective

Inland small-scale fishing has long played a crucial role in rural livelihoods in Zambia, contributing significantly to household income, employment, and food security, especially in areas surrounding floodplains, rivers, and lakes. Fisheries in Zambia are predominantly inland and artisanal, with households relying on capture from water bodies such as Lake Kariba, Lake Itezhi-Tezhi, and the Kafue Flats to meet their nutritional and economic needs. Many small-scale fishers combine fishing with related activities, including fish processing and trading, highlighting the sector's importance in supporting rural welfare and resilience (Kapembwa, Gardiner & Pétursson, 2021).

Despite their importance, inland fisheries in Zambia face mounting vulnerabilities that affect dependent communities. At Lake Itezhi-Tezhi, for instance, fishing income is often insufficient to maintain household livelihood assets due to low fish catches, particularly during closed fishing seasons and following agricultural failures. This limitation forces households to rely on supplementary activities, revealing the susceptibility of fishing communities to both ecological and economic shocks (Kapembwa, Gardiner & Pétursson, 2021). These findings underscore the necessity of livelihood diversification and targeted policy interventions to strengthen resilience.

The socio-economic and environmental challenges in the Lake Kariba fishery further demonstrate the complex nature of vulnerability. Small-scale fishers face overfishing, competition with semi-industrial operations, and weak institutional support, as well as the presence of invasive species that threaten fish productivity and household welfare (Imbwae, Aswani & Sauer, 2023). The interaction of these factors increases risk exposure, particularly in areas where regulatory measures are poorly enforced and community participation in decision-making is limited.

Environmental variability and climate change are additional layers of vulnerability for Zambian fishing households. In the Kafue Flats, heavy rainfall, strong winds, and fluctuating water levels disrupt fishing activities, reduce fish productivity, and threaten the safety of fishers. Severe weather events often halt fishing operations, forcing households into prolonged periods without income, thereby exacerbating poverty and increasing dependence on limited livelihood options (FAO, 2025). These findings highlight how environmental change directly translates into economic vulnerability.

Institutional and policy factors also shape vulnerability among Zambia's small-scale fishing communities. Fisheries management has historically focused on stock assessment and regulatory control, with insufficient integration of socio-economic factors into planning. As a result, governance interventions frequently fail to address the livelihood needs of fishers, limiting their effectiveness in enhancing community resilience (Imbwae, Aswani & Sauer, 2023). Strengthening institutional frameworks to incorporate livelihood concerns is therefore critical for improving adaptive capacity.

Structural socio-economic challenges further exacerbate vulnerability. Limited access to markets, inadequate infrastructure, and underdeveloped value chains reduce the ability of households to generate stable income. Informal trading, insufficient post-harvest processing facilities, and weak market integration constrain income opportunities and perpetuate economic insecurity for fishing households (Kafumukachemilu, 2021). These challenges demonstrate that environmental factors alone cannot explain livelihood vulnerability; socio-economic and institutional conditions are equally significant.

Finally, limited social protection mechanisms leave fishing communities exposed to shocks. Households often lack access to credit, insurance, or formal safety nets, increasing reliance on maladaptive strategies such as intensive fishing during closed seasons or sale of productive assets. These practices compromise sustainability and long-term livelihood resilience. Overall, inland small-scale fishing communities in Zambia face a constellation of risks spanning ecological, socio-economic, and institutional dimensions. Effective interventions must integrate environmental management with livelihood support and inclusive policies to strengthen community resilience (Kapembwa, Gardiner & Pétursson, 2021; Imbwae, Aswani & Sauer, 2023; Kafumukachemilu, 2021).

## 2.5 Research Gaps

Despite the growing body of literature on inland small-scale fishing communities, several significant gaps remain that limit a comprehensive understanding of livelihood vulnerabilities. Globally, most studies have concentrated on ecological and environmental factors affecting fisheries, such as declining stocks, climate change, and pollution (Islam et al., 2022; Sazzad et al., 2024). While these studies provide critical insights into resource dynamics, they often overlook

the socio-economic dimensions of vulnerability, including household income diversification, access to credit, and community coping strategies. This limited integration restricts our understanding of how environmental and social factors interact to influence resilience and adaptive capacity.

In the African regional context, existing research has predominantly focused on large water bodies and more accessible communities, with less attention given to inland small-scale fisheries in remote or marginalized areas (Béné et al., 2021; Owino et al., 2020). Additionally, much of the literature concentrates on specific countries like Nigeria, Ghana, and Kenya, with comparative studies across multiple countries remaining scarce. This creates a knowledge gap regarding regional patterns of vulnerability, adaptive strategies, and the role of governance structures in shaping household and community resilience. Without this broader perspective, policy recommendations may be insufficiently nuanced or context-specific.

Within Zambia, studies have documented ecological pressures, socio-economic constraints, and institutional gaps affecting small-scale fishers (Kapembwa, Gardiner & Pétursson, 2021; Imbwae, Aswani & Sauer, 2023). However, there is a paucity of research that systematically examines the livelihood assets, household characteristics, and coping mechanisms of fishers, particularly in inland communities such as the Kafue Bridge fishing camp. Most existing studies emphasize large lakes or commercial fisheries, leaving a gap in understanding the vulnerabilities of smaller, inland, and often informal fishing communities. Addressing this gap is crucial to developing targeted interventions that reflect the realities of households dependent on small-scale inland fisheries.

## 2.6 Theoretical Framework

Theoretical frameworks are essential in guiding research by providing structured perspectives through which phenomena can be understood and analyzed. In the context of inland small-scale fishing communities, livelihood vulnerabilities are complex, arising from intertwined ecological, socio-economic, and institutional factors. A well-chosen theoretical framework helps to conceptualize the relationships between these factors, guide data collection, and frame analysis in a coherent manner. For this study, two complementary frameworks are applied: the Sustainable Livelihoods Framework (SLF) and Vulnerability and Resilience Theory. Together, these theories

provide a holistic understanding of how households navigate ecological risks, socio-economic constraints, and institutional challenges, shaping their adaptive strategies and resilience.

### 2.6.1 Sustainable Livelihoods Framework (SLF)

The Sustainable Livelihoods Framework (SLF) was developed to provide a holistic approach to understanding how households maintain and improve their means of living under conditions of risk and vulnerability (Scoones, 2019). The framework identifies five core types of capital—human, social, natural, physical, and financial that households draw upon to sustain livelihoods. It also emphasizes the vulnerability context, which includes shocks, trends, and seasonality that affect asset availability and livelihood strategies. Transforming structures and processes, such as policies, institutions, and governance systems, mediate the interactions between assets and vulnerability, shaping the ability of households to respond effectively to risk. In the context of small-scale inland fishing, the SLF provides a structured way to analyze how fishers use their assets and community resources to cope with environmental variability, market fluctuations, and institutional limitations.

Applying the SLF to small-scale fishing communities in Zambia, such as the Kafue Bridge fishing camp, allows for a detailed examination of the assets households possess and how these influence their vulnerability and resilience. Human capital, including skills, knowledge, and health, directly affects fishers' ability to adopt sustainable practices and diversify livelihoods (Kapembwa, Gardiner & Pétursson, 2021). Natural capital, such as fish stocks, water quality, and access to fishing grounds, determines the availability of resources that underpin income and nutrition. Physical capital, including boats, nets, and storage facilities, influences efficiency and post-harvest management, while financial capital, such as savings and access to credit, provides the means to buffer shocks. Social capital, including networks, cooperative arrangements, and community leadership, further shapes collective adaptive capacity. By assessing these capitals, researchers can identify strengths and constraints within fishing households, providing insights into effective intervention strategies.

The SLF also underscores the importance of institutions and governance in shaping livelihood outcomes. Policies regulating fishing practices, market access, and resource management can either enable or constrain the ability of small-scale fishers to adapt to environmental and economic

challenges (Imbwae, Aswani & Sauer, 2023). In Zambia, weak enforcement of regulations, limited participation of fishing communities in decision-making, and inadequate support mechanisms have been shown to exacerbate livelihood vulnerability. The SLF, therefore, offers a comprehensive analytical lens to understand how structural factors interact with household assets and vulnerability contexts. It guides researchers and policymakers in identifying entry points for interventions that strengthen resilience, improve livelihood security, and enhance sustainable resource management.

### 2.6.2 Vulnerability and Resilience Theory

The Vulnerability and Resilience Theory provides a framework for understanding how households and communities respond to shocks and stresses, emphasizing the interaction between exposure, sensitivity, and adaptive capacity (Adger, 2018). Vulnerability is conceptualized as the degree to which a system is susceptible to harm due to external pressures, while resilience refers to the capacity of individuals or communities to anticipate, absorb, adapt to, and recover from adverse events. In the context of inland small-scale fisheries, vulnerability arises from environmental fluctuations, economic instability, and institutional gaps, whereas resilience encompasses the strategies and resources households mobilize to maintain livelihood stability. This theoretical lens allows researchers to analyze how ecological, social, and economic factors intersect to shape adaptive behaviors and outcomes.

Applying this theory to Zambian inland small-scale fishing communities, such as those at the Kafue Bridge fishing camp, highlights the multifaceted nature of livelihood risks. Fishers experience exposure to climate variability, fluctuating water levels, and declining fish stocks, which directly influence income and food security (Kapembwa, Gardiner & Pétursson, 2021). Sensitivity is further affected by socio-economic factors, including limited access to credit, inadequate market integration, and poor infrastructure. Households with greater adaptive capacity—through diversified income sources, cooperative networks, or access to resources—are better able to mitigate the impacts of these shocks. This approach allows for the identification of specific factors that reduce vulnerability and enhance resilience at both household and community levels.

