

**THE COSTS AND BENEFITS OF CARBON MARKET PROJECTS ON LOCAL COMMUNITIES. PERCEPTIONS FROM THE LUANGWA COMMUNITY FOREST PROJECT IN MPANSHYA CHIEFDOM RUFUNSA DISTRICT, ZAMBIA.**

**By**

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**A Dissertation submitted to the University of Zambia in partial fulfilment of the requirements for the award of the degree of Master of Science in Environmental and Natural Resource Management.**

**The University of Zambia**

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## **DECLARATION**

I, Mubiana Mushimbei, declare that this dissertation represents the culmination of my original research efforts and has not been presented for any degree or evaluation at any other institution. The contents of this dissertation are entirely my own, and any data, images, graphs, or information derived from other sources are explicitly acknowledged. Unless stated otherwise through proper citation or acknowledgment, every aspect of this work is a reflection of my contribution and scholarly dedication.

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**CERTIFICATE OF APPROVAL FORM**

This Dissertation of the costs and benefits of hosting emerging carbon market projects on local communities in Zambia has been approved as partial fulfilment for the award of Masters of Science in Environment and Natural Resource Management by The University of Zambia.

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## **ABSTRACT**

Carbon trading has emerged as a leading solution to reduce greenhouse gas emissions, combat climate change, and deliver significant environmental, economic and social benefits for communities in developing countries. However, there are concerns about how it is being implemented and whether it is delivering meaningful benefits to host communities in developing countries. This study examined the costs and benefits of carbon trading projects in Rufunsa district on the local communities using the Luangwa community forest project (LCFP) as a case. The study sought to (i) determine the roles of different local actors in the Luangwa Community Forests Carbon Project on local communities and (ii) examine local communities' experiences of the costs of the Luangwa community forests carbon project in Rufunsa district (iii) examine local communities' experiences of the benefits of the Luangwa community forests project in Rufunsa district. The study used a mixed-methods research approach and case study research design, embracing an integrative thinking mindset that allows for adaptive research practices that facilitate deeper understanding from multiple perspectives. A total of 219 randomly-selected respondents' size and 8 purposively-sampled key informants participated in the study. Using questionnaires, interviews, observations, focus group discussions, and desktop reviews, information was collected and analysed using thematic analysis, and descriptive and inferential statistics for qualitative and quantitative data, respectively. The study revealed that actors' roles in the Luangwa community forests carbon project are clearly defined except for government actors. In regard to successes, the project has delivered various benefits which includes; employment, infrastructure like boreholes and schools, and contributed to forest conservation and capacity-building to the host community. The costs of the project however, negate these benefits. These costs include but are not limited to erosion of social cohesion, social inequality, loss of forest resource control, limited use of non-forest timber products for fear of honorably forest officers, and exploitation by project developers through the unfair benefit-sharing mechanism. To address this inequality inherent in market mechanisms, the government should establish and enforce laws/regulations that will ensure a transparent and fair benefit-sharing mechanism.

Keywords: non-timber products, exploitation, benefit sharing mechanism

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## TABLE OF CONTENTS

<b>DECLARATION</b> .....	i
<b>CERTIFICATE OF APPROVAL FORM</b> .....	ii
<b>ABSTRACT</b> .....	iii
<b>ACKNOWLEDGEMENTS</b> .....	iv
<b>LIST OF FIGURES</b> .....	viii
<b>LIST OF TABLES</b> .....	ix
<b>LIST OF ABBREVIATIONS AND ACRONYM</b> .....	x
<b>CHAPTER ONE</b> .....	1
<b>1.1 Introduction</b> .....	1
<b>1.2 Background</b> .....	1
<b>1.2 Problem Statement</b> .....	4
<b>1.3 Aim</b> .....	5
<b>1.4 Specific Objectives</b> .....	5
<b>1.5 Research Questions</b> .....	5
<b>1.6 Significance of the Study</b> .....	6
<b>1.7 Dissertation Structure</b> .....	6
<b>CHAPTER TWO: LITERATURE REVIEW</b> .....	8
<b>2.1 Introduction</b> .....	8
<b>2.2 Conceptual framework</b> .....	8
<b>2.3 Carbon trading: The historical perspective</b> .....	12
<b>2.4 Types of carbon markets</b> .....	14
<b>2.5 Voluntary carbon trading actors and their roles</b> .....	15
2.5.1 Project owners.....	15
2.5.2 Third-party auditors .....	16
2.5.3 Retail providers.....	16
2.5.4 Carbon credit buyers .....	17
<b>2.6 Carbon trading benefits to local communities</b> .....	18
<b>2.7 Carbon trading costs/losses to local Communities</b> .....	20
<b>2.8 Maximising benefits and minimising costs of forest carbon projects</b> .....	22
<b>2.9 Voluntary standards in carbon markets</b> .....	23
<b>2.10 Voluntary standards and the challenges of social safeguards</b> .....	23
<b>2.11 Limitations of social safeguards and paternalistic approaches</b> .....	24
<b>2.12 Toward rights-responsive approaches</b> .....	24
<b>2.13 Forest carbon projects: The Zambian context</b> .....	25

<b>2.14 Summary of Literature and Research Gaps</b> .....	29
<b>CHAPTER THREE: DESCRIPTION OF THE STUDY AREA</b> .....	31
<b>3.1. Introduction</b> .....	31
<b>3.2. Selection of the study area</b> .....	31
<b>3.3. Description of the Study Area</b> .....	31
<b>CHAPTER FOUR: METHODOLOGY</b> .....	34
<b>4.1 Introduction</b> .....	34
<b>4.2 Philosophical Orientation</b> .....	34
<b>4.3 Research approaches</b> .....	35
<b>4.4 Research design</b> .....	35
<b>4.5 Sampling design</b> .....	36
<b>4.6 Data collection and procedure</b> .....	37
<b>4.7 Primary data collection</b> .....	37
<b>4.8 Structured interviews</b> .....	37
<b>4.9 Semi-structured interviews</b> .....	38
<b>4.10 Focus group discussions</b> .....	38
<b>4.11 Secondary data collection</b> .....	38
<b>4.12 Data analysis</b> .....	39
<b>4.13 Validity and reliability</b> .....	39
<b>4.14 Ethical issues</b> .....	40
<b>CHAPTER FIVE: PRESENTATION OF FINDINGS</b> .....	41
<b>5.1 Introduction</b> .....	41
<b>5.2 Social demographic characteristics</b> .....	41
5.2.1 Sex of respondents .....	41
5.2.2 Age of respondents.....	42
5.2.3 Education level of respondents .....	42
5.2.4 Period of respondents' residence .....	43
<b>5.3 Actors Involved in the Luangwa Community Forest Project (LCFP)</b> .....	44
5.3.1 Biocarbon Partners (BCP).....	44
5.3.2 Forestry Department (FD).....	45
5.3.3 Department of National Parks and Wildlife (DNPW) .....	46
5.3.4 Chiefdom traditional authorities .....	47
5.3.5 Local authority .....	47
5.3.6 Community forest management groups (CFMGs).....	48

5.3.7 Community Members .....	48
<b>5.4 Community Costs and Benefits of the Luangwa Community Forest Project .....</b>	<b>49</b>
5.4.1 Perceived Costs/Losses of LCFP by the community .....	49
5.4.2 Benefits of LCF Project to Community Members .....	52
5.2.3 Summary of distribution of Conservation Fees (Gross Sales) by Project Actors .....	56
5.4.3 Types of community benefits realized from LCF project.....	56
5.4.4 Community perception of the fairness of the distribution of benefits.....	59
5.5 Maximising Benefits and Minimising Costs of the LCFP .....	62
<b>5.6 Community commitment to LCFP in Mpanshya chieftdom .....</b>	<b>66</b>
5.6.1 Relationship between Sex and commitment to LCFP.....	66
<b>5.7 Reason for wishing to continue with the project .....</b>	<b>68</b>
<b>CHAPTER 6: DISCUSSION OF RESULTS.....</b>	<b>71</b>
<b>6.1 Introduction.....</b>	<b>71</b>
<b>6.2 Roles of different local actors in the Luangwa community forest project .....</b>	<b>71</b>
<b>6.3 Community costs of the Luangwa Community Forest Carbon Project.....</b>	<b>72</b>
<b>6.4 Community Benefits of the Luangwa Community Forest Carbon Project .....</b>	<b>73</b>
<b>6.5 Maximising Benefits and Minimising Costs of Forest Carbon Projects .....</b>	<b>76</b>
<b>6.6 Implications of policy.....</b>	<b>77</b>
<b>CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS .....</b>	<b>79</b>
<b>7.1. Introduction.....</b>	<b>79</b>
<b>7.2 Conclusion .....</b>	<b>79</b>
<b>7.3 Recommendations .....</b>	<b>80</b>
<b>REFERENCES.....</b>	<b>81</b>
<b>APPENDICES .....</b>	<b>95</b>
<b>Appendix I: Questionnaire.....</b>	<b>95</b>
<b>Appendix II: Interview Guide for Biocarbon Partners.....</b>	<b>100</b>
<b>Appendix III: Interview Guide for Traditional Leaders.....</b>	<b>101</b>
<b>Appendix IV: Interview Guide for the Ministry of Green Economy and Environment .....</b>	<b>102</b>
<b>Appendix V: Interview guide for Carbon Forest expert .....</b>	<b>103</b>
<b>Appendix VI: Focus Group Discussion Guide Community members (FGDs).....</b>	<b>104</b>
<b>Appendix VII: Ethical Clearance .....</b>	<b>105</b>

## LIST OF FIGURES

Figure 2.1: Coastal carbon impact framework.....	10
Figure 2.2: Summary of Voluntary Carbon Trading Actors and their Roles.....	18
Figure 2.3: COMACO Landscape Management Project sites.....	28
Figure 2.4: LZRP and LCFP Sites.....	30
Figure 3.1: Biocarbon Partners Sites.....	34
Figure 5.1: Sex Distribution of Respondents.....	42
Figure 5.2: Age Distribution of Respondents.....	43
Figure 5.3: Participants' Years Lived in the Project Area.....	44
Figure 5.4: Actors Involved in the Management of LCFP in Mpanshya chiefdom.....	45
Figure 5.5: Community Perceived Costs/Losses of LCF Project.....	51
Figure 5.6: Summary of the benefit-sharing mechanism in the LCFP.....	55
Figure 5.7: Community Perception of the Fairness of the Distribution of Benefits.....	61
Figure 5.8: Communities' Commitment to LCF Project.....	66
Figure 5.9: Reason for wishing to continue with the project.....	69
Figure 5.10: Reasons for wishing to return to old ways.....	70

## LIST OF TABLES

Table 4.1: Number of interviewees and the stakeholder groups to which they belong.....	38
Table 5.1: Education levels of Respondents.....	44
Table 5.3: LCFP Benefit Sharing Mechanism: Mpanshya CFMG.....	52
Table 5.4: Allocation of community livelihood project funds (CLPF) (27% of Gross sale) ....	53
Table 5.5: Community allocation of the gross sales and net profit of carbon fees (22%) .....	55
Table 5.6: Types of Benefits Accessed by Gender.....	58
Table 5.7: Accountability and equitable benefit distribution efforts in the LCFP.....	62
Table 5.13: Sex versus Commitment to LCFP.....	67
Table 5.14: Chi square test and nominal association sex versus commitment to LCFP.....	67

## **LIST OF ABBREVIATIONS AND ACRONYM**

AAUs	Assigned amount units
ACR	American Carbon Registry
BCP	BioCarbon Partners
CAR	Climate Action Reserve
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CA	Cooperative approaches
CCB	Community and biodiversity standards
TCC MIT	Climate Change Committee for Mitigation
CFMG	Community Forest Management Group
CRB	Community Resources Board
COMACO	Common Market for Conservation
CLMP	COMACO Landscape Management Project
COP26	United Nations Climate Change Conference of Parties
CCIF	Coastal Carbon Impacts Framework
DNPW	Department of National Parks and Wildlife
EPB	Environmental Project Brief
ERUs	Emissions reduction units
EU ETS	European Union’s Emissions Trading Scheme
FD	Forestry Department
FGDs	Focus group discussions
FPIC	Free, prior, and informed consent
GHG	Green House Gases
ITMOs	Internationally transferred mitigation outcomes
JI	Joint Implementation
LCFP	Luangwa Community Forest Project
LZRP	Lower Zambezi REDD+ Project
MtCO <sub>2</sub> e	Million tons of Carbon dioxide or equivalent
MRV	Monitoring, Reporting, and Verification

NDCs	Nationally Determined Contributions
NTFPs	Non-timber forest products
REDD+	Reduce Emissions from Deforestation and Forest Degradation
SDM	Sustainable development mechanism
SALM	Sustainable Agricultural Land Management
SI	Statutory Instrument
TCO <sub>2</sub>	Tons of Carbon dioxide
UNFCCC	United Nations Framework Convention on Climate Change
UNZA	University of Zambia
VAGs	Village Action Groups
VCS	Verified Carbon Standard
VER	Verified Emission Reduction

## CHAPTER ONE

### 1.1 Introduction

This chapter offers an overview of the study, outlining what was investigated and its relevance within a broader context. In addition to the introduction, the chapter is divided into six key sections: the background of the study, the problem statement, the research objectives, the research questions, the significance of the study, and the scope of the study.

### 1.2 Background

Carbon trading is an administrative approach used to control the accumulation of greenhouse gases (GHGs) in the atmosphere by providing incentives for achieving reductions in GHG emissions (Leggett, 2020). It was born out of the Kyoto Protocol, an international and legally binding agreement to reduce GHG emissions worldwide, adopted in 1997 and brought into force in 2005. The Kyoto Protocol developed three market-based carbon trading mechanisms that allow developed countries to meet their international emissions targets through transfers of carbon credits, namely international emissions trading, the Clean Development Mechanism (CDM), and Joint Implementation (JI) (Leggett, 2020).

International emission trading is a bilateral cap-and-trade system that allows trading among developed states of pre-assigned allowances, known as "assigned amount units" (AAUs). The Clean Development Mechanism (CDM) is a baseline-and-credit, project-based system that allows investments by developed countries in projects that reduce emissions in developing countries. Governments and private sector entities can purchase the carbon savings (called "certified emissions reductions," or "CERs") generated by projects in developing countries and claim them for compliance purposes under the protocol. The Joint Implementation (JI) is also a baseline-and-credit, project-based instrument. It allows for investments by a developed country in projects that reduce emissions in countries predominantly from Eastern Europe to generate carbon assets known as "emissions reduction units" (ERUs) (UN, 1998). In view of these mechanisms, carbon trading in developing countries falls under the Clean Development Mechanism (CDM).

Carbon trading was reinforced by the Paris Agreement, which is the second major subsidiary agreement under the United Nations Framework Convention on Climate Change (UNFCCC). The Paris Agreement defines a collective, long-term objective to hold the GHG-induced increase in temperature to well below 2 degrees Celsius and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius above the pre-industrial level (UNFCCC, 2016). The Paris Agreement

succeeded the Kyoto Protocol and established the foundation for the development of an international carbon market (World Bank, 2018).

There are two carbon trading mechanisms defined under the Paris Agreement; 'cooperative approaches' (CA) and 'sustainable development mechanism' (SDM). Under the cooperative approaches (CA), parties can exchange 'internationally transferred mitigation outcomes' (ITMOs) on a voluntary basis to meet participating countries' Nationally Determined Contributions (NDCs). CA is not itself a specific mechanism; it is a formal recognition that a variety of linkages between climate actions will be valid under the Paris Agreement (World Bank, 2018). On the other hand, the 'sustainable development mechanism' (SDM) is a project-based crediting mechanism similar to the CDM, except that both host and purchasing countries have emissions reduction or limitation commitments (World Bank, 2018).

Carbon trading delivers several economic, social, and ecological benefits that have gained local, regional, and international policy support. It reduces emissions, decouples emissions from economic growth (European Environment Agency, 2017), encourages the deployment and innovation of low-carbon technology (Nishida *et al.*, 2016), generates revenues with various uses (RGGI, 2017; RGGI, 2018; Hsia-Kiung and Morehouse, 2015), creates co-benefits such as public health, energy security, and job creation (Stutt *et al.*, 2016), enables the development of adaptable country-specific projects (ICAP, 2017; Acworth *et al.*, 2018), and provides a politically feasible solution to climate change (Fagan-Watson *et al.*, 2015).

With these benefits, proponents argue that carbon trading, particularly under CDM and SDM, provides a flexible and profitable mechanism for combating climate change and helps developing countries reach their sustainable development goals while reducing the financial burdens on their public sectors (Reddy, 2011).

In response, several developing countries, including Zambia, have signed the Paris Agreement and developed strategies to promote carbon trading. However, many of these countries face significant challenges in accessing the carbon market; including the lack of an enabling environment for carbon offset projects, limited potential returns, and the complexity of governance systems (Pan, 2022).