The theory also underscores the importance of external interventions and governance in shaping resilience outcomes. In Zambia, institutional support, such as fisheries policies, market facilitation,

and community-based resource management, plays a crucial role in enabling fishers to adapt to ecological and economic challenges (Imbwae, Aswani & Sauer, 2023). Conversely, weak enforcement of regulations, lack of social protection, and limited participation in decision-making exacerbate vulnerability and constrain adaptive strategies. By integrating the Vulnerability and Resilience Theory with empirical observations, researchers can assess the effectiveness of coping mechanisms, identify gaps in adaptive capacity, and inform policies aimed at enhancing the sustainability and security of small-scale fishing livelihoods.

## 2.7 Conceptual framework

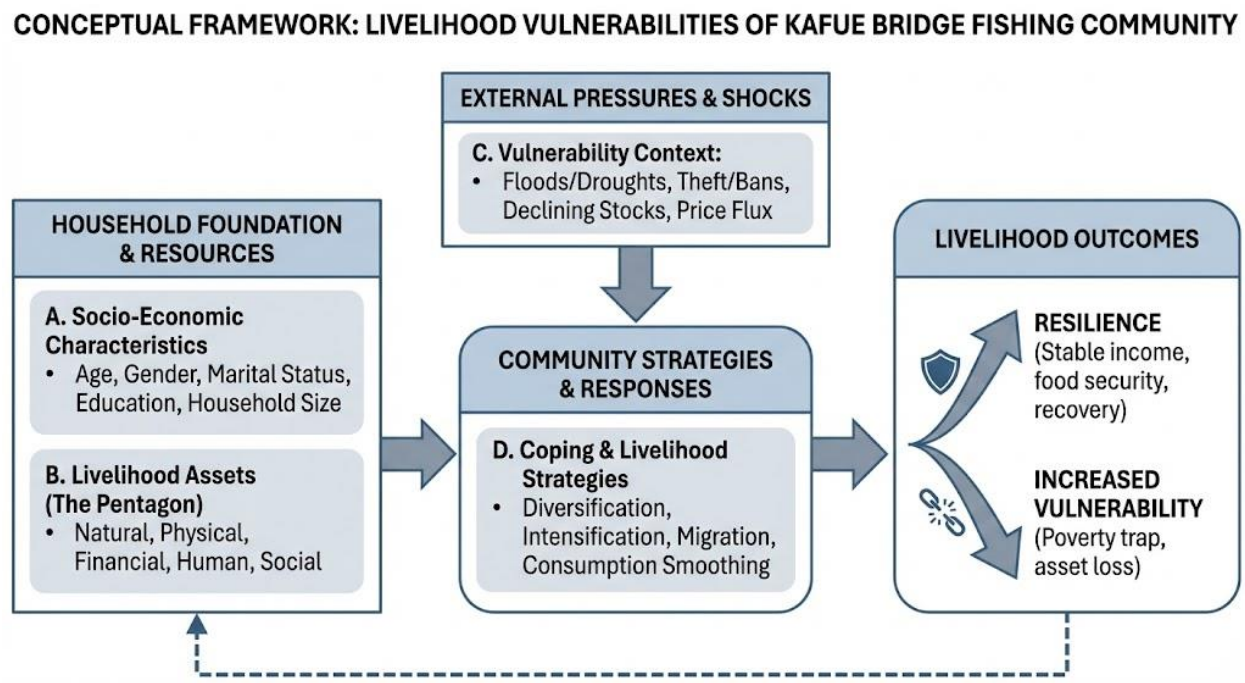


**Figure 1: Conceptual Framework**

The conceptual framework positions livelihood vulnerability of the Kafue Bridge fishing community as the dependent variable**,** reflected through livelihood outcomes such as resilience or increased vulnerability. These outcomes are directly influenced by a set of independent variables**,** namely household socio-economic characteristics**,** livelihood assets, and the vulnerability context**.** Household socio-economic characteristics including age, gender, education level, marital status, and household size determine access to and control over livelihood assets such as natural, physical,

financial, human, and social capital. These assets form the primary resource base upon which households depend for survival and income generation. External pressures and shocks such as floods, droughts, declining fish stocks, fishing bans, theft, and price fluctuations constitute the vulnerability context and operate as independent stressors that expose households to livelihood risks. Consistent with the Sustainable Livelihoods Framework, the interaction between these independent variables shapes households' capacity to pursue viable livelihoods and influences the level of vulnerability experienced (DFID, 2018; Scoones, 2019).

The framework further identifies **c**ommunity and household coping strategies as intervening (mediating) variables that link the independent variables to the dependent variable. Strategies such as diversification, intensification, seasonal migration, and consumption smoothing are adopted in response to external pressures and asset constraints. These strategies determine whether the influence of the independent variables leads to positive livelihood outcomes (resilience) such as stable income, food security, and recovery or negative outcomes (heightened vulnerability)**,** including asset depletion and poverty traps. Drawing from Vulnerability and Resilience Theory, the framework emphasizes that limited assets and weak institutional support reduce adaptive capacity, increasing the likelihood that shocks translate into adverse livelihood outcomes (Adger, 2018; Béné et al., 2021). The feedback loop illustrated in the framework shows that the dependent variable (livelihood outcomes) subsequently affects the household asset base, reinforcing either resilience or vulnerability over time. This structure clearly demonstrates the causal pathway from independent variables, through mediating strategies, to livelihood vulnerability outcomes.

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.0 Introduction

This chapter presented and explained the methodological procedures that guided the investigation of livelihood vulnerabilities among small-scale fishing communities at the Kafue Bridge fishing camp in Kafue Town. It described the research design adopted for the study, the study population and sampling procedures, data collection methods and instruments, data analysis techniques, as well as considerations of reliability, validity, ethics, and methodological limitations. The chapter further justified the methodological choices made, demonstrating how they were appropriate for addressing the research objectives and for capturing the complex and context-specific nature of livelihood vulnerability within inland fishing communities. By clearly outlining the methodological process, the chapter ensured transparency, rigor, and coherence in the overall research process.

The methodological approach adopted in this study was influenced by the nature of the research problem, which required an in-depth understanding of how environmental, economic, and social factors interacted to shape livelihood outcomes among fishing households. Livelihood vulnerability is a socially embedded phenomenon that cannot be adequately understood through numerical measurement alone. As such, emphasis was placed on methods that allowed participants to articulate their lived experiences, perceptions, and coping strategies within their natural social setting. This approach enhanced the study's ability to generate rich, contextualised insights that reflected the realities faced by the fishing community at Kafue Bridge.

## 3.1 Research Design

A research design refers to the overall plan and structure that guides the collection, analysis, and interpretation of data in a study. In this research, a qualitative research approach was adopted, as it was considered suitable for exploring the meanings, experiences, and social processes associated with livelihood vulnerability among small-scale fishing communities. Qualitative research is an approach rather than a methodology, and it is particularly useful where the aim is to understand

complex social phenomena from the perspectives of those directly affected. The choice of a qualitative approach allowed the study to move beyond surface-level descriptions and to capture the depth and diversity of experiences within the fishing community.

Specifically, the study adopted an exploratory and descriptive case study design, focusing on the Kafue Bridge fishing camp as a single, bounded case. The exploratory aspect of the design was appropriate because limited empirical research had previously examined livelihood vulnerabilities among inland fishing communities in this specific context. This necessitated an open-ended inquiry capable of uncovering underlying vulnerability factors, coping mechanisms, and livelihood dynamics as they unfolded in everyday life. At the same time, the descriptive dimension enabled the study to systematically document socio-economic characteristics, livelihood assets, vulnerability contexts, and institutional influences affecting fishing households at the Kafue Bridge camp.

The case study design further allowed for an in-depth and holistic examination of the fishing community within its real-life context. By focusing on a single case, the study was able to explore the interrelationships between environmental stressors, economic constraints, and social structures that shaped household livelihoods. The qualitative case study design was therefore considered appropriate because the study sought to understand how and why livelihood vulnerabilities emerged and persisted, rather than to establish causal relationships or to generalise findings statistically. Through this design, the research generated nuanced and context-specific insights that were directly aligned with the study objectives and the lived realities of the fishing community.

## 3.2 Study Population

A study population refers to the total number of units, individuals, or elements from which a research study draws its findings. In this study, the population comprised all individuals whose livelihoods were directly or indirectly dependent on small-scale inland fishing activities at the Kafue Bridge fishing camp in Kafue Town. This included fishing household heads, fish traders, processors, and selected community informants who possessed relevant knowledge about livelihood activities and vulnerabilities within the camp. The population was defined in this

manner to ensure that the study captured the full spectrum of livelihood experiences associated with inland fishing.

The total study population was estimated at 1,000 individuals, based on local administrative records and community leadership estimates at the Kafue Bridge fishing camp. This population size reflected the combined number of active fishers, household members engaged in fishing-related activities, and auxiliary actors such as traders and processors who relied on the fishing economy for income and subsistence. The population was considered appropriate for the study because it represented a socially and economically interconnected community whose livelihoods were shaped by shared environmental, economic, and institutional conditions.

Defining the study population in this way allowed the research to focus on a clearly bounded social unit while maintaining relevance to the research objectives. By concentrating on individuals embedded within the fishing economy, the study ensured that data collected were directly linked to livelihood vulnerability, coping strategies, and socio-economic characteristics. This population framework therefore provided a solid foundation from which an appropriate and manageable study sample could be drawn.

## 3.3 Sampling Procedure and Sample Size

A study sample refers to a subset of the population selected for participation in the research, from which data are collected and analysed. In this study, a sample was drawn from the total population of 1,000 individuals at the Kafue Bridge fishing camp. Given the qualitative nature of the study and the need for in-depth understanding rather than statistical generalisation, a sample size equivalent to 10% of the study population was considered adequate. Consequently, a total of 100 respondents constituted the study sample.