In Zambia, an administrative mechanism was established in 2006 to facilitate and support project developers' participation in carbon markets under the Kyoto Protocol. Building on this foundation,

the Zambian government developed a National Strategy to Reduce Emissions from Deforestation and Forest Degradation (REDD+) in 2015, aligning with the global REDD+ framework under the UNFCCC. The REDD+ mechanism focuses on five key areas: reducing emissions from deforestation, addressing emissions from forest degradation, conserving forest carbon stocks, promoting sustainable forest management, and enhancing forest carbon stocks. The primary goal of this strategy is to mitigate emissions resulting from tropical deforestation and forest degradation in developing countries (Matakala *et al.*, 2015).

More recently, the government of the Republic of Zambia enacted the Community Forest Management Regulation (SI of 2018) and Statutory Instrument No. 66 of 2021 on forest carbon stock management, Eighth National Development Plan (8NDP) and the Strategic Plan of the Ministry of Green Economy and Environment (MGEE) 2022 to 2026. These regulations aim to ensure the proper oversight of carbon trading, safeguard community interests, and create an enabling environment for investment in the sector. As a result, several forest carbon projects have been initiated across the country, driven by development organizations such as BioCarbon Partners (BCP).

The LCFP is one of the earliest REDD+ project implemented by BioCarbon Partners Limited in Eastern and Lusaka Provinces, Zambia, since 2014. The project spans an area of approximately 1,000,382 hectares and focuses on reducing emissions from deforestation and forest degradation, with an emphasis on protecting wildlife habitats. The project is implemented on communal lands across 12 chiefdoms within Game Management Areas (GMAs), as well as on two private ranches. It is carried out in collaboration with traditional authorities and the Government of the Republic of Zambia (GRZ, 2019).

The Luangwa Community Forest Project (LCFP) has achieved significant successes, including the protection of 1,036,636 hectares of forest and the preservation of approximately 565,102,877 trees. Additionally, the project has made conservation payments to 36,000 households and has contributed to a reduction of 1,700,000 tonnes of carbon dioxide emissions annually. With its substantial social impacts, the LCFP is arguably one of the largest projects of its kind in the world (BCP, 2022).

However, carbon trading has faced significant criticism for various reasons, including concerns over environmental integrity, the lack of genuine technology transfer, and the complexity of governance and implementation processes. Critics also argue that it perpetuates power imbalances

between the Global North and South (Reddy, 2011; Niemack and Chevallier, 2010). At the community level, carbon market projects have been reported to encounter a range of challenges, including methodological issues, implementation difficulties, and socio-economic drawbacks (Pan, 2022).

Methodological and implementation challenges in carbon trading are largely tied to the design and operational processes of the system itself, whereas socio-economic challenges directly affect the livelihoods of communities involved in carbon projects. These socio-economic challenges include high opportunity costs (Dargusch *et al.*, 2010; Aggarwal, 2020; Regan *et al.*, 2020), social costs (Lyster, 2011; Alusiola *et al.*, 2021; Larson *et al.*, 2013), and high transaction costs (Pearson *et al.*, 2014).

Moreover, carbon trading has been criticized for its market-driven, capitalistic nature, which prioritizes profit maximization and resource accumulation. As such, it demands effective management to ensure that the revenues received by host communities are not only adequate but also sufficiently higher than the costs associated with hosting the project. If not handled well, carbon trade has the potential to exacerbate poverty among powerless, poor rural communities that host carbon projects and hinder the country's achievement of sustainable development goals in developing countries like Zambia (Caney, and Hepburn, 2011).

Despite these concerns, little is known about community perceptions of carbon trading and how they experience its benefits and drawbacks in Zambia. It remains unclear how the socio-economic costs and benefits apply to LCFP. Therefore, this study aimed to assess the costs and benefits of the LCFP on local communities in Rufunsa. The research explored how costs and benefits were experienced by the community, and identified strategies to maximize the potential benefits for local stakeholders, thereby contributing to the broader discourse on the social and economic impacts of carbon trading initiatives in Zambia.

## **1.2 Problem Statement**

Carbon trading has become one of the most prominent solutions to reducing greenhouse gas emissions and addressing climate change (Shi *et al.*, 2019) while delivering substantial environmental, economic, and social co-benefits at the community level in developing countries (ICAP, 2015). However, carbon trading tends to be of a capitalistic nature and driven by profit maximization and capital accumulation, at the expense of community needs, which threaten the long-term development of poor local communities that directly, bear the cost of hosting carbon

projects (Böhm *et al.*, 2012; Sullivan, 2010). As a result, the strongest carbon trading actors (such as project implementers) receive the lion's share of the benefits, while the weakest actors, such as poor local communities, receive little or nothing at all (Bond, 2007; Reddy, 2011; Whiteman *et al.*, 2010). The numerous opportunities and social and economic costs that host communities incur are not fully appreciated by the implementers (Aggarwal, 2020; Regan *et al.*, 2020; Alusiola *et al.*, 2021). At the centre of all these issues are the local conditions and the host communities' perceptions and lived experiences, which shape their behavior and the success of the projects. Thus, understanding local conditions and host communities' perceptions and lived experiences is indispensable in transforming carbon trading into a pro-poor tool (Maraseni *et al.*, 2014; Pelletier *et al.*, 2016; Beyerl *et al.*, 2016). However, while these costs and benefits are widely documented, little is known about community perceptions and experiences of carbon trading benefits and losses in Zambia and Sub-Saharan Africa at large. Therefore, this study examined the costs and benefits of the carbon trading projects in Rufunsa district on the local communities using the Luangwa Community Forest Project.

### **1.3 Aim**

To examine the costs and benefits of the Luangwa community forests carbon project on local communities in Rufunsa district

### **1.4 Specific Objectives**

1. To determine the roles of different local actors in the Luangwa community forests carbon project on local communities in Rufunsa district
2. To examine local communities' experiences of the costs of the Luangwa community forests carbon project in Rufunsa district
3. To examine local communities' experiences of the benefits of the Luangwa community forests carbon project in Rufunsa district

### **1.5 Research Questions**

1. What are the roles of different local carbon trading actors in the Luangwa community forests carbon project in Rufunsa district?
2. What are the costs of the Luangwa community forests carbon project in Rufunsa District?
3. What are the benefits of the Luangwa community forests carbon project in Rufunsa District?

4. How should the benefits of the Luangwa community forests carbon project be increased and costs reduced in view of community members' perceptions and experiences?

### **1.6 Significance of the Study**

The significance of this study lies in its timely exploration of the costs and benefits of the Luangwa Community Forests Carbon Project in Rufunsa District, Zambia. By addressing critical issues such as community perceptions, social power dynamics, participation, and justice within carbon projects, this research provides essential insights into the complex realities of carbon trading in sub-Saharan Africa. It contributes to a growing but still, limited body of knowledge on the impact of carbon trading in developing countries, offering valuable perspectives for researchers, practitioners, and policymakers in the climate change and forest sectors.

This study is especially significant given the increasing skepticism about the true benefits of carbon projects for local communities. Concerns have been raised about whether project implementers are enriching themselves at the expense of the communities they are meant to support. The study also coincided with Biocarbon Partners' expansion into Zambia's Western, Copperbelt, and North Western provinces. By capturing the perspectives of local communities, the study provides valuable evidence on the real costs and benefits of carbon projects, helping developers craft more equitable and inclusive strategies that maximize community gains while minimizing potential harm.

Additionally, the study aligns with Zambia's strategic push to green its economy, create green jobs, and ensure fair carbon trading practices. The establishment of the Ministry of Green Economy and Environment and the promulgation of Statutory Instrument No. 66 of 2021 on forest carbon stock management (Silwamba, 2022) reflect the government's commitment to regulating carbon trading in a way that prioritizes community interests. With the Climate Change Act under development, this study's findings are poised to help policymakers design practical, responsive policies that promote both environmental sustainability and equitable benefits for local communities.

### **1.7 Dissertation Structure**

This dissertation is organized into seven chapters, beginning with the introduction, which provides background information on carbon trading and highlights the need to understand local communities' experiences and perceptions of the costs and benefits associated with carbon market projects. The introduction also outlines the research problem, aims, objectives, research questions, and the rationale for the study. The literature review follows, offering an overview of the Coastal

Carbon Impact Framework adopted for the study, along with a review of relevant literature on the impacts of carbon market projects at both global and regional levels. The third chapter describes the study area, providing context for the research setting, while the methodology chapter discusses the philosophical orientation (pragmatism), research strategy and design, sampling techniques, data collection methods, analysis approaches, and ethical considerations. The results chapter presents the main findings derived from structured and semi-structured interviews, which are then interpreted in the discussion chapter, focusing on the roles of different actors in the Luangwa Community Forest Project (LCFP), as well as the identified costs, benefits, and policy implications. The final chapter concludes the study by summarizing the key findings and offering recommendations for policy and future research.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 Introduction

Climate change mitigation is a global priority, with carbon markets serving as a key tool to reduce greenhouse gas emissions through projects like reforestation, renewable energy, and sustainable agriculture. These initiatives can offer financial and environmental benefits but may also lead to mixed socio-economic outcomes for local communities. This literature review examined the costs and benefits of carbon market projects, particularly focusing on their social, economic, and environmental impacts on local communities, using case studies and conceptual frameworks to assess their effects and identify gaps and factors influencing whether they support sustainable development or reinforce inequities.

### 2.2 Conceptual framework

The benefits and costs associated with carbon trading are often two sides of the same coin for local communities. As Ostrom (1990, p. 33) notes, individuals make rational decisions based on an evaluation of the benefits and costs of actions and their perceived linkages to outcomes that encompass both positive and negative consequences. In the context of carbon trading projects, community members' perceptions of these benefits and losses shape their behavior throughout all stages of the project and influence both the immediate outcomes and the long-term sustainability of those outcomes.

Perception is a basic psychological process by which “individuals receive and process information” (Gifford, 2014, p. 565) using sensory input, available knowledge, experience, and thoughts. It is largely influenced by the knowledge that people in a given community develop over time as a collection of facts, concepts, beliefs as well as mental models, culture, reality observation, and intuitions among others (Rodríguez-Rodríguez *et al.*, 2021).

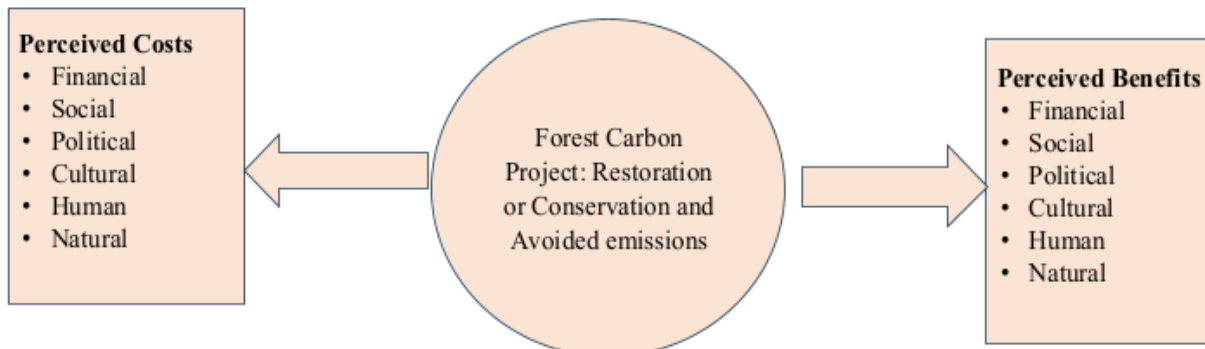
The perceptions of host communities regarding the impacts of carbon projects can be classified into two categories: “conceived” and “observed” perceptions (Agboeze and Nwankwo, 2016). *Perception-as-conceived* refers to community members’ beliefs about the potential benefits and costs of a project based on information from external sources, such as neighboring communities or other projects. These perceptions are anticipatory and based on second-hand knowledge. In contrast, *perception-as-observed* pertains to the direct experiences of communities with existing carbon projects. This perception is informed by firsthand interactions with the project and its actual benefits and costs. As such, *perception-as-observed* is grounded in lived experience, while

*perception-as-conceived* is rooted in external narratives and expectations (Agboeze and Nwankwo, 2016).

*Perception-as-observed* is intrinsically connected to *participation*, which is defined as “a process through which stakeholders’ influence and share control over development initiatives, decisions, and resources that affect their lives” (World Bank, 1994, p. 6). In the context of carbon projects, participation involves the active engagement of host communities in decision-making throughout the entire project lifecycle, from planning and implementation to evaluation and closure. It ensures that all stakeholders, particularly marginalized communities, have a voice at each stage of the project, fostering social inclusiveness and justice. Social safeguards, such as the principle of free, prior, and informed consent (UN-REDD+, 2012) have been designed to protect the rights and interests of local communities, especially indigenous people.

The outcomes of a project—both the benefits and costs—are shaped by the interplay between perception, participation, and distributive justice. These factors influence not only the immediate results but also whether the benefits will be sustained over time and if costs will be minimized. In this context, the benefits of forest carbon projects can be viewed as gains in livelihood assets or capital, while the costs represent a loss of these assets. To fully understand these dynamics, the Coastal Carbon Impacts Framework (CCIF) offers a valuable lens, providing insight into how these elements interact and impact long-term sustainability. Herra *et al.* (2019, p. 464-465) provide a vivid description of this framework:

*“The framework is organized along four main themes, from bottom to top: project type, project outcomes, social impacts and external factors. The type of project and the level of restriction will inform the project outcomes. The project outcomes are described using the capitals approach. Depending on the nature of the project and its activities, its outcomes can lead to positive or negative social impacts. The social impacts itself have a reoccurring influence on how a project continues to evolve over time.”*



**Figure 2.1: Costal carbon impact framework as adopted from Herra**

Source: Herra *et al.* (2019)

Project type: this refers to the nature of the activities being implemented in the forest carbon project. These may include: afforestation or reforestation of forest areas, prevention of forest disturbance, provision of alternative livelihoods, and restriction on natural resources. The interactions between these activities and communities' perception, and participation within a project greatly influence both positive and negative project outcomes (Cormier-Salem, 2017), and ultimately the long-term livelihood impacts and their sustainability.

Project outcomes and livelihood capitals: The project outcomes are the intended short-to mid-term results of project activities and form the building blocks of the longer-term livelihood impacts. Project outcomes directly affect the availability, quality, and quantity of livelihood capitals and assets, leading to either costs or benefits. The project outcomes are categorized in 'livelihood capitals' or 'livelihood capital assets' by combining the five livelihood capitals defined by the SLF (natural, financial, human, physical, and social) with two of the 'community capitals' (equivalent to livelihood capitals) from the Community Capitals Framework (cultural and political) (Emery and Flora, 2006). The two additional capitals are added (cultural and political) because they are not captured adequately under any of the five livelihood capitals of the SLF.

Natural capital reflects the stocks of natural resources in the project area, including forests, land, air, and water which acts as a source of livelihood. In a positive scenario, a forest carbon project will increase access, availability and effective utilization of natural resources through formal recognition of land tenure and access rights among others. In a negative scenario, the loss of open access rights or restrictions to natural resource access or use (Herra *et al.*, 2019).

Financial capital refers to the financial resources available to a community (Emery and Flora, 2006). In the context of carbon projects, financial benefits are reflected in increased household or

community income, which can be seen in land-based case studies that offer direct carbon payments, employment opportunities, alternative livelihood incomes, and income diversification and stability (Atela *et al.*, 2015). On the other hand, a financial cost may manifest as a reduction in the availability of timber, fuelwood, or charcoal, which could negatively impact local prices and wages.

Human capital refers to the skills, knowledge and abilities of people to develop and enhance their own resources as well as to access external resources and knowledge to support their community development (Emery and Flora, 2006). In forest carbon projects, carbon investments usually support overall capacity-building and new skill developments in environmental conservation such as conservation agriculture and eco-charcoal production.

Physical capital reflects community infrastructure such as in water supply, roads, clinics and schools (Herra *et al.*, 2019). The sale of carbon credits in forest carbon projects could allow for changes to local infrastructure. As a positive outcome, for example, clinics and schools could be improved, while as a negative outcome the latter could be underused, overused or not used at all.

Social capital refers to the connections and networks amongst people and organizations or the social “glue” (Emery and Flora, 2006) to make things, positive or negative, happens. This can result from loss, maintenance or gain of voices to improve or influence local, community driven processes. In the context of forest carbon offset projects, social capital benefits may be due to improved social cohesion, coordination and trust amongst participating groups and communities or community-based organizations (Atela *et al.*, 2015). On the other hand, social capital costs may results from increased competition and conflict between local stakeholders, participants, non-participants, project implementers.

Cultural capital reflects activities and outcomes based on how people act within the world they know, based on their traditions and language (Emery and Flora, 2006). The capital reflects outcomes linked to creativity and innovation. Changes in CC could provide impetus to continue the creation of new assets as community members find reasons to support local business and receive support to follow their own ideas (Herra *et al.*, 2019).

Political capital reflects access to power, organizations, connection to resources, and power brokers. It also refers to the ability of people to find their voice and to engage in actions that contribute to the well-being of their community (Emery and Flora, 2006). In comparison to social capital, the goal of political capital is to find out whether carbon offset projects can have a potential

positive or negative effect on resources and power relationships within the local host community (Herra *et al.*, 2019).

Social impacts, otherwise also referred to as ‘livelihood impacts,’ can be defined as “the consequences to human populations of any public or private actions that alter how people live, work, play, relate to one another, organize to meet their needs, and generally cope as members of society. The term also includes cultural impacts involving changes to the norms, values, and beliefs that guide and rationalize their cognition of themselves and their society (Interorganizational Committee on Guidelines and Principles, 1994). Social impacts are difficult to measure since long-term consequences on the social well-being of whole communities usually only become apparent after several years, and can be additionally influenced by external factors (Herra *et al.*, 2019). Therefore, the focus is on short and medium-term benefits and costs and how their realization is influenced by participation, perception, and distributive justice as well as how their long-term impacts are likely to be given existing participation, perception, and distributive justice patterns.

External factor refers to people's ‘vulnerability context’, as well as the policy, legal and institutional framework to fully determine long-term impacts of a project and thus livelihood sustainability (DfID, 1999). In the context of forest carbon projects, “external factors” also determine the long-term success (or failure) of a carbon project and its livelihood impacts. External factors include shocks such as droughts, floods, and inflation, as well as seasonality such as shifts in employment opportunities, and fluctuations in prices (Goldstein, 2015).

### **2.3 Carbon trading: The historical perspective**

Carbon trading emerged from the Kyoto Protocol in 1997 under the framework of the UNFCCC, aimed at helping developed countries reduce their greenhouse gas (GHG) emissions. This process involved the commodification of carbon in the form of carbon emission reductions or removals, allowing carbon to be traded as a commodity in the "carbon market." The Kyoto Protocol established three key market mechanisms to facilitate this: emissions trading, joint implementation, and clean development mechanisms.

Emissions trading operates as a bilateral cap-and-trade system, set forth in Article 17 of the Kyoto Protocol. It allows developed countries to trade "assigned amount units" (AAUs), which represent allowances for emissions. The system limits the total amount of emissions across all participating countries, and those with surplus emissions units can sell them to countries that exceed or wish to

exceed their emissions limits. This mechanism applies specifically to developed nations listed in Annex B of the Kyoto Protocol.

Tamra Gilbertson and Oscar Reyes provide an insightful explanation of the cap-and-trade system: The theory is that the availability of carbon permits will gradually be reduced ensuring scarcity so that the market retains its value while at the same time forcing a reduction in the overall level of pollution. The ‘cap’ part is supposed to do the work, environmentally speaking, setting a legal limit on levels of permissible pollution within a given time period. Each cap reduction is, in effect, a new regulatory measure introduced by governments and/or international bodies to reduce pollution further. The ‘trading’ part (or ‘market-based’) component of such a scheme does not actually reduce any emissions. It simply gives companies greater room to maneuver in addressing the emissions problem, for which carbon trading proposals are sometimes also referred to as ‘flexible mechanisms. Installations exceeding their reduction commitments can sell their surpluses to those who have failed to clean up their act adequately. Companies that want to keep on polluting save money, while in theory companies that are able to reduce beyond legal requirements will seize the chance to make money from selling their spare credits (Gilbertson and Reyes,2009, p. 9).

Joint Implementation, outlined in Article 4 of the Kyoto Protocol, is a baseline-and-credit mechanism that allows developed countries to invest in emission-reducing projects in other developed countries. These projects generate tradable carbon credits known as "emission reduction units" (ERUs), transferring the credits between two Annex I countries with "Quantified Emission Limitation and Reduction Objectives" (QELRO) targets (UN, 1998).

The Clean Development Mechanism (CDM), established under Article 12 of the Kyoto Protocol, allows developed countries to fund GHG-reducing projects in developing countries. These projects generate "Certified Emission Reductions" (CERs), which can be purchased by governments and private entities in developed countries to meet their emissions targets.

Although the Paris Agreement, adopted in December 2015 and entered into force in November 2016, replaced the Kyoto Protocol, the latter remained in effect until 2020. The Paris Agreement's primary objective is to strengthen the global response to climate change by limiting global temperature rise to below 2°C, aiming for a 1.5°C target, while promoting low-emission and climate-resilient development (Article 2 of the Paris Agreement, 2015).

The Paris Agreement marks a shift in climate governance, ushering in a new era for carbon markets and climate policy. This shift occurs in three significant ways. First, it adopts a bottom-up approach to climate change policy, empowering parties to determine their own contributions to address climate change, unlike the top-down framework of the Kyoto Protocol (Bodansky, 2021). Second, the Paris Agreement introduces a nuanced approach to differentiation. In contrast to the Kyoto Protocol, which differentiated sharply between developed and developing countries, the Paris Agreement establishes universal procedural obligations for all parties. However, it allows countries to self-determine their mitigation contributions through Nationally Determined Contributions (NDCs). Financial obligations are only imposed on developed countries, while others are encouraged to provide voluntary support. The agreement also establishes a common transparency framework with flexibility for developing countries that need it due to capacity constraints (Bodansky, 2021, p. 1).

Although the Paris Agreement does not explicitly reference the Kyoto Protocol's three carbon trading mechanisms, it introduces two new market mechanisms under Article 6: cooperative approaches (CA) and sustainable development mechanisms (SDM). Article 6.2 allows countries to engage in "cooperative approaches," facilitating voluntary international transfers of mitigation outcomes (ITMOs) to meet NDCs, effectively creating a new form of emissions trading. CA is not a formal mechanism but a framework allowing countries to establish their own rules for bilateral cooperation. This approach facilitates the transfer of emission reductions from one country to another, counted towards their NDCs (World Bank, 2018).

Meanwhile, the SDM, as defined in Article 6.4, resembles the Kyoto Protocol's CDM but applies to both the host and purchasing countries, both of which have emissions reduction commitments. This mechanism seeks to create an international carbon market where emissions credits are generated through joint projects between participating countries. Although the rules for Article 6.2 and 6.4 mechanisms are still being negotiated, the transition to the Paris Agreement framework is progressing smoothly without significant obstacles (Asian Development Bank, 2021).

## **2.4 Types of carbon markets**

Carbon markets generally fall into two categories based on their revenue-generating nature, whereby each ton of reduced or avoided carbon emissions is tradable in the form of carbon credits (Schmid, 2022). These are mandatory (compliance) markets and voluntary markets.

Compliance markets, also known as regulated markets, are primarily driven by the legal requirement for buyers to meet GHG emission reduction regulations. These markets can be subdivided into two types. The first is the "cap-and-trade" or "Emission Trading Scheme (ETS)" market, where governmental bodies issue carbon emission allowances for firms or sectors, setting a cap on the emissions they can produce. Companies can buy and sell these allowances to balance their emissions (International Organization of Securities Commissions, 2022).

The second type of compliance market is the "voluntary compliance market," also known as a baseline-and-credit system. In these markets, there is no fixed emissions cap, but companies that exceed their emissions reduction targets can earn carbon credits, which can be sold to those failing to meet their obligations. All three Kyoto Protocol mechanisms are associated with the compliance market, as participating countries were required to comply with emission reduction targets (International Organization of Securities Commissions, 2022).

In contrast, the voluntary market has grown alongside the compliance market, driven by increased awareness of the need for emissions reductions at the local level. In the voluntary market, companies, organizations, and individuals voluntarily buy carbon credits generated by emissions-reducing projects to offset their own carbon footprints. These offset credits are typically generated from projects that either avoid or reduce emissions or capture carbon already present in the atmosphere (International Organization of Securities Commissions, 2022).

## **2.5 Voluntary carbon trading actors and their roles**

The voluntary carbon trading process involves several key actors, each with specific responsibilities spanning the stages from project design to the issuance and retirement of carbon credits. Hearneough *et al.* (2020) provide a comprehensive overview of these roles, which are critical to the functioning of the voluntary carbon market.

### **2.5.1 Project owners**

Project owners are integral to the creation and implementation of emission reduction projects. Their main role is to identify potential projects, develop them, and ensure they comply with the standards and procedures established by carbon crediting bodies. These crediting standards serve as the framework within which emission reduction projects must operate to qualify for carbon credits. They outline the rules and methodologies for quantifying emission reductions across various project types.

The approval of projects, which makes them eligible for carbon credits, is typically granted by the standard bodies, which also issue the carbon credits and manage registry systems that facilitate the transaction of these credits. Project owners often engage consultants who assist in the project development process, either for a consultancy fee or an agreed-upon share of the proceeds from the eventual sale of carbon credits (Hearneough *et al.*, 2020).

Carbon credit standards are broadly categorized into three types: non-governmental, governmental, and international or bilateral standards. The non-governmental standards are established and managed by non-profit organizations or private companies, often without direct government regulation. Hearneough *et al.* (2020) identify Verra (which administers the Verified Carbon Standard, or VCS) and the Gold Standard as the most significant players in this category, in terms of both value and volume of carbon credits sold. Other important non-governmental standards include the Climate Action Reserve and the American Carbon Registry.

The governmental standards are developed and operated under the supervision of national governments. Examples include Australia's Carbon Farming Initiative and the UK's Woodland Carbon Code. Finally, international or bilateral standards are governed by international agreements or treaties, such as the Clean Development Mechanism under the Kyoto Protocol and the new mechanism established under Article 6.4 of the Paris Agreement (Hearneough *et al.*, 2020).

### **2.5.2 Third-party auditors**

Third-party auditors play a crucial role in ensuring that emission reduction projects meet the requirements set forth by the relevant carbon credit standards. Their duties include verifying that the projects meet the eligibility criteria and confirming the accuracy of the emission reductions reported by the projects. This verification process is essential to determine the correct number of carbon credits that a project will receive (Hearneough *et al.*, 2020). Without third-party auditors, the integrity of the carbon credit system would be compromised, as these auditors provide an independent check on the claims made by project owners regarding the environmental impact of their projects.

### **2.5.3 Retail providers**

Retail providers serve as intermediaries in the voluntary carbon market. They purchase carbon credits from project owners once the credits have been issued and then resell them to end buyers. In some cases, retail providers also develop their projects, thus assuming the roles of both project

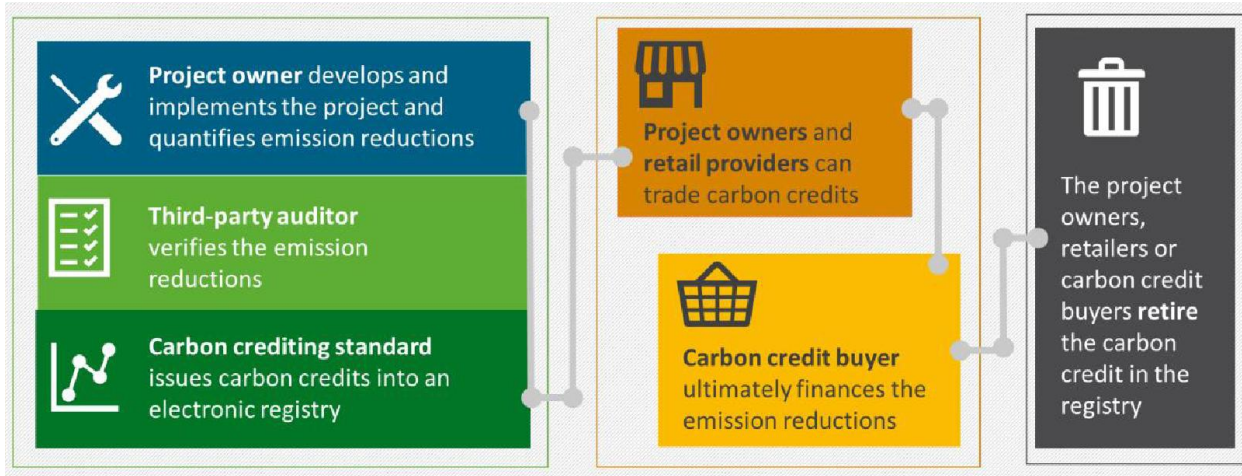
owner and intermediary. These providers typically operate platforms that offer emission calculation tools and additional information about voluntary compensation options. Through these platforms, retail providers help attract demand to the market by offering a communication channel that connects buyers with available carbon credits (Hearneough *et al.*, 2020). Their role is pivotal in making carbon credits accessible to a wider range of buyers and ensuring liquidity in the market.

#### **2.5.4 Carbon credit buyers**

The final group of actors in the voluntary carbon trading process are the carbon credit buyers, who are responsible for providing the financial resources that enable emission reductions. These buyers purchase carbon credits either directly from project owners or through retail providers. In some cases, buyers may also play a more active role in the development of carbon reduction projects.

Carbon credit buyers can be divided into two broad categories: institutional and individual buyers. Institutional buyers typically purchase large volumes of carbon credits from project owners or via intermediaries. These buyers include companies, governments (acting voluntarily), public institutions, and non-governmental organizations. On the other hand, individual buyers generally purchase smaller quantities of carbon credits, often to offset personal activities such as air travel or other private emissions (Hearneough *et al.*, 2020). Both categories of buyers are essential to the functioning of the voluntary carbon market, with institutional buyers providing the bulk of the financial support for carbon reduction projects, while individual buyers help to sustain market demand and promote public awareness of carbon offsetting.

Figure 2.2 illustrates the voluntary carbon credit life cycle, providing a visual overview of how carbon credits are created, bought, and retired in the market. This life cycle underscores the interdependence of all the actors involved in the process, from project owners to carbon credit buyers, highlighting their roles in ensuring the success and integrity of the voluntary carbon market.



**Figure 2.2: Summary of voluntary carbon trading actors and their roles**

Source: Hearneough *et al.* (2020)

### 2.6 Carbon trading benefits to local communities

Developing countries, despite contributing the least to global greenhouse gas emissions, are disproportionately impacted by climate change. This disparity is especially pronounced in rural areas, where limited adaptive capacity heightens vulnerability (EU-UNEP, 2019). As a result, carbon trading systems, which simultaneously promote climate change mitigation, adaptation, and socio-economic development, have emerged as an attractive solution for many developing nations (UNFCCC, 2018).

Carbon projects that generate carbon credits span various economic sectors, including clean energy, energy efficiency, mining, waste management, and forestry (Schmid, 2022). Among these, forest carbon projects stand out as particularly cost-effective tools for climate change mitigation. Not only do they deliver significant greenhouse gas reductions, but they also offer co-benefits such as biodiversity conservation and enhanced livelihoods for local communities (Angelsen *et al.*, 2012; Angelsen *et al.*, 2012; Phelps *et al.*, 2012). As a result, the "multiple-win" narrative has driven the proliferation of forest carbon projects (Schmid, 2022).

By 2016, approximately 1,500 forest carbon projects were registered globally, generating an annual trade value of USD 662.1 million (Hamrick and Gallant, 2017). The voluntary carbon offset market surpassed USD 280 million by 2019, with the forestry and land-use sector accounting for over half of this total (USD 159.1 million) (Donofrio *et al.*, 2020). Forest and land-use credits became the second most traded carbon credits, following renewable energy credits (Donofrio *et al.*, 2020). The World Bank Group (2020) noted that between 2015 and 2019, forest carbon

projects contributed 42% of the global offset credits, with half of these coming from voluntary programs.

Forest carbon trading offers numerous environmental and socio-economic benefits. For instance, a study of carbon projects in India, Indonesia, Kenya, Tanzania, and Madagascar revealed improvements in natural capital, such as increased wildlife populations, better soil fertility, higher marine productivity, and improved shoreline protection (Herra *et al.*, 2019). These projects also created jobs and demand for labor, particularly for tasks such as tree planting, thinning, harvesting, and monitoring, which contributed to short-term employment and income diversification (Herra *et al.*, 2019).

Additionally, revenue from the sale of timber, non-timber forest products (NTFPs), carbon credits, and ecotourism—such as the sale of souvenirs and snacks—contributed to improving local livelihoods (Herra *et al.*, 2019). These projects also increased access to microcredit through community trust funds or rotating funds (Herra *et al.*, 2019). Beyond economic benefits, forest carbon projects foster human resource development by enhancing skills in areas like business administration, forest and marine management, agroforestry, sustainable agriculture/aquaculture, and wildlife conservation (Herra *et al.*, 2019).