The sampling procedure involved the use of purposive sampling, which is appropriate in qualitative research where participants are selected based on their relevance, knowledge, and experience in relation to the research problem. Participants were deliberately selected because they were actively engaged in fishing and fishing-related livelihood activities and were therefore well

positioned to provide detailed insights into vulnerability contexts, livelihood assets, and coping strategies. This approach ensured that information-rich cases were included, thereby enhancing the depth and quality of the data collected.

To ensure balanced representation of key livelihood actors within the fishing community, the sample was distributed across relevant categories of respondents. The distribution reflected the structure of the fishing economy at the Kafue Bridge camp and ensured that diverse perspectives were captured.

**Table 1: Sample distribution of respondents**

| Category of Respondents | Population Estimate | Sample Size | Percentage (%) |
|---|---|---|---|
| Small-scale fishers (household heads) | 500 | 50 | 50% |
| Fish traders and processors | 300 | 30 | 30% |
| Community leaders and key informants | 200 | 20 | 20% |
| **Total** | **1,000** | **100** | **100%** |

*Source: Field Data, 2025*

This sample distribution allowed the study to capture variations in livelihood vulnerability across different roles within the fishing community. Fishers provided insights into production-related challenges, traders and processors highlighted market and income dynamics, while community leaders and key informants offered broader perspectives on institutional and environmental factors. The sampling procedure and sample size were therefore appropriate for addressing the research objectives and for generating rich, context-specific qualitative data.

## 3.4 Data Collection Methods and Instruments

Data collection refers to the systematic process of gathering information from study participants for the purpose of answering the research questions and achieving the study objectives. In this study, data were collected using qualitative data collection methods, which were considered appropriate for capturing in-depth information on livelihood vulnerabilities, coping strategies, and socio-economic realities of small-scale fishing households at the Kafue Bridge fishing camp. Qualitative data collection allowed participants to express their experiences, perceptions, and interpretations of vulnerability in their own words, thereby generating rich and contextualised data.

The study employed in-depth interviews and focus group discussions (FGDs) as the primary data collection methods. In-depth interviews were conducted with selected fishing household heads, fish traders, processors, and key informants to obtain detailed individual accounts of livelihood conditions, vulnerability factors, and adaptive strategies. This method was suitable because it enabled the researcher to probe deeply into sensitive issues such as income instability, environmental stress, access to resources, and household coping mechanisms. Interviews also provided flexibility, allowing participants to elaborate on issues they considered most relevant to their lived experiences.

Focus group discussions were used to complement individual interviews by capturing shared experiences, collective perceptions, and community-level dynamics related to livelihood vulnerability. FGDs facilitated interaction among participants, enabling them to reflect, agree, or disagree on common challenges and coping strategies within the fishing community. This method was particularly useful in identifying social norms, collective responses to shocks, and gendered dimensions of livelihood vulnerability. The combination of interviews and FGDs enhanced data triangulation, thereby strengthening the credibility and depth of the findings.

**Data Collection Instruments**

A data collection instrument refers to the tool used to record information during the data collection process. In this study, an interview guide and a focus group discussion guide were used as the main

instruments. The interview guide consisted of open-ended questions structured around the study objectives, covering themes such as livelihood activities, vulnerability factors, socio-economic characteristics, livelihood assets, and coping strategies. The semi-structured nature of the guide allowed for consistency across interviews while still permitting flexibility for probing and follow-up questions.

Similarly, the focus group discussion guide was designed to facilitate group interaction and discussion on shared livelihood experiences and community-level vulnerabilities. The guide ensured that discussions remained focused on key thematic areas while allowing participants to introduce relevant issues based on their collective experiences. Both instruments were developed in a clear and culturally appropriate manner to ensure that questions were easily understood by participants and capable of generating meaningful qualitative data relevant to the study objectives.

## 3.5 Reliability and Validity

Reliability refers to the consistency and dependability of research findings, particularly the extent to which similar results are likely to be obtained if the study were repeated under comparable conditions. In qualitative research, reliability does not imply exact replication of findings, but rather consistency in the research process and transparency in how data are generated and analysed. In this study, reliability was enhanced through the use of clearly defined research objectives, standardized interview and focus group discussion guides, and systematic data collection procedures that were applied consistently across all participants.

Furthermore, detailed field notes and audio recordings were used to accurately capture participants' responses during interviews and focus group discussions. This ensured that participants' views were recorded as expressed and reduced the likelihood of distortion or selective interpretation of data. The research process, including sampling procedures, data collection methods, and analytical steps, was carefully documented to enhance dependability and allow the study process to be clearly understood and assessed.

Validity refers to the extent to which a study accurately measures and represents the phenomenon under investigation. In this research, validity was strengthened through methodological triangulation, whereby data were collected using multiple methods, namely in-depth interviews

and focus group discussions, and from different categories of respondents within the fishing community. This approach enabled cross-verification of information and increased confidence that the findings reflected the true livelihood vulnerabilities and coping strategies of the Kafue Bridge fishing community.

## 3.6 Data Analysis

Data analysis refers to the systematic process of organizing, interpreting, and making meaning of collected data in order to answer the research questions and achieve the study objectives. In this study, thematic analysis was used to analyse qualitative data obtained from in-depth interviews and focus group discussions. Thematic analysis was considered appropriate because it allows for the identification, examination, and interpretation of recurring patterns and meanings within qualitative data. This method was suitable for analysing participants' narratives related to livelihood vulnerabilities, socio-economic characteristics, livelihood assets, and coping strategies within the Kafue Bridge fishing community.

The data analysis process involved several interconnected stages. First, audio-recorded interviews and focus group discussions were transcribed verbatim to ensure accuracy and completeness of the data. The transcripts were then read repeatedly to achieve familiarisation and to gain an overall understanding of the content. Initial codes were generated by systematically identifying significant statements, phrases, and ideas that related to the study objectives. These codes were subsequently grouped into broader categories based on similarities and relationships, leading to the development of key themes.

Finally, the identified themes were reviewed, refined, and interpreted in relation to the research questions and the theoretical framework guiding the study. Thematic interpretation involved linking empirical findings to concepts from the Sustainable Livelihoods Framework and Vulnerability and Resilience Theory to provide deeper explanations of livelihood vulnerability patterns. Direct quotations from participants were used during analysis to support interpretations and to ensure that findings remained grounded in participants' lived experiences. This systematic approach enhanced the credibility and analytical depth of the study findings.

## 3.7 Limitations of the Methodology

Despite the careful design and implementation of the research methodology, the study encountered several methodological limitations. One key limitation related to time constraints, which restricted the duration of fieldwork and limited the opportunity for prolonged engagement with participants. As a result, some seasonal livelihood dynamics and long-term vulnerability trends may not have been fully captured within the study period. Time limitations also affected the number of follow-up interviews that could be conducted with participants.

Another limitation concerned resource constraints, including financial and logistical challenges associated with accessing the fishing camp and organising focus group discussions. Limited resources affected the scale of data collection and restricted the ability to include a wider range of participants from more remote sections of the fishing community. Additionally, reliance on qualitative methods meant that findings were context-specific and could not be statistically generalised to other inland fishing communities beyond the Kafue Bridge fishing camp.

The study also faced potential limitations related to response bias and language interpretation. Some participants may have withheld information or provided socially desirable responses, particularly on sensitive issues such as income levels and fishing practices. Although efforts were made to build rapport and ensure confidentiality, such biases could not be entirely eliminated. Furthermore, translation of responses from local languages into English may have led to minor loss of meaning, despite careful interpretation. These limitations were acknowledged and considered during data analysis and interpretation of findings.

## 3.8 Ethical Considerations

Research ethics refers to the principles and standards that guide responsible conduct in the collection, analysis, and reporting of research data, with particular emphasis on respect for participants, integrity, and protection from harm. In this study, ethical considerations were observed throughout the research process to ensure the rights, dignity, and wellbeing of participants were safeguarded. Prior to data collection, permission to conduct the study was sought from relevant local authorities and community leadership at the Kafue Bridge fishing camp. All

participants were informed about the purpose of the study, the nature of their participation, and their right to withdraw from the study at any stage without any negative consequences.

Informed consent was obtained from all participants before interviews and focus group discussions were conducted. Confidentiality and anonymity were ensured by avoiding the use of participants' names and by securely storing all collected data, including interview recordings and transcripts. Participants were assured that the information provided would be used strictly for academic purposes only. Special care was taken to conduct the research in a culturally sensitive manner, ensuring respect for local norms and values. These ethical measures enhanced trust between the researcher and participants and contributed to the credibility and integrity of the study.

# CHAPTER FOUR

# DATA PRESENTATION AND DISCUSSION OF FINDINGS

## 4.0 Introduction

This chapter presents, analyses, and discusses the findings of the study on the livelihood vulnerabilities of inland small-scale fishing communities at the Kafue Bridge fishing camp in Kafue Town. The main aim of the study was to analyse livelihood vulnerabilities within small-scale fishing communities, with specific objectives focusing on identifying existing vulnerabilities and coping strategies, examining factors affecting livelihoods, and assessing the socio-economic characteristics and livelihood assets of fishing households. In line with these objectives, the chapter is organised into three main sections: first, the demographic characteristics of respondents; second, the presentation of findings structured according to the study objectives; and finally, a discussion of the findings in relation to existing literature and the theoretical framework guiding the study.

## 4.1 Demographic Characteristics of Respondents

Understanding the demographic characteristics of respondents is essential for interpreting the livelihood vulnerabilities of inland small-scale fishing communities. Demographic variables such as age, gender, educational level, occupation, and fishing experience shape access to livelihood assets, exposure to risks, and the capacity to cope with shocks. In fishing-dependent communities like the Kafue Bridge fishing camp, these characteristics influence how households engage in fishing activities, diversify income sources, and respond to environmental and economic pressures. Analysing demographic data therefore provides an important foundation for contextualising the findings presented in this chapter.