Physical infrastructure in host communities has also been bolstered by carbon projects, including transportation networks, ecotourism facilities, and essential services such as healthcare, education, and water and sanitation (Herra *et al.*, 2019). Furthermore, carbon projects support the development of social capital by establishing community organizations, securing land tenure, and promoting gender equality. They also enhance community negotiation skills, empowering local populations and improving their participation in both local and national planning, as well as private sector engagement (Herra *et al.*, 2019). In Ethiopia, for example, local communities viewed carbon payments as beneficial to both households and villages, with funds being managed transparently and directed toward village priorities. This yielded significant returns in cash and consumable goods, supporting both development and conservation goals (Chorito, 2015).

In addition to these direct benefits, carbon trading brings broader economic, social, and ecological advantages. It helps reduce emissions, facilitates the decoupling of emissions from economic growth (European Environment Agency, 2017), and fosters innovation in low-carbon technologies (Nishida *et al.*, 2016). Furthermore, it generates revenue that can be allocated for diverse purposes (RGGI, 2017; RGGI, 2018; Hsia-Kiung and Morehouse, 2015) and creates co-benefits such as

public health improvements, energy security, and job creation (Stutt *et al.*, 2016). Carbon trading also enables the development of flexible, country-specific projects (ICAP, 2017; Acworth *et al.*, 2018) and offers politically viable solutions to climate change (Fagan-Watson *et al.*, 2015).

## **2.7 Carbon trading costs/losses to local Communities**

Carbon projects, particularly those focused on forest conservation, are often implemented in ecologically and socially sensitive areas. Over 800 million people globally live in and around forests, with more than 250 million of them living below the extreme poverty line and heavily dependent on forests for their livelihoods (FAO, 2018). These communities, who rely on forests for biodiversity and climate health, are at risk when carbon projects are introduced. As such, carbon initiatives have brought significant costs, particularly for marginalized populations.

One of the primary challenges faced by host communities in carbon projects is the limitation of land rights. When forest land is designated for carbon offset projects, communities often lose control over the land (Pan, 2022). This can result in a loss or reduction in the area available for agriculture, grazing, aquaculture, or fishing. Additionally, restrictions on timber and fuelwood collection due to access limitations can exacerbate local shortages, particularly in countries where communities rely on these resources for household needs (Herra *et al.*, 2019). The replacement of traditional resource management systems by outside project developers also undermines local knowledge and practices, which are crucial for sustainable resource management (Herra *et al.*, 2019).

Carbon projects have also fostered distrust and conflict. For example, in Guatemala's CARE International Agroforestry Project, stringent protection of natural resources—such as criminalizing subsistence activities like fuelwood collection—led to distrust between local communities and government forest agencies (Wittman *et al.*, 2009). In India, similar tensions were reported due to misunderstandings around the complexity of compensation regimes and carbon pricing (Herra *et al.*, 2019). Conflicts over forest resource use have also been common. In Vietnam, for example, the national afforestation program led to disputes over non-timber forest products (NFTPs) and grazing land (Clement *et al.*, 2009). In Uganda, 20,000 long-term residents were allegedly evicted under afforestation and reforestation schemes (Carrere, 2009), while in China, the top-down approach of the Large-scale Forest Restoration Program led to conflict over land management practices between villagers and forest officials (He & Sikor, 2015).

In Ethiopia, Kemerink-Seyoum *et al.* (2018) found that climate-financed forestry projects reduced the supply of fodder, leading to fewer cattle being kept by farmers. This also forced them to purchase expensive charcoal and firewood from neighboring villages, increasing their economic strain. Farmers who illegally cut down trees or grazed cattle in protected areas faced fines or arrest, and some took legal action after being evicted. While courts ruled in their favor, the land was never returned. These tensions are often driven by inequities in resource access and the imposition of new governance structures that shift power dynamics (Alusiola *et al.*, 2021). In many cases, powerful economic actors exploit these projects as instruments for capital accumulation, engaging in "green grabs"—the appropriation of land and natural resources under the guise of environmental protection (Fairhead *et al.*, 2012).

Carbon projects can further exacerbate social inequality and poverty. In Guatemala and Sri Lanka, agroforestry carbon offset projects disproportionately benefited wealthier farmers, leaving poorer farmers at a disadvantage (Wittman & Caron, 2009). Similarly, in Indonesia, carbon investments tended to overlook the diversity of local village life, often excluding marginalized groups based on ethnicity, class, or gender (Astuti *et al.*, 2016). In Ethiopia, Kemerink-Seyoum *et al.* (2018) observed that the focus on creating organizational frameworks for carbon projects often overlooked deeper issues of unequal resource distribution and the marginalization of local communities, leading to conflicts over resource use and elite capture.

In Kenya, the constitution recognizes the rights of communities to ancestral lands, yet indigenous peoples in the Embobut Forest have faced violent evictions (Survival International, 2014). Even in areas where forests are officially owned by local communities, such as in Papua New Guinea, many landowners are unaware of their rights, leaving them vulnerable to exploitation (Larson *et al.*, 2013). Furthermore, carbon projects often create new social divisions, as evidenced by the unequal distribution of compensation, with wealthier or more politically connected groups receiving benefits, while the poorest suffer disproportionately (Poudyal *et al.*, 2016).

This inequality is inherent to market-based systems. As Caney and Hepburn (2011) argue, market economies tend to perpetuate or exacerbate existing wealth disparities, and environmental markets, such as carbon trading, are no exception. Carbon projects, driven by the need to generate revenue from carbon credits, often shift the focus away from addressing local community needs and instead prioritize carbon offset accounting requirements, as seen in Guatemala's CARE International

project (Wittman & Caron, 2009). This misalignment of priorities can result in the neglect of essential poverty alleviation services in favor of meeting carbon sequestration targets.

Additionally, carbon projects have been criticized for their high opportunity costs—the economic value lost when land is diverted from traditional uses to carbon offset initiatives. Boucher (2015) estimates that the opportunity cost of deforestation drivers like timber, beef, soy, and palm oil far exceeds the total funding of offset projects. Similarly, Oeba *et al.* (2017) found that converting orchards to forest projects in the United States yielded minimal economic returns due to the higher profitability of orchard farming.

Carbon projects are also often marked by uneven community participation. Limited understanding of carbon offset mechanisms and a lack of transparency in decision-making processes lead to poor engagement from host communities (Holmes *et al.*, 2017; Kelly *et al.*, 2017). In Guangdong Province, China, for instance, the unilateral decisions made by project developers regarding benefit-sharing and tree species selection left local farmers with little input (Zhou *et al.*, 2017). This lack of participation, combined with low carbon prices and unreliable revenue streams, further undermines the long-term sustainability of these projects (Pan *et al.*, 2021).

Finally, the issue of ‘leakage’—the displacement of environmental damage from one site to another—has been a persistent concern with forest carbon projects. This can occur when displaced communities move into other forested areas or when environmental harm is shifted to different locations (Smith, 2002; Dryzek, 2013). In some cases, carbon projects effectively enclose common pool resources, restricting who can use these resources and under what terms, which exacerbates social differentiation and inequities (Kemerink-Seyoum *et al.*, 2018). Even when compensation is provided, it is often insufficient to cover the full extent of livelihood losses, further contributing to social and economic inequality (Kemerink-Seyoum *et al.*, 2018).

## **2.8 Maximising benefits and minimising costs of forest carbon projects**

The debate surrounding carbon trading revolves around its potential to simultaneously address environmental and social issues or exacerbate them. While there is consensus among both proponents and critics that carbon projects come with substantial benefits and costs, the key issue remains: which outweighs the other? This ongoing debate underscores the necessity for reforming the carbon market system rather than abolishing it (Caney *et al.*, 2011; Lejano *et al.*, 2020). As a result, efforts have been focused on maximizing the benefits and minimizing the costs of carbon projects.

## **2.9 Voluntary standards in carbon markets**

In response to these challenges, voluntary standards have been developed and implemented within carbon markets to ensure better governance of carbon projects (Pan, 2021). These standards outline rules and procedures for accounting greenhouse gas emissions, removals, and co-benefits from REDD+ or other forest carbon activities, leading to validation or certification of these actions (Schmidt and Gerber, 2016). Four major standards have emerged: the Verified Carbon Standard (VCS), American Carbon Registry (ACR), Plan Vivo, and the Climate Action Reserve (CAR) (Hamrick and Gallant, 2017). While each of these standards aims to address the environmental and social dimensions of carbon projects, their effectiveness in mitigating the associated costs varies.

The VCS integrates climate, community, and biodiversity standards (CCB) to safeguard the rights of Indigenous peoples and local communities, promote livelihoods, protect traditional cultures, and ensure project benefit-sharing (Maguire *et al.*, 2021). More than 80% of VCS credits traded have incorporated the CCB (Maguire *et al.*, 2021). The ACR, meanwhile, mandates that carbon projects assess community risks and establish mechanisms to avoid, reduce, or compensate for harm, aiming to ensure that projects "do no harm" to local communities (American Carbon Registry, 2020).

Plan Vivo places a strong emphasis on community benefits, requiring at least 60% of credit sales to flow directly to the communities involved. The Plan Vivo standards are also built on the principle of free, prior, and informed consent (FPIC), ensuring that local communities play a leading role in the development and management of carbon projects (Plan Vivo, 2013). In contrast, the CAR standards provide opportunities for local stakeholder consultation, with a focus on assessing potential social impacts during the protocol development process, ensuring that harmful protocols are not adopted (Climate Action Reserve, 2021). All of these standards incorporate strategies to avoid leakage, a critical concern in carbon projects.

## **2.10 Voluntary standards and the challenges of social safeguards**

Despite the efforts to integrate safeguards and standards, challenges remain in addressing the social costs of carbon projects. The Cancun safeguards, agreed upon at COP 16, aim to ensure that REDD+ activities, at a minimum, do not harm communities or the environment (Decision 1/CP.16, Appendix 1). Multilateral funding institutions involved in REDD+ have also adopted these safeguards. However, none of these standards provide explicit strategies to ensure cost-effectiveness, leaving room for the continued exploitation of host communities (Pan, 2021). As

Larson *et al.* (2013) argue, while many projects include provisions to secure Indigenous tenure rights, these protections are often inadequate without broader land tenure reforms.

Poudyal *et al.* (2016) further contend that, despite the presence of environmental and social safeguards, vulnerable community members are still exposed to risks due to entrenched social and economic power imbalances that favor local elites. The difficulty in identifying the right beneficiaries for compensation is compounded by challenges such as limited access to remote areas, lack of accurate community data, and reliance on non-representative local institutions (Poudyal *et al.*, 2016). This gap in effective safeguard implementation leads to the marginalization of those who are most in need of protection.

### **2.11 Limitations of social safeguards and paternalistic approaches**

Lofts, Sarmiento, and Larson, (2021). argue that social safeguards often adopt a paternalistic approach, framing affected communities as passive recipients rather than active participants in the design, implementation, and monitoring of projects. This approach limits the potential for Indigenous Peoples and local communities (IPLCs) to be self-determined partners in projects affecting their lands. It can also obscure conflicts and power dynamics, ultimately disempowering marginalized groups by treating them as beneficiaries rather than as change-makers (Lofts, Sarmiento, and Larson, 2021).

In light of these issues, carbon projects and REDD+ have been criticized as a form of "neo-colonialism," wherein traditional lands of forest-dependent communities are co-opted into global schemes designed for broad environmental benefits, often at the expense of these communities (Godden and Tehan, 2016). This critique underscores the need for reform in the governance of carbon projects to address foundational inequities and spatial inequalities.

### **2.12 Toward rights-responsive approaches**

Given these challenges, implementers of social safeguards and voluntary standards must move beyond business-as-usual practices (Poudyal *et al.*, 2016) and adopt rights-responsive approaches that support the transformational potential of carbon projects. As Ribot and Larson (2012) argue, if REDD+ is to benefit local populations, safeguard policies must not only protect existing rights but also strengthen and secure them. In other words, it is insufficient to merely recognize rights; communities must have the capacity to benefit from those rights. This is a critical issue for Indigenous Peoples and local communities, who must have the ability to actively participate in and benefit from carbon projects (Ribot and Larson, 2012).

Alusiola *et al.* (2021) reinforce this idea, advocating for placing the rights, livelihoods, and benefits of local communities at the center of REDD+ and carbon-related projects. According to Sunderlin and Sills (2012), carbon projects must compensate host communities for lost opportunities, which includes direct payment schemes based on clear land rights and the ability to exclude third parties from altering land cover. In the absence of clear tenure, forest-dependent communities risk exclusion from participation in REDD+ benefits, and may face increased vulnerability as resource value increases (Sunderlin *et al.*, 2012). Therefore, due process and fair compensation are essential to ensure that carbon projects do not exacerbate hardships for these communities.

### **2.13 Forest carbon projects: The Zambian context**

Forest carbon projects in Zambia have their origins in 2008 when the country initiated the REDD+ process, which led to the approval of the National UN-REDD Joint Programme (2010–2014). Since then, Zambia has achieved several milestones in forest carbon governance. Notable achievements include the development of a national REDD+ Strategy (2015), the submission of an Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC) (2015), the establishment of a Forest Monitoring System to relay and share information (2016), the submission of the Forest Reference Emission Level (FREL) to the UNFCCC (2016), and the creation of a REDD+ Investment Plan (2017). Additionally, Zambia has institutionalized Cancun safeguards to ensure the protection of communities and the environment in its REDD+ projects.

In 2021, Zambia further strengthened its forest carbon management framework by amending the Forest Act No. 4 of 2015 through Statutory Instrument (SI) No. 66, which now includes provisions for carbon stock management. This statutory instrument outlines eligible activities for carbon projects, including reducing deforestation, mitigating forest degradation, conserving forests, promoting sustainable forest management, and enhancing carbon stocks. It also requires applicants to demonstrate proof of user rights for the forest or land where the project will be implemented, such as a community forest agreement for customary lands. Additionally, the SI mandates compliance with social, environmental, and fiduciary safeguards, and requires the disclosure of benefit-sharing mechanisms, carbon buyer information, carbon prices, and total revenue generated from the carbon project.

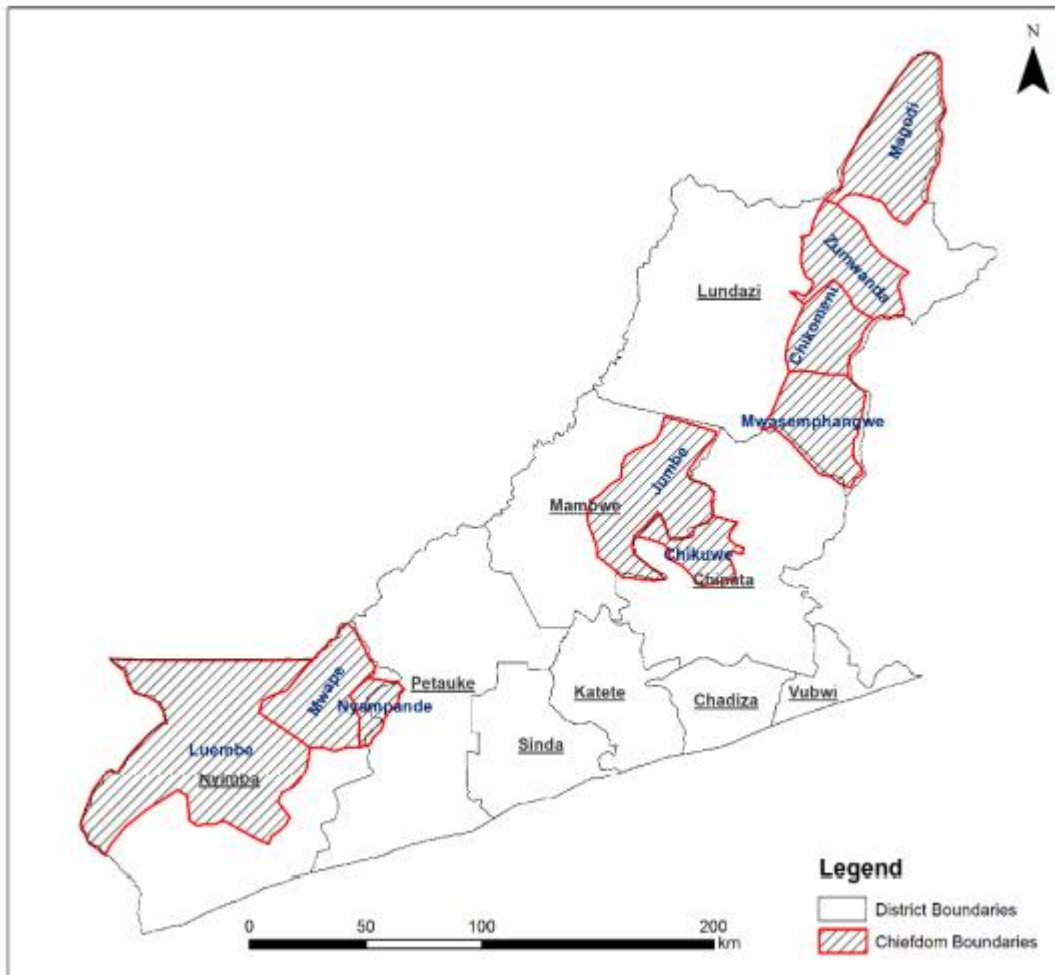
Zambia has successfully implemented three major forest carbon projects: the COMACO Landscape Management Project (CLMP), the Lower Zambezi REDD+ Project (LZRP), and the

Luangwa Community Forests Project (LCFP) (GRZ, 2019). Among these, the COMACO Landscape Management Project, launched in 2015, stands out for its efforts to reduce greenhouse gas (GHG) emissions through sustainable land management across 38 chiefdoms in Zambia's Eastern Province. Funded by the World Bank, the project aimed to manage 197,246 ha of land traditionally used for community activities, incorporating both agricultural and non-agricultural interventions. Specifically, the project focused on emission reductions through Reduced Deforestation and Forest Degradation (REDD+) and Sustainable Agricultural Land Management (SALM), covering 182,246 ha for REDD+ and 15,000 ha for SALM (World Bank, 2020).

The project's success is evidenced by its recent emission reduction purchase agreement (ERPA), in which 264,578 tCO<sub>2</sub>e were verified by a third-party as GHG reductions, fulfilling its emission reduction commitment. In accordance with the benefit-sharing plan, 60% of the carbon payments went to the participating communities, with the remaining 40% allocated to COMACO (World Bank, 2020). Furthermore, the CLMP contributed to the adoption of sustainable agriculture practices among 19,399 smallholder farmers, covering 17,130 ha under SALM. These practices, which included agroforestry, residue management, alley-cropping, and reduced tillage, not only enhanced crop productivity but also diversified household incomes through activities such as beekeeping. The project also protected 112,245 ha of forests, reducing deforestation and degradation risks, and ultimately brought a total of 128,375 ha under sustainable land management (World Bank, 2020).

To mitigate the potential environmental and social impacts, COMACO developed an Environmental and Social Management Framework (ESMF) and Pest Management Plan, which provided guidance on managing risks associated with various sub-projects. The Zambia Environmental Management Agency approved the program's Environmental Project Brief (EPB), in compliance with the Environmental Impact Assessment regulations.

COMACO, the implementing organization of the Landscape Management Project, is a non-profit company founded in 2003 to promote rural livelihood development through sustainable agriculture and environmental conservation. By providing smallholder farmers with access to improved farming practices and market opportunities, COMACO aimed to reduce wildlife poaching and illegal deforestation caused by charcoal production, thus supporting both community livelihoods and environmental sustainability (Dale and Wilkie, 2020).



**Figure 2.3: COMACO Landscape Management Project sites**

Source: Biocarbon Partners, (2020)

The Lower Zambezi REDD+ Project (LZRP) is a REDD+ initiative implemented by Biocarbon Partners Limited in the Rufunsa Conservancy, a privately-owned area, with financial support from the USAID-funded Community Forests Programme. The project aims to reduce emissions from deforestation and forest degradation (REDD+) over 40,126 hectares of privately-owned land in the Rufunsa district, Lusaka Province, targeting a reduction of 187,143 tons of carbon dioxide equivalent per year. The LZRP serves approximately 8,300 people across 28 villages within four community zones. It is Zambia’s first REDD+ project to be verified under the Verified Carbon Standard (VCS) (GRZ, 2019).

The LZRP has achieved several social, economic, and environmental successes. It has protected around 20,624,764 trees, paid conservation fees to 1,199 households, supported 35 community

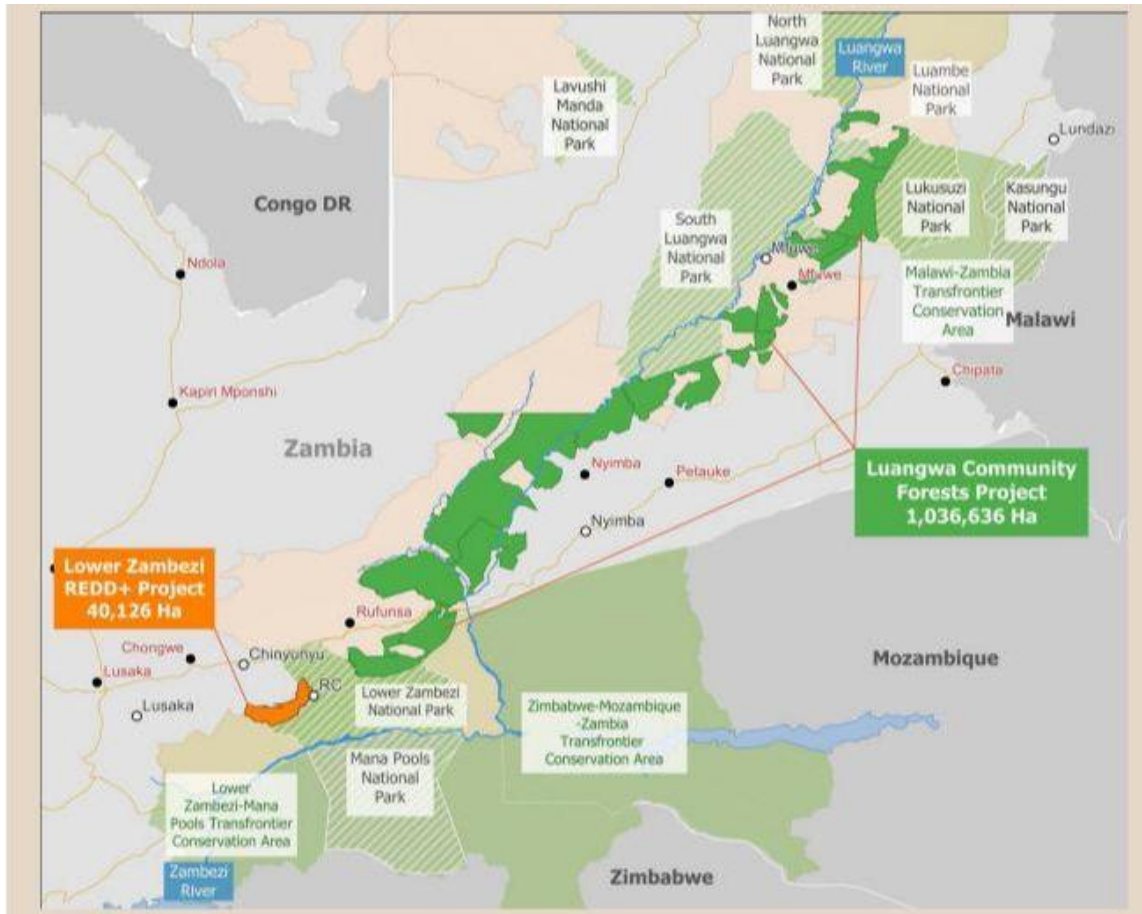
scouts, and trained 31 lead farmers in conservation farming techniques. Additionally, 1,166 farmers have been trained in climate-smart agriculture. The project has also successfully reduced carbon dioxide emissions by 199,631 metric tonnes annually.

Another key initiative, the Luangwa Community Forests Project (LCFP), was also implemented by Biocarbon Partners Limited with support from USAID. This large-scale REDD+ project spans 1,000,382 hectares across the Eastern and Lusaka Provinces of Zambia. The LCFP shares similar objectives with the LZRP, but with a greater emphasis on habitat protection. The project is located on communal land in 12 chiefdoms within Game Management Areas (GMAs) and two private ranches, in partnership with traditional authorities and the Government of Zambia (GRZ, 2019).

The LCFP has made significant social, economic, and environmental strides. It has protected 1,036,636 hectares of forest, secured approximately 565,102,877 trees, paid conservation fees to 36,000 households, and reduced carbon dioxide emissions by 1.7 million tonnes annually. In 2021, the LCFP was ranked as the world's best REDD+ project by Environmental Finance's Voluntary Carbon Market Rankings, and is regarded as one of the largest in the world in terms of quantified social impacts.

To mitigate potential negative social, economic, and environmental impacts, Biocarbon Partners (BCP) has adhered to the social and environmental safeguards outlined by the VCS and national standards for carbon projects. Despite these efforts, certain challenges remain, particularly around key social and economic issues, such as benefit-sharing mechanisms and ensuring effective participation from local communities (USAID, 2019).

Founded in 2012, BioCarbon Partners (BCP) is a mission-driven forest conservation company with a focus on making wildlife habitat conservation valuable to local communities. BCP develops forest carbon offset projects in regions of global biodiversity significance, aiming to conserve Africa's wildlife strongholds and generate positive impacts for surrounding communities. BCP operates across over 1 million hectares of threatened forests in 13 chiefdoms in Zambia and has plans for regional expansion. Over the past decade, BCP has become one of Africa's leading REDD+ developers and is one of the few companies globally to have VCS-verified eight consecutive REDD+ projects. In 2021, its Impact Report was recognized as the Best Impact Monitoring Report in the world.



**Figure 2.4: Lower Zambezi REDD+ project (LZRP), and the Luangwa community forests project (LCFP) sites.**

Source: Biocarbon Partners, (2020)

### 2.14 Summary of literature and research gaps

The literature highlights several potential benefits and costs associated with forest carbon projects for host communities in developing countries. While these projects can reduce deforestation and carbon emissions in specific areas, they may simultaneously lead to the degradation of other resources elsewhere. This paradox extends to the social and economic dimensions as well, where carbon projects can enhance the socioeconomic well-being of some local people, while potentially diminishing the well-being of others. These outcomes have been attributed to various factors, including the market-driven nature of carbon projects, historical contexts, existing economic and social conditions, local institutions, and the interdependent relationship between host communities and forests.

However, a significant gap in the literature is the limited exploration of host communities' perceptions and experiences regarding the benefits and losses associated with carbon projects. Often, these perceptions are either underexplored, merely implied, or entirely overlooked. The dynamics of carbon projects are influenced by community perceptions and experiences, which include factors such as participation or non-participation, compliance or non-compliance, and the presence or absence of social conflict (Beyer et al., 2016).

Furthermore, there is a notable absence of studies on carbon projects in Zambia, with very limited evaluations of the country's three major REDD+ projects. While these evaluations often emphasize the positive economic and environmental outcomes, they tend to overlook key issues inherent in carbon trading. These include the nature of community participation, decision-making processes, benefit-sharing mechanisms, social power dynamics, and conflict resolution strategies. In particular, there has been minimal attention to issues of distributional and procedural justice, as well as the inclusivity or exclusivity of these projects from the community's perspective.

Addressing these issues is critical to dispelling the negative perceptions of carbon projects and, more importantly, ensuring that these projects deliver sustainable environmental, social, and economic outcomes. This study aims to bridge this gap by examining the costs and benefits of the Luangwa Community Forests Project (LCFP) in the Rufunsa district, with a particular focus on community perceptions, social power relations, participation, and justice—both distributive and procedural. The study will consider these issues from the perspectives of not only the host communities but also the project implementers and other stakeholders.

## **CHAPTER THREE: DESCRIPTION OF THE STUDY AREA**

### **3.1. Introduction**

This chapter provides a detailed account of the study area selected for the research. It outlines the rationale behind the selection, key geographical, social, economic, and environmental characteristics, and the relevance of the area to the research objectives.

### **3.2. Selection of the study area**

The Luangwa Community Forests Project (LCFP) has been selected as it is one of the three main carbon projects in Zambia and due to its distinctiveness and notable achievements. First, the project stands out for its scope, as it spans both communal land across 12 chiefdoms within Game Management Areas (GMAs) and private land owned by two ranches, covering a total area of 1,000,382 hectares (GRZ, 2019). Second, it has had a significant impact, protecting 1,036,636 hectares of forest, securing approximately 565,102,877 trees, paying conservation fees to 36,000 households, and reducing carbon dioxide emissions by 1.7 million tonnes annually. Third, the LCFP was ranked the world's best REDD+ project in the 2021 Environmental Finance Voluntary Carbon Market Rankings, and it is arguably the largest globally in terms of quantified social impacts (BCP, 2020). Lastly, the project involves communities and chiefs who previously supported the controversial Kangaluwi open-pit copper mine in the Lower Zambezi National Park, which further highlights the project's relevance and influence in the region.

### **3.3. Description of the study area**

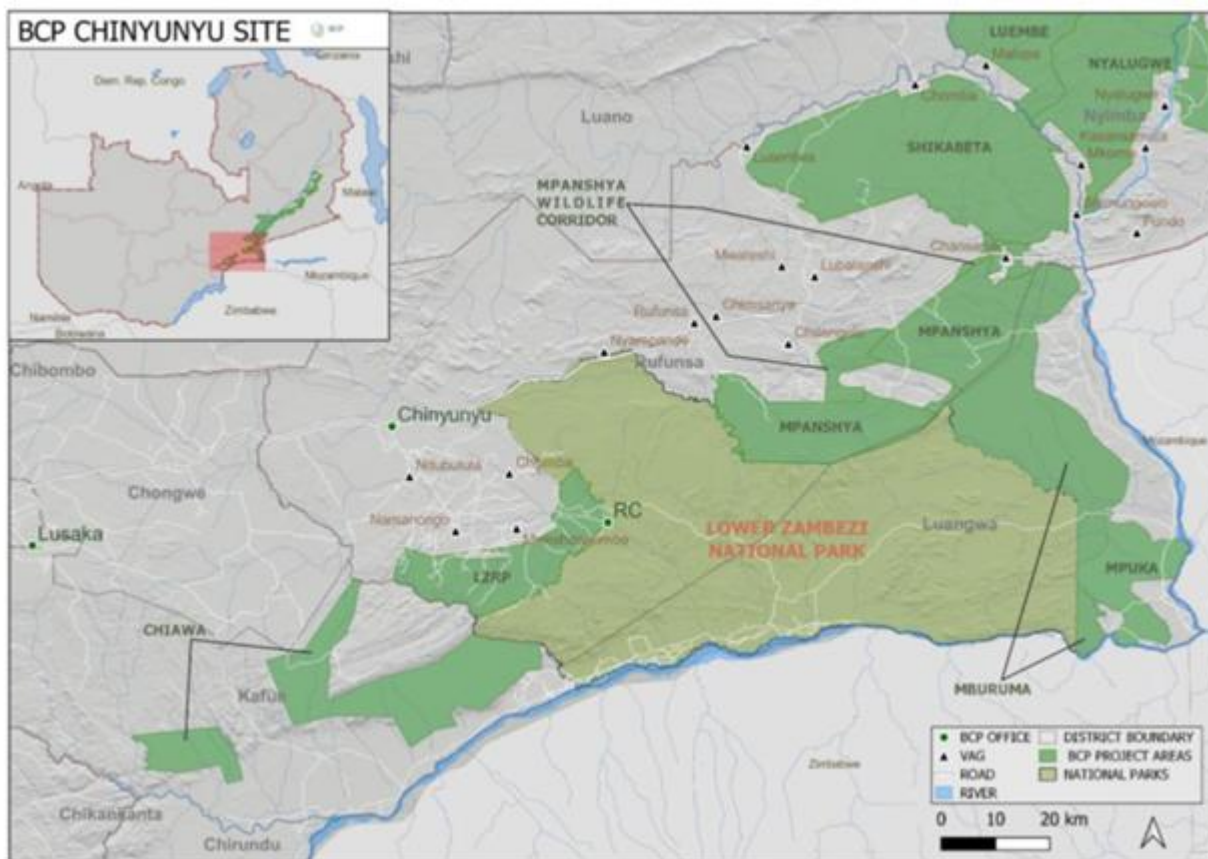
Established in 2012 by the late President Michael Sata, Rufunsa District was formerly part of Chongwe District. It is a predominantly rural area located 150 kilometers east of Lusaka, within Lusaka Province according to the 2022 Census-of population and housing Rufunsa, is estimated to have a population of approximately 82,347 people. The district is home to the Soli-speaking people, who live under two traditional leaders: Chief Mphansya and Chieftainess Shikabeta (Ministry of Agriculture, 2019).

The Luangwa Community Forests Project (LCFP) operates in two chiefdoms within Rufunsa District. In Shikabeta Chiefdom, the LCFP covers the Shikabeta Community Forest, which spans 118,102 hectares and benefits 319 households, or approximately 1,914 individuals. This community forest is located on the southeastern side of the chiefdom, within the South Luano Game Management Area (GMA). The forest is managed by the Shikabeta Community Resources Board (CRB), five Village Action Groups (VAGs), and Chieftainess Shikabeta, who serves as the matron (BCP, n.d.).

The Shikabeta Community Forest is composed of Miombo and Mopane woodlands, interspersed with seasonal rivers and streams that originate from nearby mountains. The primary users of the forest include loggers, mushroom and tuber collectors, wild honey hunters, as well as those who gather fruits and caterpillars. Despite this, the main economic activities in Shikabeta Chiefdom are agriculture, fishing, logging, and trade (BCP, n.d.).