Moreover, demographic characteristics help explain variations in vulnerability and resilience among different groups within the fishing community. For instance, differences in age and experience may affect fishing skills and decision-making, while gender and education levels often determine access to resources, alternative livelihoods, and institutional support. Presenting these

characteristics at the beginning of the chapter allows for a clearer understanding of who the respondents are and how their social and economic backgrounds shape the livelihood challenges discussed in subsequent sections. To ensure ethical integrity, no personal identifiers were collected or reported, and all data were analysed in aggregate form.

### 4.1.1 Age of Respondents

Age is a critical demographic variable in livelihood studies because it influences labour capacity, experience, risk perception, and the ability to adopt coping strategies. In small-scale fishing communities, age often determines access to fishing knowledge, physical endurance required for fishing activities, and openness to livelihood diversification. Understanding the age distribution of respondents therefore provides important context for interpreting livelihood vulnerability and adaptive capacity within the Kafue Bridge fishing community.

**Table 2: Age distribution of respondents**

| Age Group (Years) | Frequency | Percentage (%) |
|---|---|---|
| 18–29 | 18 | 18.0 |
| 30–39 | 32 | 32.0 |
| 40–49 | 27 | 27.0 |
| 50–59 | 15 | 15.0 |
| 60 and above | 8 | 8.0 |
| **Total** | **100** | **100.0** |

*Source: Field Data (2025)*

The findings indicate that the majority of respondents (59%) fell within the economically active age range of 30–49 years, suggesting that fishing at the Kafue Bridge camp is predominantly undertaken by individuals in their prime working years. This age group is likely to possess both the physical capacity required for fishing activities and accumulated experience in navigating livelihood challenges. However, the presence of older respondents (23% aged 50 years and above) suggests increasing vulnerability related to declining physical strength and limited alternative livelihood options, which may heighten susceptibility to economic and environmental shocks.

### 4.1.2 Gender of Respondents

Gender is a key demographic variable in livelihood studies because it shapes access to resources, division of labour, and exposure to livelihood risks. In small-scale fishing communities, gender roles often influence participation in fishing activities, control over income, and decision-making at both household and community levels. Examining the gender composition of respondents therefore provides important insight into how livelihood vulnerabilities are experienced differently within the Kafue Bridge fishing camp.

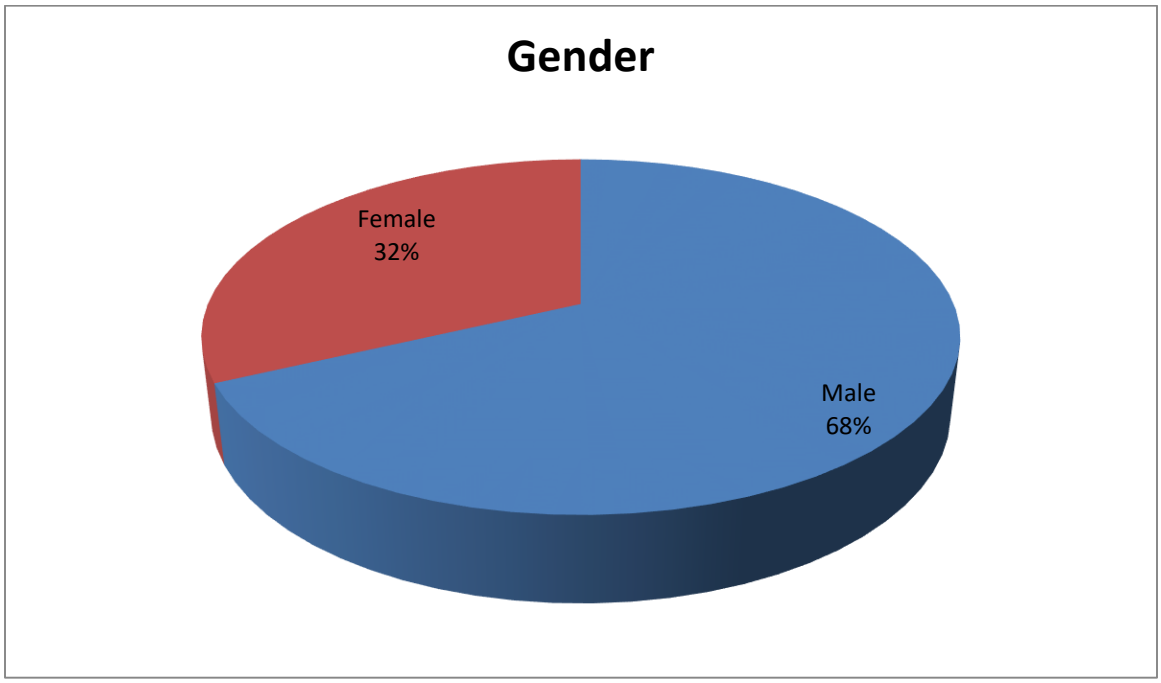


**Figure 2: Gender of respondents**

*Source: Field Data (2025)*

The findings show that the majority of respondents were male (68%), reflecting the male-dominated nature of fishing activities at the Kafue Bridge fishing camp. However, the presence of a substantial proportion of female respondents (32%) highlights the important role women play in fishing-related livelihoods, particularly in fish processing, trading, and household income management. This gender distribution suggests that while men are more visible in capture fishing, women remain integral to sustaining household livelihoods and may face distinct forms of vulnerability that require targeted consideration.

### 4.1.3 Educational Level of Respondents

Educational attainment is an important factor in understanding livelihood vulnerability because it influences skills development, access to information, and the ability to diversify income sources. In small-scale fishing communities, education often affects awareness of sustainable fishing practices, access to alternative employment opportunities, and engagement with institutional support systems. Analysing the educational levels of respondents therefore helps to explain variations in adaptive capacity and resilience within the Kafue Bridge fishing community

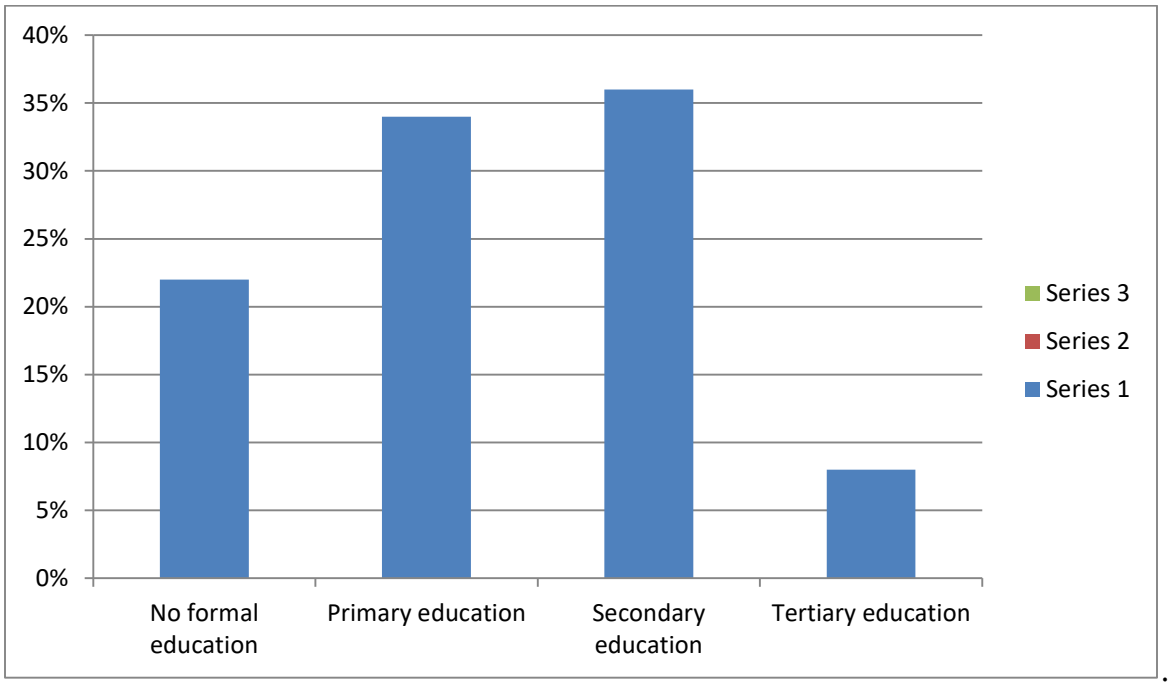


**Figure 3: Educational level of respondents**

*Source: Field Data (2025)*

The results indicate that the majority of respondents (56%) had attained either primary or no formal education, suggesting limited access to formal schooling within the fishing community. Although 36% had secondary education, only a small proportion (8%) had attained tertiary education, which may constrain opportunities for livelihood diversification beyond fishing. This educational profile suggests that low levels of formal education may heighten livelihood vulnerability by limiting access to alternative income sources, financial services, and information on adaptive strategies.

### 4.1.4 Occupation of Respondents

Occupation is a key indicator of livelihood dependence and vulnerability, particularly in communities where income sources are closely tied to natural resources. In small-scale fishing communities, occupational roles determine levels of exposure to environmental risks, income stability, and access to livelihood assets. Examining the occupational distribution of respondents therefore provides insight into the degree of reliance on fishing and related activities at the Kafue Bridge fishing camp.

**Table 3: Occupational of respondents**

| Occupation | Frequency | Percentage (%) |
|---|---|---|
| Small-scale fisher | 46 | 46.0 |
| Fish trader / processor | 28 | 28.0 |
| Fishing-related casual labour | 14 | 14.0 |
| Other non-fishing activities | 12 | 12.0 |
| **Total** | **100** | **100.0** |

*Source: Field Data (2025)*

The findings show that nearly half of the respondents (46%) were directly engaged in small-scale fishing, indicating a high level of dependence on fishing as the primary livelihood activity. A significant proportion (28%) was involved in fish trading and processing, highlighting the importance of post-harvest activities within the fishing economy. The presence of respondents engaged in casual fishing-related labour and non-fishing activities suggests some level of livelihood diversification; however, the dominance of fishing-based occupations indicates continued vulnerability to environmental shocks, seasonal fluctuations, and declining fish stocks.

### 4.1.5 Fishing Experience of Respondents

Fishing experience is an important variable in understanding livelihood vulnerability, as it reflects accumulated skills, local ecological knowledge, and the ability to respond to environmental and economic changes. In inland fishing communities, years of experience often influence fishing efficiency, decision-making, and resilience to shocks such as declining fish stocks or seasonal variability. Analysing fishing experience therefore provides insight into how

long-term engagement in fishing shapes vulnerability and coping capacity at the Kafue Bridge fishing camp.

**Table 4: Fishing experience of respondent**

| Years of Fishing Experience | Frequency | Percentage (%) |
|---|---|---|
| Less than 5 years | 16 | 16.0 |
| 5–10 years | 29 | 29.0 |
| 11–20 years | 34 | 34.0 |
| Above 20 years | 21 | 21.0 |
| **Total** | **100** | **100.0** |

*Source: Field Data (2025)*

The results indicate that the majority of respondents (55%) had more than ten years of fishing experience, suggesting a high level of dependence on fishing as a long-term livelihood. This extensive experience implies strong local knowledge of fishing practices and river conditions; however, prolonged reliance on fishing may also increase vulnerability where alternative livelihood options are limited. Respondents with fewer years of experience may possess greater flexibility to diversify livelihoods, while long-serving fishers may face greater challenges in adapting to declining fish stocks and changing environmental conditions.

## 4.2 Presentation of Findings

This section presents and analyses the findings of the study in line with the specific research objectives. The organisation of results according to the objectives allows for a systematic examination of livelihood vulnerabilities, factors affecting livelihoods, and the socio-economic characteristics and livelihood assets of households at the Kafue Bridge fishing camp. Each objective is addressed separately to ensure clarity and logical flow in the presentation of findings.

For each objective, the section begins with a clear subheading reflecting the focus of the objective, followed by relevant tables summarising respondents' views where applicable. This is then complemented by an in-depth qualitative analysis, drawing on respondents' narratives to explain emerging patterns, key themes, and variations in experiences. Direct quotations from respondents

are incorporated and labelled appropriately to provide voice to participants and to ground the analysis in lived experiences. Each objective concludes with a brief summary highlighting the main findings before transitioning to the next objective.

### 4.2.1 Vulnerabilities and Coping Strategies of Small-Scale Fishing Communities at the Kafue Bridge

This section presents findings related to the first specific objective of the study, which sought to find out the vulnerabilities affecting small-scale fishing communities at the Kafue Bridge fishing camp and the coping strategies adopted by households. The analysis responds directly to the research question on how vulnerabilities affect small-scale fishing communities and the ways in which households attempt to cope with these challenges. Data were drawn from in-depth interviews and focus group discussions, allowing respondents to describe their lived experiences in detail. The findings show that livelihood vulnerability at the Kafue Bridge fishing camp is complex and multidimensional, shaped by environmental, economic, and social factors. These vulnerabilities often interact and reinforce one another, increasing household exposure to risk. As a result, fishing households employ a range of coping strategies, most of which are short-term and survival-oriented. The section begins by outlining the major vulnerabilities reported by respondents before analysing coping responses.

**Table 5: Major livelihood vulnerabilities affecting small scale fishing communities**

| Livelihood Vulnerability | Frequency | Percentage (%) |
|---|---|---|
| Declining fish stocks | 36 | 36.0 |
| Seasonal income instability | 24 | 24.0 |
| Environmental changes (floods/droughts) | 18 | 18.0 |
| Limited access to fishing inputs | 14 | 14.0 |
| Market price fluctuations | 8 | 8.0 |
| **Total** | **100** | **100.0** |

*Source: Field Data (2025)*

The most prominent vulnerability identified by respondents was declining fish stocks, which was reported by over one-third of the participants. Respondents explained that fish catches had reduced

significantly over the years, directly affecting household income and food security. Many attributed this decline to increased fishing pressure, changes in river conditions, and lack of effective regulation. One participant stated, *"In the past, fishing was enough to support a family, but now the fish are few, and we struggle every day"* (Respondent One). This decline forced households to spend more time fishing while earning less, increasing physical exhaustion and economic stress. Reduced catches also limited households' ability to save or reinvest in fishing equipment. As a result, declining fish stocks emerged as a central driver of livelihood vulnerability at the fishing camp.

Seasonal income instability was another major vulnerability affecting fishing households at the Kafue Bridge. Respondents explained that fishing income fluctuated depending on seasons, water levels, and weather conditions, making it difficult to maintain consistent household livelihoods. During periods of low fish availability, many households experienced sharp income declines. One respondent noted, *"There are months when fishing is good, but there are also times when you can go home with nothing"* (Respondent Two). These fluctuations made it difficult for households to plan expenses such as school fees, food purchases, and healthcare. Without alternative income sources, many families became highly vulnerable during lean fishing periods. Seasonal instability therefore heightened financial insecurity and deepened household dependence on fishing.

Environmental changes, including flooding and prolonged dry spells, further intensified livelihood vulnerability within the fishing community. Respondents described how floods damaged fishing gear, displaced households, and disrupted fishing activities. Conversely, low water levels during dry seasons reduced fish availability and restricted fishing areas. One participant explained, *"When the river floods, we lose our nets, and when the water is too low, there are no fish to catch"* (Respondent Three). These environmental challenges were largely beyond the control of fishing households, yet they had direct and immediate impacts on income and food security. Environmental unpredictability also increased uncertainty and anxiety among households that relied solely on fishing. Consequently, environmental changes emerged as a significant stressor affecting livelihood stability.

Limited access to fishing inputs and unstable market prices were additional vulnerabilities reported by respondents. Many households lacked adequate boats, nets, and storage facilities, which

reduced fishing efficiency and income potential. Respondents indicated that high costs prevented them from replacing damaged or outdated equipment. As noted by Respondent Four, *"Without proper nets and boats, even when fish are available, you cannot benefit fully."* In addition, fluctuating market prices for fish affected household earnings, particularly for those selling through middlemen. Low bargaining power often forced fishers to sell at unfavourable prices. These economic constraints further compounded vulnerability and limited opportunities for livelihood improvement.

In response to these vulnerabilities, households adopted various coping strategies aimed at sustaining livelihoods during difficult periods. Common strategies included livelihood diversification into casual labour, small-scale farming, or petty trading, as well as reliance on social networks for financial support. Some households reduced food consumption or delayed important expenditures to manage income shortages. One respondent explained, *"When fishing is bad, we depend on piece work or help from relatives to survive"* (Respondent Five). While these strategies helped households cope temporarily, they were often insufficient to address long-term vulnerability. Most coping mechanisms were reactive rather than proactive, highlighting limited adaptive capacity within the community.

The findings reveal that small-scale fishing communities at the Kafue Bridge fishing camp experience multiple and interconnected livelihood vulnerabilities, with declining fish stocks, seasonal income instability, and environmental changes being the most significant. Although households employ a range of coping strategies, including diversification and reliance on social networks, these responses are largely short-term and inadequate for building long-term resilience. This underscores the need for interventions that enhance sustainable fishing practices, income diversification, and adaptive capacity within the community.

### 4.2.2 Factors Affecting the Livelihoods of Small-Scale Fishing Communities at the Kafue Bridge

This section presents findings related to the second specific objective of the study, which sought to examine the factors affecting the livelihoods of small-scale fishing communities at the Kafue Bridge fishing camp. The analysis responds directly to the research question on why the

livelihoods of fishing households are affected by different factors. Data from interviews and focus group discussions revealed that livelihood outcomes were shaped by a combination of environmental, economic, institutional, and social factors. These factors did not operate in isolation but interacted to influence income stability, resource access, and household wellbeing. Respondents consistently emphasised that their livelihoods were vulnerable to both external shocks and internal structural constraints. Understanding these factors is critical for explaining persistent livelihood insecurity within the fishing community. The section begins by outlining the key factors identified by respondents before analysing their implications.

**Table 6: Factors Affecting Livelihood of Small Scale fishing Communities**

| Livelihood-Affecting Factor | Frequency | Percentage (%) |
|---|---|---|
| Environmental and climate changes | 30 | 30.0 |
| Limited access to markets | 22 | 22.0 |
| Lack of institutional support | 20 | 20.0 |
| High cost of fishing inputs | 16 | 16.0 |
| Population pressure and competition | 12 | 12.0 |
| **Total** | **100** | **100.0** |

*Source: Field Data (2025)*

Environmental and climate-related factors were identified as the most influential determinants of livelihood outcomes within the fishing community. Respondents explained that unpredictable rainfall patterns, floods, and prolonged dry spells disrupted fishing activities and reduced fish availability. These environmental changes affected fishing schedules and increased uncertainty regarding daily catches. One respondent noted, *"Sometimes the weather changes suddenly, and you cannot go fishing even if you need money"* (Respondent Six). Such conditions reduced income reliability and increased household vulnerability. Environmental stress also affected fish breeding patterns, further reducing long-term productivity. As a result, environmental factors were widely perceived as beyond the control of fishing households yet central to their livelihood challenges.

Limited access to markets emerged as another critical factor affecting fishing livelihoods at the Kafue Bridge camp. Respondents reported difficulties accessing reliable and competitive markets for their fish, often relying on middlemen who dictated prices. Poor storage facilities and lack of

cold-chain infrastructure further constrained market access, forcing households to sell fish quickly at low prices. As expressed by Respondent Seven, *"We sell fish cheaply because we have no place to keep it; if you wait, it goes bad."* These market constraints reduced profit margins and discouraged investment in fishing activities. Inadequate transport infrastructure also limited access to urban markets where better prices could be obtained. Consequently, limited market access significantly undermined income stability and livelihood sustainability.