In Mpanshya Chiefdom, the LCFP covers the Mpanshya Community Forest, which lies on the southeastern side of the chiefdom within the Rufunsa Game Management Area (GMA) No. 35. This community forest shares a boundary to the south with the renowned Lower Zambezi National Park, and the northeastern part is connected to the Shikabeta Community Forest through a corridor. The forest is managed by the Mpanshya Community Forest Management Group (CFMG), five Village Action Groups (VAGs), and Chieftainess Mpanshya, who serves as the matron (BCP, n.d.).

Like Shikabeta, the Mpanshya Community Forest is predominantly Miombo woodland, interspersed with numerous seasonal rivers and streams. The area is rich in wildlife, including elephants and hippos. The primary users of the forest are loggers, mushroom and tuber collectors, wild honey hunters, fruit and caterpillar collectors, and charcoal producers. The economic activities in Mpanshya Chiefdom mirror those of Shikabeta, with agriculture, fishing, logging, and trade serving as the main livelihood sources (BCP, n.d.).



**Figure 3.1: Biocarbon Partners Sites**

Source: BCP (2021)

## CHAPTER FOUR: METHODOLOGY

### 4.1 Introduction

This chapter provides the approach used in this study. The chapter focuses on the philosophical orientation, research approach, research design, population, sample size and sampling technique, data collection techniques, and data analysis as well as ethical considerations.

### 4.2 Philosophical Orientation

There are a number of philosophical paradigms used in social sciences and educational research among them positivism, interpretivism, post positivism and pragmatism. These philosophical paradigms are assumptions, beliefs, values, ontology and epistemology that are crucial to methodology, (Kincheloe and Berry 2004:6). Therefore, they underpin the methodological choice, research strategy, data collection techniques as well as analytical procedures (Saunders, 2009). Jackson (2013) asserts that ‘without the formulation of the philosophical background, researchers may remain innocently unaware of the deeper meaning and commitments of how they conduct their research. These philosophical paradigms are mainly focused around ontological and epistemological assumptions.

Ontology simply refers to the assumptions of the nature of reality. Ontology is the interpretation of what one constitutes as reality, thus it shapes the way in which the researcher studies and perceives their research objects (Saunders, 2009). The researcher’s ontological perspective is therefore ‘closely related to issues of how one decides to collect research data because its linked to the basis upon which someone knows something to be true’ (Oliver, 2010:34). On the other hand, epistemology concerns assumptions about knowledge, what constitutes acceptable, valid and legitimate knowledge and how the knowledge can be communicated to others (Burrell and Morgan, 1979). Simply defined it is about information that counts as acceptable knowledge and how it should be acquired and interpreted. Therefore, once a researcher accepts a particular epistemology, he /she adopt methods that are characteristic of that position.

This study adopted the pragmatism paradigm as its guiding philosophical orientation. Pragmatism is centered on the idea that research should focus on what works in real-world settings and that the choice of methods should be driven by the research problem rather than fixed epistemological boundaries (Kaushik and Walsh, 2019). Given the complexity and multi-dimensional nature of assessing both the costs and benefits of carbon market projects on local communities, pragmatism offered a flexible and practical framework.

By integrating both quantitative (survey data, statistical tests like the Chi-Square) and qualitative (focus group discussions, community interviews) methods, the study was able to gain a more

holistic understanding of the impacts of the Luangwa Community Forest Project (LCFP) in Mpanashya Chiefdom. This mixed-methods approach common under the pragmatist paradigm allowed the research to capture not only measurable outcomes (such as economic benefits), but also community perceptions, experiences, and nuanced gender differences in commitment to the project.

In essence, the pragmatist approach aligned well with the study's aim of producing practical, context-specific insights that can inform future policy decisions, community engagement strategies, and project implementation in the realm of community-based carbon market initiatives.

#### **4.3 Research approaches**

This study employed a mixed-methods research approach, which integrates both qualitative and quantitative methods to address research questions in a principled and effective manner (Creswell, 2015). Mixed-methods research involves the collection, analysis, interpretation, and reporting of both types of data. This approach was selected to bridge the gap between quantitative and qualitative research methods, aiming to offer a more comprehensive understanding of a topic. By combining both approaches, it seeks to generate deeper and more nuanced conclusions, where the findings from one method (either qualitative or quantitative) can inform and enhance the other. This integration enables researchers to form a full picture, incorporating diverse perspectives that not only deepen understanding but also inspire further exploration. Ultimately, this mixed-methods approach fosters a richer, more reflective analysis and opens up new possibilities for future research (Dawadi, Shrestha, & Giri, 2021)

#### **4.4 Research design**

This study used a case study convergent research design, which is an in-depth empirical inquiry focused on investigating single or multiple cases within their real-life context. A case is a phenomenon that is spatially delimited, and the unit is studied either at one point or over a bounded period of time (Sandelowski, 2011). By using the Luangwa Forest Carbon Project in Rufunsa District as a case, this study aims to examine local communities' perceptions and experiences of the costs and benefits of carbon trading in great detail. As Halinen and Törnroos (2005, p. 79) argue, the case study offers the opportunity to study a phenomenon within its context and thus develop a deep understanding of how it relates to its context.

The rationale for choosing a case study convergent design is that it “allows for the investigation of complex phenomena utilizing an integrative thinking mindset that facilitates deeper understanding from multiple perspectives” (Cook & Kamalodeen, 2021). Additionally, it enables

the researcher to employ multiple methods or techniques to (1) converge and corroborate the results to eliminate the inherent bias of relying on a single method (triangulation), (2) elaborate and clarify the findings from one method using the insights from the other method (complementarity), and (3) extend the breadth and range of inquiry (expansion) (Greene, Caracelli, & Graham, 1989; Cook & Kamalodeen, 2021).

#### **4.5 Sampling design**

This research was conducted in the Luangwa Community Forests Project (LCFP) in the Mpanshya Chiefdom of Rufunsa District, Lusaka Province, Zambia. The project covers approximately 3,289 households in the Mpanshya Chiefdom. The study employed both probability and non-probability sampling designs.

For the probability sampling, simple random sampling was used, as the study area does not follow any distinct pattern. The sample was divided into male-headed and female-headed households using the village register, ensuring proper representation of both groups, given the potential power dynamics between them. A total of 219 households were proportionally selected from the chiefdom using simple random sampling to ensure equal representation within the population. The sample size was determined through a priori power analysis using the software G Power 3.2. The sample size of 219 provided statistical power for detecting moderate effect size at the 0.05 level of significance (Erdfelder et al., 1996).

For the non-probability sampling design, purposive sampling was used to select 8 key informants, as outlined in Table 4.1 below. These key informants were chosen based on their knowledge, expertise, and experience with the phenomenon under investigation. Additionally, purposive sampling was used to select discussion participants from the pool of respondents, specifically those with extensive knowledge of the research topic. As Kothari (2014) notes, purposive sampling is used to select individuals who are judged to be most capable of providing the best information to achieve the study's objectives, as not all individuals possess the desired information about the phenomenon under investigation.

**Table 4.1: Number of interviewees**

Key Informant	No of participants	Basis of Selection
Traditional Leaders	1	Knowledge and experience relating to the interaction between trading institutions and the communities
Ministry of Green Economy and forest department	2	Knowledge and experience relating to the interaction between trading institutions and the communities
Representatives from Community Forest Action Groups, Community Resource Board (CRB), and Resource Protection Scouts	2	Knowledge and experience relating to the interaction between trading institutions and the communities
Biocarbon Partners Officers	2	Technical knowledge and experience in the implementation of carbon trading projects
Carbon Forest expert	1	Policy expertise on carbon trading and environmental management
Total	<b>8</b>	
Community members (4 FGDs)	4	Knowledge and experience relating to the LCFP

Source: Field Data (2023)

#### **4.6 Data collection and procedure**

This study collected both primary and secondary data. The following subsections outline data collection methods, procedures, instruments and sources was used in each of the data, primary and secondary.

#### **4.7 Primary data collection**

Primary data was collected from community members and key informants such as the Traditional leaders, Representatives from Community Forest Action Groups and Community Resource Board, Biocarbon Partners Officers and Forest experts and Ministry of Green Economy Officers. This was done using structured interviews, in-depth interviews, focus group discussions, and observations. The following subsections explain each of these methods in detail.

#### **4.8 Structured interviews**

The study surveyed 219 households in Mpanshya Chiefdom, Rufunsa District, using a structured questionnaire. This tool was designed to gather socio-demographic data and quantitative insights on the costs and benefits of LCF projects for participants. A simple random sampling method was employed to ensure unbiased participant selection. All respondents were asked the same set of

questions, and their responses were documented on individual interview schedules. The interviews were conducted in Nyanja, the predominant local language.

#### **4.9 Semi-structured interviews**

In-depth interviews offer a flexible framework that allows researchers some degree of freedom to guide the conversation, rather than adhering to a rigid question-and-answer format. As Longhurst (2009, p. 580) explains, “*Although the interviewer prepares a list of predetermined questions, in-depth, semi-structured interviews tend to unfold in a conversational manner. This offers participants the opportunity to explore issues they feel are significant. The interviewer does not keep a tight rein on the interview but instead allows the interviewee, through the use of open-ended questions, to explore the subject in as much depth than and from as many angles as they please.*”

The interviews for this study were conducted with eight key informants, including traditional leaders, members of Community Forest Action Groups, Biocarbon Partners staff, department of forest, Green Economy and Climate Change department and carbon market experts. These informants were purposively sampled because they were considered to have significant knowledge of the study topic (McMillan *et al.*, 2006). Each interview lasted approximately one hour, and the responses were recorded in a field notebook before being transcribed for analysis.

#### **4.10 Focus group discussions**

Focus group discussions (FGDs) are structured group interactions facilitated by a moderator to explore participants' views on a specific topic (Bryman, 2008). This study conducted 4 FGDs with both female- and male-headed households involved in the project because the nature of the questions did not require grouping responded according to there gender. No sensitive information was obtained. The groups were selected using purposive sampling, following Onwuegbuzie and Collins' (2007) recommendation of a minimum of 3 FGDs to generate sufficient data. Each FGD included 7 participants, aligning with the recommended size of 6 to 12 participants (Onwuegbuzie & Collins, 2007). Participants were selected based on gender and age to ensure heterogeneous groups, allowing for diverse experiences and perspectives. Discussions focused on community perceptions of project benefits, decision-making processes regarding project selection, and the distribution of conservation fees from carbon projects among community members.

#### **4.11 Secondary data collection**

Secondary data was primarily sourced from archival records of income generated through carbon sales, as well as documents related to carbon projects from Biocarbon Partners Limited and other projects implemented in the region. This provided insights into both the income generated directly

from carbon sales and that resulting from donor-funded carbon projects. Additionally, the study involved an extensive review of existing literature, both published and unpublished, on carbon trading worldwide. The research reviewed research articles, the wildlife act, forest act to get a proper understanding how carbon trading is implemented and regulated. This review explored management strategies employed by various countries to optimize carbon projects and enhance pro-poor outcomes.

#### **4.12 Data analysis**

Data analysis involved the use of qualitative and quantitative data analysis techniques in a complimentary manner. Qualitative data collected from focus group discussions, in-depth interviews, and secondary sources was analyzed using thematic analysis. This method identifies, organizes, and reports themes within a dataset (Braun & Clarke, 2006). Thematic analysis is a flexible approach that provides a rich, detailed account of the data (Lorelli, 2017). It involves five phases: data familiarization, where the researcher reads the data actively to identify patterns and meanings; generating initial codes, where interesting aspects of the data are systematically highlighted for potential themes; searching for themes by grouping relevant data into broader themes; reviewing themes, ensuring they form coherent patterns and reflect the overall data; and finally, defining and naming the themes, considering how they fit into the research questions and the broader narrative.

On the other hand, quantitative data from questionnaires was analyzed using the chi-square test and descriptive statistics with the aid of Microsoft Excel 2013 and SPSS software. The analysis followed several steps: ensuring data validity, checking for completeness and identifying gaps, conducting data checks to eliminate inaccuracies, grouping and assigning values for entry into the software, and running descriptive statistics to determine frequency distributions and measures of central tendency. To integrate both data types during interpretation and reporting, the study will use a narrative approach, specifically the "weaving approach" (Fetters *et al.*, 2013). This method presents both qualitative and quantitative findings on a theme-by-theme basis, allowing for comparison and identification of overlaps. This integration enriched the findings by using qualitative data to validate or explain quantitative results and vice versa.

#### **4.13 Validity and reliability**

Validity is the degree to which an instrument measures what it is intended to (Golafshani, 2003). On the other hand, reliability is the extent to which results are consistent over time and an accurate representation of the total population and if the results of a study can be reproduced under a similar

methodology (Joppe, 2000). To ensure validity and reliability, data collection instruments was pre-tested on a neutral pilot sample in Rufunsa district and data collection adjusted and fine-tuned accordingly in order to answer to the data needed for the study. Moreover, the study also triangulated data from multiple sources.

#### **4.14 Ethical issues**

Ethics refers to the moral principles that govern an individual's behavior (Huma and Nayeem, 2017). In the context of research, ethics involve adhering to morally and legally sound practices, and distinguishing between acceptable and unacceptable behavior (Huma and Nayeem, 2017). To ensure the ethical integrity of the study, the researcher sought approval from the University of Zambia Ethics Committee before collecting data. During data collection, the researcher strictly adhered to key ethical principles, including maintaining the quality and integrity of the research, obtaining informed consent from participants, ensuring confidentiality and anonymity, and confirming that participation was voluntary. Additionally, the researcher took steps to minimize any potential harm to participants and upheld independence and impartiality throughout the study. The researcher also explained to the participants that their contribution will contribute to the limited body of knowledge on the costs and benefits of carbon trading projects in Zambia and help the implementers understand the true costs and benefits of their interventions on local communities.

## CHAPTER FIVE: PRESENTATION OF FINDINGS

### 5.1 Introduction

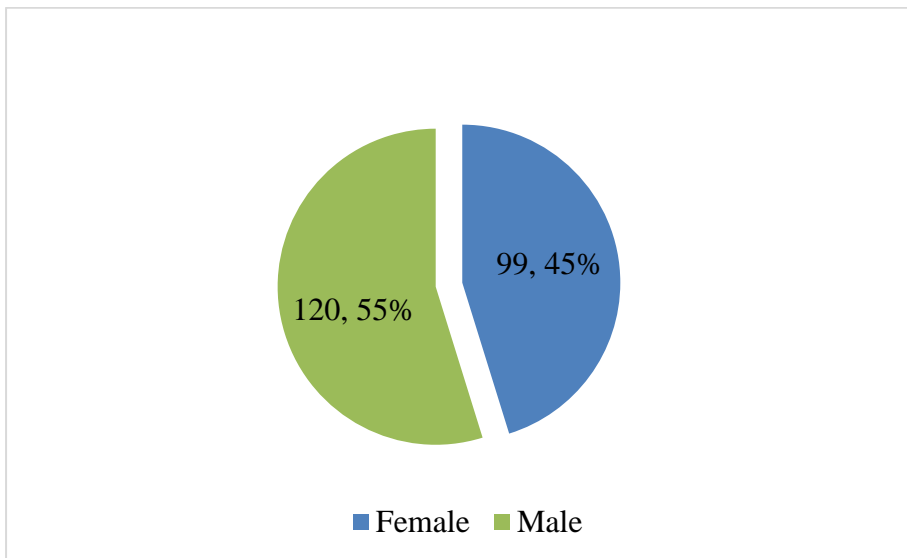
This chapter presents the findings of the study, organized by objective. The demographic characteristics of the study area are first described, followed by an examination of the legal institutional framework governing carbon trading in Zambia. The roles of local actors in the Luangwa Community Forest Carbon Project are then discussed, and finally, the costs and benefits of the project to the community are analyzed. This structured approach enables the reader to easily follow the findings and their alignment with the study's objectives.

### 5.2 Social demographic characteristics

This section deals with selected socio-economic and demographic variables of respondents that might influence people's experience of Luangwa community forest carbon project costs and benefits. These variables include sex, age, education levels and years spent in the chieftdom. The findings on each of these variables are presented in a subsection.

#### 5.2.1 Sex of respondents

The findings show that of 219 respondents who participated in this study, 55% were male while 45% were female (Figure 5.1). These results show that the majority of respondents were male.