Institutional factors, particularly the lack of government and organisational support, were also highlighted as major constraints. Respondents indicated limited access to extension services, training programmes, and financial assistance related to fishing activities. Many households reported that support programmes rarely reached fishing communities, leaving them without guidance on sustainable practices or alternative livelihood options. One respondent stated, *"We rarely see officers who come to advise us or help improve our fishing"* (Respondent Eight). The absence of institutional support limited awareness of resource management and reduced opportunities for capacity building. This gap also contributed to weak regulation, exacerbating overfishing and resource depletion. Institutional neglect therefore played a significant role in shaping livelihood vulnerability.

Economic factors such as the high cost of fishing inputs further affected livelihood outcomes. Respondents explained that fishing equipment, including nets and boats, was expensive and difficult to replace when damaged. Limited access to credit forced households to operate with inadequate or worn-out equipment, reducing productivity. Respondent Nine explained, *"If your net is torn and you have no money to fix it, your work stops completely."* High input costs discouraged expansion and innovation within fishing activities. These economic constraints disproportionately affected poorer households, reinforcing income inequality within the community. As a result, economic barriers were closely linked to persistent livelihood insecurity.

Population pressure and increased competition for fishing resources also influenced livelihood outcomes at the Kafue Bridge fishing camp. Respondents reported that the growing number of fishers increased competition, leading to reduced individual catches. This pressure intensified overfishing and strained already limited fish stocks. One respondent remarked, *"There are too many people fishing in the same place, and the fish cannot increase"* (Respondent Ten). Increased

competition reduced cooperation among fishers and heightened conflicts over fishing areas. This situation further undermined sustainable resource use and long-term livelihood prospects. Population pressure therefore emerged as a significant social factor affecting fishing livelihoods.

The findings reveal that the livelihoods of small-scale fishing communities at the Kafue Bridge fishing camp are affected by multiple interacting factors, including environmental changes, market limitations, institutional gaps, economic constraints, and population pressure. These factors collectively reduce income stability, limit resource access, and undermine long-term livelihood sustainability. Addressing livelihood vulnerability in the fishing community therefore requires integrated interventions that consider environmental management, market development, institutional support, and economic empowerment.

### 4.2.3 Socio-Economic Characteristics and Livelihood Assets of Households in the Kafue Bridge Fishing Camp

This section presents findings related to the third specific objective of the study, which sought to examine the socio-economic characteristics and livelihood assets of households in the Kafue Bridge fishing camp. The objective responds to the research question on how household characteristics and livelihood assets influence the wellbeing and resilience of small-scale fishing communities. Analysis focused on human, physical, financial, social, and natural assets, as well as key socio-economic attributes such as household size, education, and income sources. Findings indicate that household livelihoods were shaped by uneven access to assets and varying socio-economic capacities. These differences influenced households' ability to cope with shocks and sustain fishing-based livelihoods. The section begins with an overview of key livelihood assets before providing an in-depth qualitative analysis of emerging patterns.

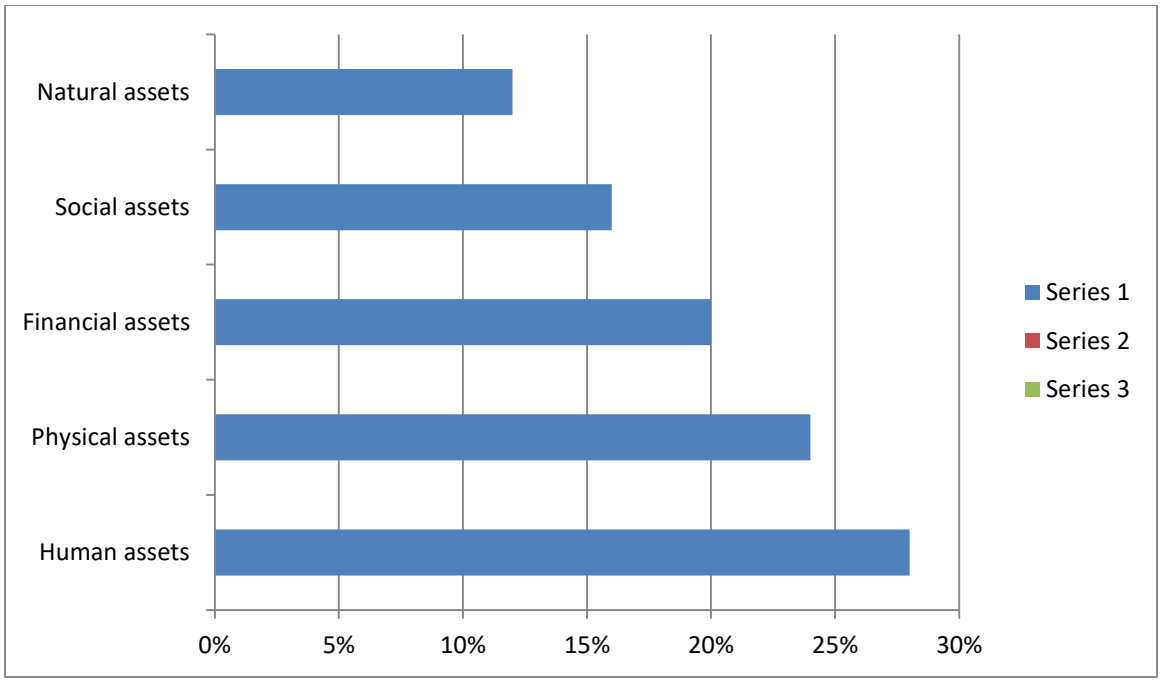


**Figure 4: Households Livelihood Assets among Small Scale Fishing communities.**

*Source: Field Data (2025)*

Human assets, particularly education, skills, and fishing experience, played a significant role in shaping household livelihood outcomes. Respondents with higher levels of education or longer fishing experience reported better decision-making regarding fishing practices and income use. Skills acquired through experience enabled some households to diversify their livelihood activities beyond fishing. Respondent Eleven stated, *"Because I have been fishing for many years, I know when and where to fish and when to stop."* Households with limited education faced challenges in adopting improved fishing methods or accessing alternative employment. Low literacy levels also restricted engagement with formal institutions and training opportunities. As a result, disparities in human assets contributed to unequal livelihood resilience across households.

Physical assets, including fishing equipment, housing quality, and storage facilities, were identified as critical determinants of livelihood security. Respondents explained that ownership of boats, nets, and drying racks enhanced productivity and income generation. Conversely, households lacking adequate equipment experienced frequent interruptions in fishing activities. Respondent Twelve noted, *"If you don't have your own boat, you depend on others, and sometimes you miss work."* Poor housing conditions further exposed households to health risks and

environmental hazards. Limited storage facilities increased post-harvest losses, reducing overall earnings. Physical asset ownership therefore directly influenced livelihood stability and economic performance.

Financial assets were found to be limited among most households in the fishing camp. Respondents reported low and irregular incomes, with minimal savings to cushion against shocks such as illness or poor fishing seasons. Access to formal credit was rare, forcing households to rely on informal borrowing at high interest rates. Respondent Thirteen explained, *"When fishing is bad, we borrow money, but paying it back becomes very hard."* The absence of financial buffers increased vulnerability and reduced the ability to invest in better fishing equipment. Income dependency on fishing alone further heightened financial insecurity. Financial asset constraints thus reinforced cycles of poverty within the community.

Social assets, including family networks, community groups, and mutual support systems, played an important role in sustaining livelihoods. Respondents indicated that social relationships facilitated access to shared equipment, labour exchange, and emergency support. Respondent Fourteen stated, *"We help each other with food or money when someone is struggling."* Strong social ties improved coping capacity during difficult periods. However, respondents also noted that increased competition for fishing resources sometimes weakened cooperation. Social capital therefore varied across households, influencing their resilience to livelihood shocks. Despite limitations, social networks remained a key informal safety net within the fishing camp.

Natural assets, particularly access to fishing grounds and fish stocks, formed the foundation of household livelihoods. Respondents emphasised that proximity to the river enabled daily fishing activities and income generation. However, declining fish stocks and environmental degradation threatened the sustainability of this natural asset base. Respondent Fifteen remarked, *"The river is our life, but the fish are becoming fewer every year."* Overdependence on natural resources without adequate conservation measures increased long-term vulnerability. Limited alternative natural resources further constrained livelihood diversification. As a result, natural asset degradation posed serious risks to household livelihood sustainability.

The findings indicate that socio-economic characteristics and livelihood assets significantly influence the wellbeing and resilience of households in the Kafue Bridge fishing camp. Unequal access to human, physical, financial, social, and natural assets shaped households' ability to sustain fishing livelihoods and cope with shocks. Strengthening livelihood assets and promoting diversification are therefore essential for enhancing resilience among small-scale fishing communities.

## 4.3 Discussion of Findings

This section discusses the findings of the study in relation to existing literature and the theoretical frameworks that guided the research. The discussion goes beyond simple description by critically interpreting the results in light of global, regional, and local empirical studies on livelihood vulnerabilities in small-scale inland fishing communities. The purpose is to establish how the findings from the Kafue Bridge fishing camp confirm, contradict, or extend existing knowledge. Each discussion subsection is organised according to the specific objectives of the study, allowing for a structured and coherent analysis. The Sustainable Livelihoods Framework and the Vulnerability and Resilience Theory are applied to explain how vulnerabilities, livelihood assets, and external shocks interact to shape household outcomes. Through this approach, the discussion situates the study's findings within broader academic debates while highlighting context-specific realities of small-scale fishing communities in Zambia.

### 4.3.1 Vulnerabilities and Coping Strategies of Small-Scale Fishing Communities at Kafue Bridge

The findings revealed that small-scale fishing households at the Kafue Bridge fishing camp experienced multiple and interconnected livelihood vulnerabilities. Environmental stressors, particularly fluctuating water levels of the Kafue River, declining fish stocks, and seasonal flooding, emerged as dominant challenges affecting fishing productivity and household income. These vulnerabilities directly translated into food insecurity, unstable earnings, and increased uncertainty in planning daily livelihood activities. Respondents also highlighted economic pressures such as rising costs of fishing gear, fuel, and food commodities, which further constrained household resilience. Social vulnerabilities, including limited access to credit facilities

and weak institutional support, compounded these challenges. As a result, households were often forced to rely on short-term coping strategies that prioritised survival over long-term sustainability. These findings demonstrate that vulnerability at Kafue Bridge was not caused by a single factor but rather by the cumulative interaction of environmental, economic, and social stressors.

When compared with global literature, the study's findings are consistent with evidence from inland small-scale fishing communities in Asia and Latin America, where environmental variability and market instability have been identified as key drivers of livelihood vulnerability. Studies conducted in regions such as Southeast Asia have shown that declining fish stocks and climate-related shocks significantly reduce income stability among small-scale fishers, pushing households toward informal and sometimes unsustainable coping mechanisms. Similar to the findings at Kafue Bridge, global studies have reported coping strategies such as increased fishing effort, borrowing from informal lenders, and diversification into low-paying casual labour. These parallels suggest that the vulnerabilities observed in the Kafue Bridge fishing camp reflect broader structural challenges facing inland fisheries globally. However, the limited availability of alternative livelihood options at Kafue Bridge appeared to intensify the severity of vulnerability compared to some global contexts where diversification opportunities are more accessible.

At the regional level within Africa, the findings align closely with studies conducted in countries such as Malawi, Uganda, and Tanzania. Research on inland fishing communities along Lake Malawi and Lake Victoria has documented similar patterns of declining fish stocks, climate variability, and limited institutional support as major sources of vulnerability. African studies further emphasise that overdependence on fishing as a primary livelihood, combined with weak governance and enforcement of fisheries regulations, increases household exposure to shocks. In the Kafue Bridge fishing camp, respondents echoed these regional experiences by noting that inadequate regulation and limited extension services contributed to resource depletion and livelihood insecurity. The convergence of findings suggests that vulnerability among African inland fishing communities is shaped by shared ecological and governance challenges, although local contexts determine the intensity and form of these vulnerabilities.

At the national level, the findings correspond with existing Zambian studies on small-scale fisheries along major river systems and reservoirs. Previous research in Zambia has highlighted that small-scale fishers often operate within informal markets, lack access to financial services, and receive minimal institutional support. The experiences of Kafue Bridge households reflected these national trends, particularly regarding dependence on informal credit and social networks during periods of stress. Respondents reported that assistance from government agencies and non-governmental organisations was irregular and insufficient to address persistent livelihood risks. This reinforces national-level evidence that policy implementation gaps continue to undermine the resilience of small-scale fishing communities. Consequently, the vulnerabilities identified at Kafue Bridge can be understood as part of a wider national pattern affecting inland fisheries in Zambia.

Applying the Sustainable Livelihoods Framework provides deeper insight into how these vulnerabilities affected household outcomes. The findings showed that natural capital, particularly access to fish resources, was increasingly unstable due to environmental change and overexploitation. Financial capital was limited, as most households relied on daily fish sales with little capacity for savings. Physical capital, such as boats and fishing gear, was often inadequate or poorly maintained, increasing operational risks. Human capital constraints, including limited education and technical skills, reduced households' ability to diversify livelihoods. Social capital played a crucial role in coping, as households relied on kinship networks for borrowing food or money, although this support was often stretched during widespread shocks. Overall, weak access to livelihood assets heightened vulnerability and constrained adaptive capacity.

The Vulnerability and Resilience Theory further explains the coping strategies adopted by fishing households at Kafue Bridge. According to the theory, vulnerability increases when exposure to shocks is high and adaptive capacity is low, a situation clearly reflected in the study findings. Households were highly exposed to environmental and economic shocks but possessed limited resources to absorb or recover from these disturbances. Coping strategies such as reducing meal frequency, increasing fishing effort, engaging in piecework, or temporarily migrating were indicative of short-term responses rather than transformative adaptation. While these strategies helped households manage immediate stress, they often increased long-term vulnerability by depleting assets and undermining resource sustainability. The theory thus highlights the need for interventions that strengthen resilience rather than merely supporting short-term coping.

### 4.3.2 Factors Affecting the Livelihoods of Small-Scale Fishing Communities at Kafue Bridge

The findings under Objective Two revealed that the livelihoods of small-scale fishing communities at the Kafue Bridge fishing camp were affected by a complex interaction of environmental, economic, institutional, and socio-cultural factors. Environmental conditions such as seasonal flooding, reduced water levels, and water pollution were consistently identified as key determinants of fishing productivity. These factors directly influenced fish availability, catch volumes, and income stability. Economic pressures, including fluctuating fish prices, high costs of fishing inputs, and limited access to formal credit, further undermined livelihood security. Institutional factors, particularly weak fisheries management, limited extension services, and inconsistent enforcement of fishing regulations, also played a significant role. In addition, social factors such as household size, dependency ratios, and limited alternative livelihood options intensified livelihood stress. Collectively, these findings indicate that livelihoods at Kafue Bridge were shaped by both external shocks and structural constraints within the fisheries sector.

In comparison with global literature, the factors affecting livelihoods at Kafue Bridge mirror those documented in inland fishing communities in Asia and South America. Global studies have consistently shown that environmental degradation, climate variability, and market instability significantly influence the sustainability of small-scale fisheries. Similar to the findings of this study, global research highlights that small-scale fishers often operate within volatile markets where price fluctuations and limited bargaining power reduce income security. The lack of affordable credit and insurance mechanisms has also been widely reported as a constraint on livelihood investment and growth. These global parallels suggest that the challenges faced by Kafue Bridge fishing households are not isolated but reflect systemic issues affecting small-scale fisheries worldwide. However, the limited presence of safety nets at Kafue Bridge appeared to exacerbate vulnerability compared to some global contexts where institutional support is stronger.

At the regional level within Africa, the findings align with studies conducted among inland fishing communities in countries such as Malawi, Kenya, Tanzania, and Uganda. African literature emphasises that environmental change, weak governance, and poverty interact to constrain livelihood opportunities in fishing-dependent households. Similar to the Kafue Bridge case, studies

across the region have reported that overdependence on fishing, coupled with limited livelihood diversification, increases exposure to shocks. Institutional weaknesses, including inadequate enforcement of fisheries regulations and limited access to extension services, are also common regional challenges. The consistency of these findings indicates that African inland fishing communities share structural constraints that limit livelihood sustainability. Nonetheless, local socio-economic conditions and policy environments influence how these factors manifest in specific contexts such as Kafue Bridge.

At the national level, the findings correspond closely with Zambian studies on small-scale inland fisheries. Research conducted along major rivers and reservoirs in Zambia has identified environmental variability, poor infrastructure, and limited market access as key livelihood constraints. The experiences of Kafue Bridge fishing households reflected these national patterns, particularly regarding reliance on informal markets and vulnerability to price fluctuations. Respondents' accounts of limited institutional support further reinforced national evidence of gaps between fisheries policies and their implementation at community level. These findings suggest that livelihood challenges at Kafue Bridge are embedded within broader national development and governance issues affecting the fisheries sector. Addressing these challenges therefore requires interventions that go beyond community-level actions to include policy and institutional reforms.

The Sustainable Livelihoods Framework provides a useful lens for understanding how these factors influenced livelihood outcomes at Kafue Bridge. Environmental conditions directly affected natural capital, particularly access to fish resources. Economic and market-related factors constrained financial capital, limiting households' ability to invest in better equipment or diversify income sources. Weak infrastructure and inadequate fishing gear reflected constraints in physical capital. Human capital limitations, such as low levels of formal education and limited technical training, reduced adaptive capacity. Social capital, while important for mutual support, was often insufficient to compensate for widespread shocks affecting the entire community. The framework thus illustrates how multiple forms of capital interacted to shape livelihood vulnerability.

From the perspective of Vulnerability and Resilience Theory, the factors affecting livelihoods at Kafue Bridge increased both exposure and sensitivity to shocks while limiting adaptive capacity. Environmental variability and market instability heightened exposure, while poverty and limited

asset ownership increased sensitivity. Institutional weaknesses reduced households' ability to anticipate, cope with, and recover from shocks. As a result, resilience remained low, and households struggled to transition from coping to adaptive strategies. This theoretical perspective underscores the importance of strengthening adaptive capacity through improved access to resources, information, and institutional support. Without such measures, livelihood vulnerability is likely to persist.

### 4.3.3 Socio-Economic Characteristics and Livelihood Assets of Households at Kafue Bridge

The findings under Objective Three showed that the socio-economic characteristics and livelihood assets of households at the Kafue Bridge fishing camp played a decisive role in shaping livelihood vulnerability and resilience. Key characteristics such as age, education level, household size, fishing experience, and marital status influenced access to resources and decision-making capacity. Households with larger family sizes faced higher dependency ratios, which increased pressure on limited income sources. Low levels of formal education constrained opportunities for livelihood diversification and limited engagement with alternative income-generating activities. Fishing experience contributed positively to skills and local ecological knowledge, yet experience alone did not guarantee livelihood security in the face of declining fish stocks. Asset ownership, including boats, nets, and housing quality, varied significantly among households, influencing their ability to cope with shocks. These findings highlight the importance of socio-economic differentiation in understanding livelihood outcomes within fishing communities.