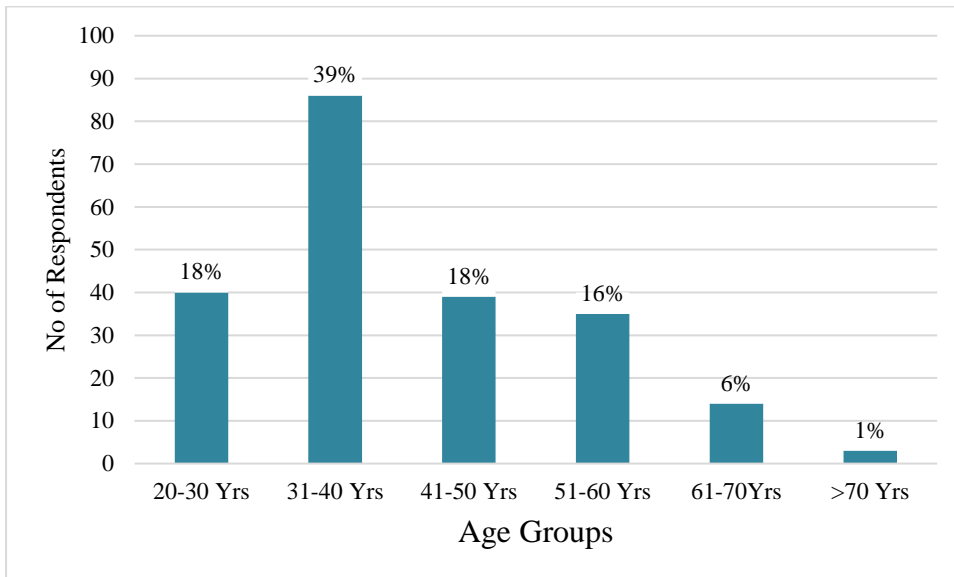


**Figure 5.1: Sex distribution of respondents**

Source: Field Data (2023)

### 5.2.2 Age of respondents

As shown in Figure 5.2, the respondents' age was distributed as follows: 20-30 years (18%), 31-40 years (39%), 41-50 years (18%), 51-60 years (16%), 61-70 years (6%) and >70 years (1%). Respondents of different age groups participated in the study, of which the majority were in the age group of 31-40 years. This age diversity allowed the study to capture a diverse range of perspectives, reflecting the views and experiences of both younger and older members of the targeted host community.



**Figure 5.2: Age distribution of respondents**

Source: Field Data (2023)

### 5.2.3 Education level of respondents

As shown in Table 5.1, the findings reveal that the majority of respondents had completed primary education (78%, n=219), followed by those with secondary education (44%, n=219). Respondents with tertiary education were the least represented, comprising only 2% (n=219) of the sample. These results highlight the predominance of lower levels of formal education among the study participants, which may influence their perspectives on the Luangwa Community Forests Project.

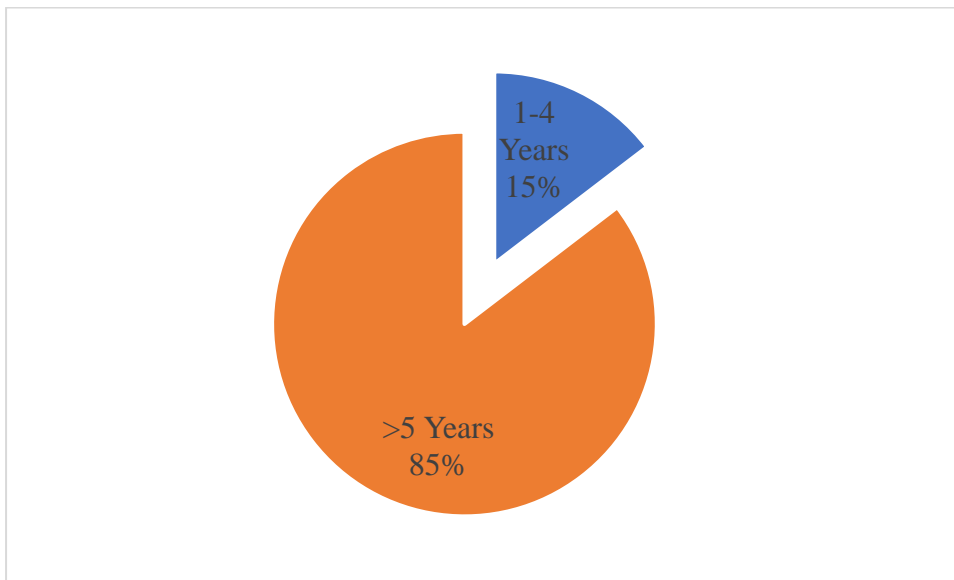
**Table 5.1: Education levels of respondents**

Education levels	Total	Percentage (%)
Primary	170	78
Secondary	44	20
Tertiary	5	2
<b>Total</b>	<b>219</b>	<b>100</b>

Source: Field Data, (2023).

#### **5.2.4 Period of respondents' residence**

Figure 5.3, reveals that 15% (n=32) of respondents had lived in the area for 1-4 years, while the majority, 85% (n=187), had resided there for 5 years or more. These results suggest that most respondents had a relatively long-term engagement with the project, giving them a proper understanding of its impacts and benefits.

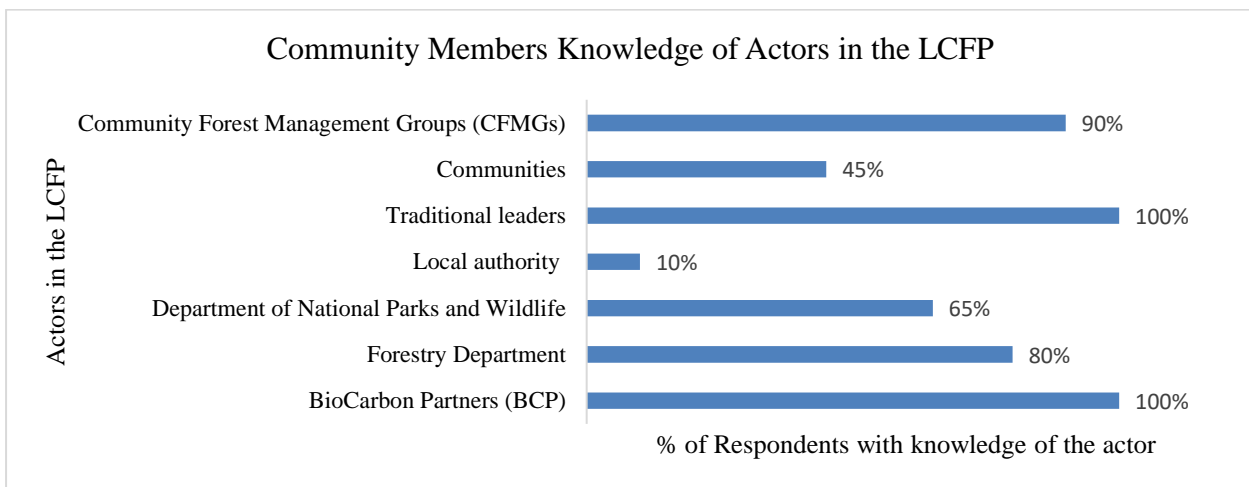


**Figure 5.3: Participants' years lived in the project area**

Source: Field Data, (2023)

### 5.3 Actors involved in the Luangwa community forest project (LCFP)

This section outlines the key actors involved in the management and implementation of the Luangwa Community Forest Project (LCFP) in Mpanshya Chiefdom (Figure 5.4). Each actor plays a distinct role in ensuring the success and sustainability of the project. The most well-known actors were the Biocarbon Partners (BCP), Traditional Leaders, Community Forest Management Group (CFMG), Forest Department, Department of National Parks and Wildlife (DNPW), Community Members and the Local Authority.



**Figure 5.4: Actors Involved in the Management of LCFP in Mpanshya chiefdom**

Source: Field Data, (2023).

While some responsibilities, particularly between government departments such as the Forestry Department (FD) and the Department of National Parks and Wildlife (DNPW), tend to overlap, other actors have clearly defined mandates. The narrative below elaborates on their individual contributions in LCFP.

#### 5.3.1 Biocarbon partners (BCP)

BCP is a Zambian private company and the primary project developer of the LCFP. As the project proponent, BCP is responsible for technical implementation, including forest carbon inventory, carbon benefit quantification, third-party verification, registration, and overall management. They also serve as the carbon credit marketer, acting as intermediaries between the community and international buyers.

BCP closely collaborates with government departments to ensure that project activities are aligned with local needs and comply with regulatory standards. For example, when developing infrastructure such as boreholes, BCP works with local authorities specifically district planners to ensure proper water testing and certification:

*“We ensure to involve government departments in all the project activities in order to safeguard the interest of the communities and manage the community forest sustainably. For example, if we want to put up a borehole, we involve district planners because they know and understand each area well. We involve them to ensure that they do the water quality testing and certify the boreholes fit for people to use” “We involve them to ensure that they do the water quality testing and certify the boreholes fit for people to use.”* (BCP Key Informant (KI), 2023).

Additionally, BCP works with Mpanshya Community Forest Management Group (CFMG) to develop bylaws for fund use, promoting transparency and preventing elite capture. BCP representative explains: *“We work closely with the CFMG to make sure the bylaws are clear and fair, so that everyone knows how the funds are used and this helps us avoid misuse of resources”* (BCP KI, 2023).

However, coordinating various stakeholders has been challenging task for the developer. As BCP representative explains:

*“One of the major challenges we face is making sure all partners are on the same page whether it’s a government department or local communities. Things take time, and sometimes there are delays in getting approvals or feedback. We have to keep the process inclusive but also move the project forward.”* (BCP KI, 2023).

### **5.3.2 Forestry department (FD)**

The Forestry Department plays a key regulatory and technical support role. According to the Forestry Act of 2015, the responsibilities of the FD include the approval, monitoring, and certification of community projects. FD also guides the establishment and operationalization of Community Forest Areas and supports CFMGs in developing management plans.

The department is mandated to institutionalize community forestry in its plans and budgeting processes. It also provides extension services and monitors project budgets to ensure alignment with community priorities.

The Forest Department re-echoed these responsibilities: *“Our role is to monitor whether planned activities in the community budget are implemented for transparency purposes”* (FD KI, 2023). By ensuring that forest conservation and community development are linked, the FD aims at securing long-term project benefits. However, some the challenges that the department face in delivering the responsibility is lack of inadequate funding and institutional overlap. *“We often find ourselves duplicating efforts with DNPW. This causes confusion not only for us but for the community too”* (FD KI, 2023).

In addition to the unclear roles and responsibilities between the Department of Forestry and the Department of National Parks and Wildlife (DNPW), both institutions suffer from inadequate funding. As one FD key informant explained: *“We rely on BCP to support us with funds when we need to go out for field monitoring, but most of the time they tell us the carbon revenue funds are already used up. The 3% they refer to is shared among all government departments involved in the project, which makes it really difficult for us to do our work”* (FD KI, 2023).

### **5.3.3 Department of national parks and wildlife (DNPW)**

DNPW’s primary mandate is wildlife conservation, and within the LCFP, it supports BCP in protecting biodiversity, particularly in Game Management Areas (GMAs) and REDD+ zones. According to the Wildlife Act of 2014. DNPW is mandated to protect and conserve Zambia’s wildlife and improve the quality of the life among communities in the wildlife estates; to maintain sustainable biodiversity in national parks and game management areas; to reverse the decline in wildlife resources and improve wildlife resource management to a level which will secure sustainable flow of benefits from the resources.

The department collaborates with communities and other stakeholders in conducting needs assessments and provides technical guidance on the co-management of wildlife resources.

*DNPW re-echoed these responsibilities: “We also ensure maintenance of biodiversity in the REDD+ area however, there’s no clear line between what we’re supposed to do and what the*

*Forestry Department is doing. Sometimes we both show up to do the same thing in the same area”* (DNPW KI, 2023).

#### **5.3.4 Chieftain traditional authorities**

Traditional leaders specifically Chieftainess Mpanshya and her village headmen/women play a pivotal role in LCFP. Recognized both legally and culturally, the chieftainess offer oversight and legitimacy to the project. As she clearly puts it:

*“I am the matron of this chieftain and my role is to ensure that I am fully involved in all the processes of the project from the beginning to the end. The goal is to ensure my chieftain fully participate and benefit from the project”* (Chieftainess Mpanshya, 2023).

*“I also manage the CFMGs’ affairs and am involved in all the project processes. I ensure that all members of my chieftain are registered as participants and that benefits are fairly distributed”* (Chieftainess Mpanshya, 2023).

The involvement of traditional leaders enhances local ownership and ensures that traditional knowledge is respected in project implementation.

#### **5.3.5 Local authority**

Local authorities play a key role in forest management. According to the local government act of 2019, local authorities are responsible for promoting and facilitating sustainable natural resource management within their jurisdictions, including forest conservation. They support the protection and management of local forests by working with communities, enforcing relevant by-laws, and ensuring that forest-related activities align with local development plans. Their role also includes collaborating with government departments and other stakeholders to implement environmental and climate-related initiatives at the local level.

In the context of this project, local authority collaborates with BCP and government departments in planning and supervising development projects. *“We work with BCP and other government departments to make sure development projects are aligned with community needs. In planning meetings, we sit together to look at priorities, and our role is to ensure that what’s being implemented fits within local plans and regulations. We also help monitor progress and make sure there’s transparency.”* (Local Authority KI, 2023).

Their technical expertise, especially in infrastructure and service delivery, supports quality assurance and alignment with local development plans.

*“Our technical teams provide input, especially on infrastructure and service delivery, to make sure everything meets the right standards.”*

### **5.3.6 Community forest management groups (CFMGs)**

These community-based institutions are central to the governance of local natural resources under the Forest Act of 2015. According Act, the roles of CMFGs include protecting and conserving forest resources through approved management practices, enforcing forest laws by helping to prevent illegal activities such as unauthorized harvesting, and engaging local communities in decision-making processes to ensure transparency and local ownership. Additionally, CFMGs collaborate with the Director of Forestry and other stakeholders to strengthen forest governance and support long-term conservation efforts.

CFMG representatives re-echoed these responsibilities: *“Our role as CFMG is to enforce management plans, controlling forest access, and ensuring that benefits are distributed transparently in the chieftdom. We also work closely with our implementing partners to effectively manage forest resources, and financial resources derived from carbon credits, on behalf of the wider community”* (CFMG KI, 2023).

They are also in charge of allocating the profit from the sale of carbon credits in local development projects, giving the forest and its protection direct tangible value for local populations.

Thus, CFMGs serve as the link between communities and government, overseeing resource use and the implementation of development projects funded through carbon credit revenues, translating conservation outcomes into community development. As CFMG representative explains: *“We take the lead in controlling access to the forest; ensuring benefits from the forest are maximized.”* (CFMG KI, 2023)

### **5.3.7 Community members**

Community members are very important actors in the project. Under Zambia's Forests Act No. 4 of 2015 and the Forests (Community Forest Management) Regulations, 2018 (S.I. No. 11), the community plays a central role in establishing and managing community carbon projects. The process begins with the community identifying a forest area for management, ensuring that it is

within or adjacent to their village and that they derive their livelihood from it. The community then forms a Community Forest Management Group (CFMG), guided by principles of transparency, fairness, and non-discrimination, and develops a constitution outlining roles and responsibilities.

A general assembly is convened to elect office bearers democratically, ensuring broad representation, including women and marginalized groups. Following this, the community applies to the Director of Forestry for recognition, submitting necessary documents such as the CFMG constitution, a sketch map of the proposed forest area, and consent from the local Chief. Upon recognition, the CFMG enters into a Community Forest Agreement with the Director, formalizing their rights and responsibilities in managing the forest sustainably.

Additionally, the community appoints Honorary Forest Officers (HFOs) to assist in enforcing forest laws and managing resources effectively. This participatory approach ensures that the community is actively involved in all stages of the carbon project, from planning to implementation.

Their engagement in decision-making, implementation, and compliance with conservation rules is vital to the long-term success of the project. Results from FGD reported; *“we the communities act as social guards of the forest and that is why normally report to our leaders if there is any forest damage in the project area we are protecting”*.

#### **5.4 Community costs and benefits of the Luangwa community forest project**

This section explores the impacts of the LCFP on local communities, detailing the perceived benefits and costs associated with the project.

##### **5.4.1 Perceived costs/losses of Luangwa community forest project by the community**

The study sought to explore the perceived costs of the Luangwa Community Forest Project (LCFP) in the Mpanshya chiefdom. Respondents were asked to indicate their level of agreement or disagreement with five cost-related statements: limited access to Non-Timber Forest Product (NTFP), limited freedom to interact with the forest, new livelihoods are less lucrative than the old ones, internal conflict within or among communities, and severe punishment to non-compliant community members.

The findings indicated that the majority of respondents (45%) disagreed (27%) or strongly disagreed (18%) with the statement of limited access to Non-Timber Forest Products (NTFPs),

suggesting they do not perceive access as restricted. However, 30% agreed (14%) or strongly agreed (26%), indicating some perceived access restrictions. In line with these results, FGDs revealed that NTFPs in the forest remain underutilized by the communities. As one discussant explains this dilemma: "*BCP does not stop us from collecting NTFPs from protected areas, but we are afraid to go inside for fear of being misunderstood of doing other things that in the forest like cutting trees for charcoal*" (FDG 1, 2023). This highlights the underlying concerns that, although access may not be formally restricted, apprehension and misinterpretation still hinder the full utilization of these resources.