In relation to global literature, the findings are consistent with studies on small-scale fishing communities in Asia and Latin America, which emphasise that household characteristics and asset ownership significantly determine livelihood resilience. Global research has shown that education enhances adaptive capacity by enabling households to diversify income sources and adopt improved livelihood strategies. Similarly, asset-rich households are better positioned to absorb shocks and recover from livelihood disruptions. The Kafue Bridge findings reflect these global patterns, particularly regarding the advantages enjoyed by households with better fishing equipment and supplementary income sources. However, unlike some global contexts where social protection mechanisms exist, households at Kafue Bridge relied largely on personal assets and

informal networks. This lack of external support heightened the influence of household characteristics on livelihood outcomes.

At the regional African level, the findings align with studies from inland fishing communities in Malawi, Uganda, and Tanzania, where socio-economic characteristics strongly influence vulnerability. African literature indicates that households with limited education, large family sizes, and low asset ownership are more susceptible to livelihood shocks. Similar to the Kafue Bridge case, regional studies report that women and youth often have limited access to productive assets, which constrains their participation in profitable livelihood activities. Social norms and power relations further shape access to resources within households and communities. These regional comparisons suggest that the socio-economic challenges observed at Kafue Bridge are part of broader structural patterns affecting inland fishing communities across Africa. Nonetheless, local context determines how these factors interact and the extent to which households can respond to shocks.

At the national level, the findings correspond with Zambian studies that highlight the role of household characteristics and livelihood assets in shaping vulnerability among small-scale fishers. National research has shown that limited education, poor housing conditions, and inadequate fishing equipment contribute to persistent poverty in fishing communities. The Kafue Bridge findings reinforce this evidence, particularly regarding the importance of asset ownership in determining income stability. Respondents with access to boats and efficient fishing gear reported relatively better livelihood outcomes than those relying on shared or outdated equipment. This pattern underscores national concerns about inequality within fishing communities and the uneven distribution of livelihood assets. It also reflects broader rural development challenges in Zambia, where access to productive assets remains limited for many households.

The Sustainable Livelihoods Framework provides a comprehensive explanation of how socio-economic characteristics and livelihood assets shaped household outcomes at Kafue Bridge. Human capital, including education, skills, and health, influenced households' ability to diversify livelihoods and adapt to change. Natural capital, particularly access to fishing grounds and fish resources, remained central to livelihood activities. Financial capital was constrained by low and irregular income, limiting savings and investment. Physical capital, such as boats, nets, and

housing, determined fishing efficiency and safety. Social capital played a supportive role through kinship networks and mutual assistance, although its effectiveness declined during widespread shocks. The framework demonstrates that imbalances across livelihood assets increased vulnerability and restricted adaptive capacity.

From the perspective of Vulnerability and Resilience Theory, socio-economic characteristics influenced both sensitivity and adaptive capacity within households. Households with limited assets and high dependency ratios were more sensitive to environmental and economic shocks. Low levels of education and limited access to information reduced the ability to anticipate and respond effectively to livelihood risks. Conversely, households with greater experience, stronger social networks, and better asset ownership exhibited higher resilience, enabling them to recover more quickly from disruptions. The theory highlights that resilience is not evenly distributed within communities but shaped by underlying socio-economic conditions. Strengthening resilience therefore requires targeted interventions that address household-level inequalities.

# CHAPTER FIVE

# CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE STUDIES

## 5.0 Introduction

This chapter presents the conclusions, recommendations, and suggestions for future studies drawn from the findings discussed in Chapter Four. It synthesises the major results of the study in relation to the research objectives and highlights their implications for theory, practice, and policy on livelihood vulnerabilities in small-scale inland fishing communities. Based on evidence from the Kafue Bridge fishing camp, the chapter proposes actionable recommendations aimed at enhancing livelihood resilience and reducing vulnerability. It also outlines areas where further research is

required to strengthen knowledge and inform sustainable development interventions within the fisheries sector.

## 5.1 Conclusions

The study concluded that livelihood vulnerabilities among small-scale fishing communities at the Kafue Bridge fishing camp were multidimensional and deeply interconnected. Environmental factors such as declining fish stocks, fluctuating river water levels, and seasonal flooding emerged as primary sources of livelihood insecurity. These environmental stressors directly affected fishing productivity, household income, and food availability, increasing uncertainty in daily livelihood activities. The findings demonstrated that vulnerability was not only ecological but also reinforced by economic and social constraints. Limited access to financial resources and weak institutional support further intensified household exposure to shocks. As a result, fishing households frequently adopted short-term coping strategies that prioritised immediate survival over long-term sustainability. This conclusion highlights the complex nature of vulnerability within inland small-scale fishing communities.

The study further concluded that several interrelated factors significantly affected the livelihoods of the Kafue Bridge fishing community. Economic pressures, including fluctuating fish prices, high costs of fishing inputs, and reliance on informal markets, reduced income stability and constrained livelihood growth. Institutional challenges such as inadequate extension services, weak enforcement of fishing regulations, and limited policy implementation capacity also played a critical role. Social factors, including household size, dependency ratios, and limited alternative livelihood opportunities, compounded these challenges. The interaction of these factors created a cycle of vulnerability that limited households' ability to recover from shocks. This finding underscores the importance of addressing livelihood challenges through integrated approaches rather than isolated interventions. It also demonstrates that improving livelihoods requires attention to both structural and contextual factors.

The study also concluded that socio-economic characteristics and livelihood assets strongly influenced household vulnerability and resilience at the Kafue Bridge fishing camp. Households with higher levels of education, greater fishing experience, and better access to productive assets

such as boats and fishing gear exhibited relatively stronger livelihood outcomes. In contrast, households with limited assets, large family sizes, and low educational attainment were more vulnerable to environmental and economic shocks. Asset ownership was particularly important in determining the capacity to cope with and recover from livelihood disturbances. These findings revealed significant inequalities within the fishing community, where differences in asset access translated into unequal livelihood outcomes. The conclusion emphasises the need to address socio-economic disparities when designing interventions for fishing communities. Strengthening asset access is therefore essential for enhancing livelihood resilience.

From a theoretical perspective, the study concluded that the Sustainable Livelihoods Framework provided a robust lens for understanding livelihood vulnerability in inland fishing communities. The framework effectively illustrated how constraints in natural, financial, physical, human, and social capital interacted to shape livelihood outcomes. Limited access to these livelihood assets reduced adaptive capacity and increased sensitivity to shocks. Similarly, the Vulnerability and Resilience Theory helped explain why coping strategies adopted by households were largely short-term and insufficient for long-term resilience. High exposure to environmental and economic risks, combined with low adaptive capacity, resulted in persistent vulnerability. These theoretical insights confirm the relevance of integrating asset-based and resilience-oriented approaches in livelihood analysis. The study therefore contributes to the application of these theories within the Zambian inland fisheries context.

## 5.2 Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed to address livelihood vulnerabilities and enhance the resilience of small-scale fishing communities at the Kafue Bridge fishing camp. These recommendations are grouped into policy-level, community-level, institutional, capacity-building, and research-oriented actions to ensure a comprehensive and practical response to the challenges identified.

1. **Policy-Level Recommendation**
   Government agencies responsible for fisheries and rural development should strengthen the implementation of fisheries policies through improved enforcement and regular

monitoring of fishing activities. Clear and consistent regulation of fishing practices can help address overfishing and resource depletion, thereby stabilising fish stocks. Policy frameworks should also integrate climate adaptation strategies to support fishing communities facing environmental variability. Such measures would contribute to sustainable resource management and long-term livelihood security.

2. **Community-Level Recommendation**
   Fishing communities at Kafue Bridge should be supported to organise and strengthen local fisher associations or cooperatives. These groups can enhance collective bargaining power, improve access to markets, and facilitate shared ownership of fishing equipment. Community-based organisations can also promote peer learning on sustainable fishing practices and resource conservation. Strengthening community structures would enhance social capital and improve collective resilience.
3. **Institutional and Organisational Recommendation**
   Relevant institutions, including extension services and non-governmental organisations, should increase their presence and engagement within the fishing camp. Regular training, advisory services, and technical support can improve fishing efficiency and encourage sustainable practices. Institutions should also facilitate access to financial services such as microcredit and savings schemes tailored to small-scale fishers. Enhanced institutional support would reduce dependence on informal coping mechanisms.
4. **Livelihood Diversification and Capacity-Building Recommendation**
   Programmes aimed at promoting alternative livelihood activities should be introduced to reduce overdependence on fishing. Skills training in areas such as aquaculture, small-scale agriculture, or petty trading can provide supplementary income sources. Education and skills development initiatives should target both youth and women to promote inclusive livelihood opportunities. Diversification would reduce household exposure to fishing-related shocks and improve income stability.
5. **Infrastructure and Asset Development Recommendation**
   Investment in basic infrastructure such as storage facilities, improved fishing gear, and safe landing sites should be prioritised. Improved infrastructure can reduce post-harvest losses, enhance product quality, and increase market value. Support for asset acquisition through subsidised equipment or cooperative ownership schemes would strengthen

productive capacity. Such investments would directly improve livelihood outcomes for fishing households.

## 5.3 Suggestions for Future Studies

1. **Future research could explore** the long-term impacts of climate change on inland small-scale fisheries by examining seasonal and inter-annual variations in fish stocks and fishing livelihoods along the Kafue River. Such studies would provide deeper insight into climate adaptation needs for fishing communities.
2. **Further studies should examine** gender dynamics within small-scale fishing communities, particularly focusing on women's roles, access to livelihood assets, and participation in decision-making processes. This would help inform gender-responsive policies and interventions within the fisheries sector.
3. **A comparative study could be conducted** between different inland fishing camps in Zambia to assess variations in livelihood vulnerabilities and coping strategies across ecological and socio-economic contexts. Comparative research would enhance generalisability and inform location-specific policy responses.

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