Similarly, the findings showed mixed perceptions about freedom to interact with the forest. The majority of respondents 55% agreed (23%) or strongly agreed (32%) with having limited freedom to interact with the forests, indicating access is limited. On the other hand, 29% of the respondents strongly disagreed (10%) and disagreed (19%) with the statement. In line with these findings, one discussant expressed concern "*We used to walk freely in the forest, even just to admire nature or gather small things. But now, people are scared to enter—it's like we've lost access to what God gave us,*" said one community member, reflecting on the restrictions brought by the project in the area.

When it came to whether new livelihoods are less lucrative than the old ones, the results were also mixed. Most respondents 44% agreed (12%) or strongly agreed (32%) that these livelihoods are less lucrative while 39% strongly disagreed (19%) or disagreed (20%). In line with these findings, a 38-year-old female discussant expressed dissatisfaction, noting that the project prioritizes community-wide projects, such as boreholes, rather than addressing household-level needs. She lamented that the restriction on forest use, which had previously provided resources for daily necessities like food and clothing, has made it harder for individuals to appreciate the project's benefits. This comment underscores the disconnect between the project's goals and the immediate financial needs of community members, particularly regarding personal income from forest resources.

This was also echoed by the traditional leaders in sharing the change that they would like to see going forward as captured below:

*"Our implementing partners should support livelihoods projects that will address the real needs of the people. Their livelihood should aim at reducing poverty, improving local food security, and providing new sustainable alternative sources of income. For example, they can be implementing*

*projects or activities that generate Income such as savings and Loans programs or skills training programs if conservation goal is to be achieved” (Traditional Leader KI, 2023).*

The Traditional leader further stated:

*“I want to see a reduction in the implementation of projects that have no direct benefits to people and focus on the real needs of the people. Some projects such as schools, clinics can be done by the government and not the project unless otherwise. They should focus on empowering people by giving them incentives and various trainings and skills” (Traditional Leader KI, 2023).*

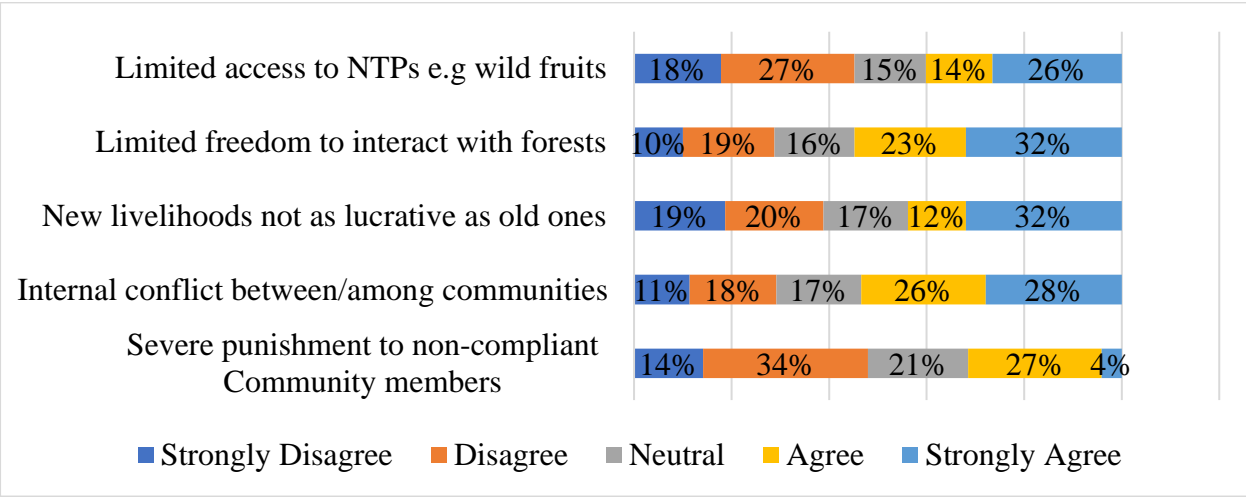
Regarding internal conflict within communities due to the project, 54% agree (26%) or strongly agree (28%), indicating that a majority perceive the project as a source of division. In contrast, 29% (64 respondents) disagree or strongly disagree. These results suggest that a significant portion of the community perceive the project as a source of internal conflict. In line with these results, a 58-year-old male discussant noted:

*“People have stopped coming to meetings because they feel it’s always the same individuals benefiting—mostly those who are close to the ones running the project. Things like goats or farming inputs don’t reach everyone, and that’s causing a lot of tension in the community.*

This comment underscores the perception that unequal distribution of project benefits is contributing to internal conflict and fostering division within the community.

Lastly, most respondents, 48% disagreed (34%) or strongly disagreed (14%) experiencing severe punishment for breaking the rules established by the project (non-compliance) while 31% agreed 27%, and strongly agreed 4%. In line with these findings, the One respondent who felt enforcement was generally fair said, *“They mostly just warn us or call a meeting if someone breaks the rules. It’s not like they punish people harshly.”* Another echoed this view, stating, *“We are told the rules clearly, and if you make a mistake, they talk to you first before taking any action.”*

However, some did report a sense of strict enforcement. *“If you’re caught doing something wrong in the forest, even unintentionally, they can report you. That scares people,”* said one community member. Another noted, *“It depends who you are—some get away with things, while others are punished quickly. That’s why people feel it’s not always fair.”*



**Figure 5.5: Community perceived costs/losses of LCFP**

Source: Field Data, (2023)

**5.4.2 Benefits of Luangwa community forest project to community members**

The Luangwa Community Forest Project (LCFP) uses a four-stage benefit-sharing mechanism to distribute revenue from carbon credits. The first stage accounts for 40% of the gross revenue, which covers various operational costs related to running the project and the sale of carbon credits. This portion is divided into three categories: (i) the cost of sales (10%), (ii) general, administrative, and overhead costs (10%), and (iii) management fees (20%).

The cost of sales (10%) is allocated to commissions paid to brokers facilitating the global sale of carbon credits and to cover Verified Carbon Standards (VCS) and registry costs associated with the issuance of carbon credits. General, administrative, and overhead costs (10%) include expenses that cannot be directly attributed to a specific project but are essential for overall project operations. These costs encompass board governance, staff salaries (shared across multiple projects), sales, marketing, and other shared expenses such as rent and insurance. The management fees (20%) are designated for BCP's exclusive use, supporting capital repayments, debt financing for project expansion, and profit-sharing.

The second stage involves the distribution of net profits, which account for 60% of the gross sales. Of this, 33% is allocated to LCFP operations, and 27% is directed toward community livelihood projects. LCFP operations funding (33%) is used to enhance the value of community assets, such as the forest, through expenses for co-management, infrastructure, biodiversity conservation, encroachment surveillance, governance capacity building, and forest monitoring to maintain

successful annual verification and ensure continuous revenue generation. BCP has the discretion to allocate up to 3% of this amount for additional livelihoods, which is deemed critical for maintaining LCFP’s annual verification.

However, transparency around the exact allocation of funds remains an issue. As stated in the BCP Monitoring Report, BCP could not disclose detailed financial allocations or clarify the direct benefits realized from the project. A BCP representative explained, *"Unfortunately, I cannot disclose certain information unless you get consent from the higher authority, but what I can tell you is that there is a percentage that comes to BCP"* (BCP interview, 2024). This lack of clarity raises questions about the accountability and transparency of the fund distribution process. The Table 5.3 below outlines the details of the allocation of revenue and profit across various stages and components, including cost of sales, overheads, management fees, operational costs, and community livelihood projects. The mechanism ensures equitable distribution by distinguishing between gross sales and net profit, with specified percentages allocated to each category.

**Table 5.3: LCFP benefit sharing mechanism: Mpanshya CFMG**

Stages	Items	% of gross sales	% of net profit
First Stage covers deductions (40% of the gross sales)	Cost of sales	10%	
	General, administrative & overhead costs	10%	
	Management fees	20%	
Second stage covers the net profit (60% of the gross sales)	LCFP operations (retained by BCP)	33%	55%
	Community livelihood projects	27%	45%
<b>Total</b>		<b>100%</b>	<b>100%</b>

Source: Field Data (2023)

The third stage focuses on the distribution of the 27% allocated to community livelihood projects. This share is further divided among three strategic local stakeholders: Her Royal Highness Chieftainess Mpanshya (2%), CFMG operations and administration (3%), and the community itself (22%). The funds allocated to the community are used for various initiatives that support local livelihoods and socio-economic development. The percentages of the CLPF, net profit, and gross sales attributed to each category are detailed in Table 5.4 below.

**Table 5.4: Allocation of community livelihood project funds (CLPF) (27% of gross carbon sales**

Items	% of CLPF	% of net profit	% of gross sales
Her Royal Highness Chieftainess Mpanshya	7%	3%	2%
CFMG operations and administration	12%	5%	3%
Community	81%	37%	22%
<b>Total</b>	<b>100%</b>	<b>45%</b>	<b>27%</b>

Source: Field Data (2023)

In the fourth stage, as can be seen in Table 5.5 below, 3% of the 22% allocated to the community is used to support government involvement in the LCFP, specifically covering expenses for government departments like the Forestry Department (FD) and the Department of National Parks and Wildlife (DNPW). According to one Forest Department (FD) interviewee, *“The money is used to give allowances to the [government] officers when we go in the field. It is also used for servicing vehicles if we (FD) make a request.”* The BCP interviewee further clarified, *“Whatever government (departments involved in the LCFP project) wants that is the money they use. For example, if they want to go in the field for field work, every expense is paid with this money.”* This indicates that the funds primarily support operational activities and logistical costs for government personnel involved in the project.

However, concerns arise from the fact that this 3% does not sit in a government account but instead remains in BCP’s account. As one FD respondent explained, *“This money does not sit in any government account to give us (government staff) room to decide what to do with it, but instead, it sits in BCP’s account.”* This arrangement grants BCP full control over the funds, raising questions about the level of oversight government departments have over the allocation and use of these funds. BCP, in turn, has stated that the money *“does not go direct as per se what we tell them (government staff) is that there is this percentage...,”* suggesting that the funds are managed according to BCP’s discretion rather than directly according to the government’s needs.

The lack of transparency in managing these funds is further highlighted by FD interviewees who expressed frustration over the lack of visibility into the fund's movement and usage. One FD interviewee pointed out:

*“We do not know how the money moves. We also do not know how they even arrive at 3%... 3% of what? How much is the 3% and how is it used? Sometimes they will just say money for the government coffer is finished so we would not even know it is finished... even when you request money to service the vehicles, it’s not guaranteed that we will be given only out of their discretion.”*

This uncertainty and lack of control hinder the ability of government staff to monitor and manage the funds effectively.

The remaining 3% is allocated to supporting improved community livelihoods, which, like the government share, is retained and managed by BCP in consultation with community members. This brings the total percentage controlled by BCP to 6%, while the remaining 16% is fully managed and controlled by the communities themselves (see figure 5.5). The control exerted by BCP over these 6% of the funds, both for government and community livelihood support, raises concerns about the transparency and fairness of the distribution process.

The government’s recognition of these concerns is reflected in their involvement to ensure greater clarity and accountability. As one FD interviewee mentioned:

*“Government has come in to ensure that the sharing mechanism is well known and that amount that will be coming to government is specified and go to government accounts but as it stands, that is the way things used to move.”*

This statement acknowledges that, while the government is now working to make the sharing mechanism clearer, the previous system lacked transparency and oversight, highlighting the ongoing need for reform in the financial management of the project.

Table 5.5 outlines the distribution of funds from net profit and gross sales to support various community initiatives and government programs. The allocation is divided into three main categories: government support, chiefdom livelihood fund, and community livelihoods, with each category further detailing its percentage share of the allocation, net profit, and gross sales.

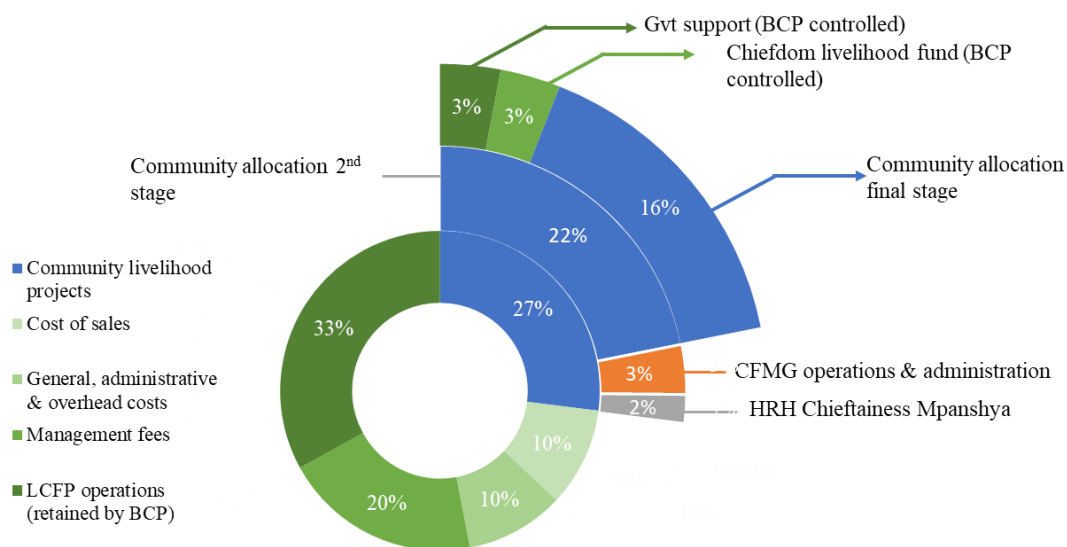
**Table 5.5: Community allocation of the gross sales and net profit of carbon fees (22%)**

No	Item	% of the allocation	% of net profit	% of gross sales
	Government support (BCP controlled)	13.6%	5%	3%
	Chiefdom livelihood fund (BCP controlled)	13.6%	5%	3%
	Community livelihoods (community controlled)	72.7	27%	16%
	<b>Total</b>	<b>100%</b>	<b>37%</b>	<b>22</b>

Source: Field Data (2023)

### 5.2.3 Summary of distribution of conservation fees (Gross Sales) by project actors

Figure 5.6 below provides a summary of the benefit-sharing mechanism for conservation fees under the LCFP. It outlines the distribution of revenues among key project stakeholders, including the government, community members, traditional leaders, CFMGs, and BCP.



**Figure 5.6: Summary of the benefit-sharing mechanism in the LCFP**

Source: Field Data, (2023)

### 5.4.3 Types of community benefits realized from LCF project

The study sought to understand the benefits accessed by gender in the LCFP project in Mpanshya Chiefdom, covering education, water, hammer mills, farming inputs, goats and employment.

Out of 219 respondents, 46% males and 40% females benefited from education, with an overall benefit rate of 86%, indicating that education was the most widely accessed benefit and available to a significant portion of both genders (see table 5.6). The results align with a statement made by one of the respondents during the focus group discussion:

*“The building of the one-by-two classroom block has really shortened the distance to and from school for our children.” “...This has helped reduce absenteeism among school-going children who previously missed school frequently due to distance. We parents would assume they are in school, but not. So, we are very grateful for the project and also made come together than before.”*

Out of 219 respondents, water access was universal, with 55% males and 45% females benefiting, resulting in a 100% benefit rate, indicating that water provision addressed a critical community need effectively (see table 5.6). Focus group discussion confirmed the positive impact of improved water access. As one focus group member stated:

*“We had issues with water in most parts of the chiefdom but with the coming of the project, that has really changed...” Thanks to the boreholes constructed using carbon fees, we now have reliable access to clean water.” A female respondent added; “The project has also significantly improved our lives by addressing the long-standing water challenges that were a major concern in our communities.”*

For the hammer mill benefit, only 9% male and 6% female out of 219 respondents benefited, representing 15%, indicating that this benefit was not widely accessed (see table 5.6). A female respondent during focus group discussion noted, *“The project has greatly improved our lives by solving the challenges we previously faced with hammer mills in the chiefdom but the only problem is that we are not sure how the funds generated from the hammer mill are being used. It’s like the only people reaping the benefits are those in charge, and close the elites in the chiefdom.*

Farming inputs were only accessed by 5% male and 5% female out of 219 respondents, resulting in 10% benefit rate, highlighting the limited availability or utilization of this benefit. Similarly, focus group discussants expressed mixed reactions, with some appreciating the climate-smart agriculture training but feeling that the farming inputs provided were insufficient. One respondent noted, *“The inputs fell short of our expectations,”* highlighting a gap between the expected and realized benefits.

The goat benefit was accessed by 4% male and 7% female out of 219 respondents, which resulted in an 11% overall benefit rate. This suggests that the goat distribution benefit was not widely effective or appreciated. The results align with a statement made by one of the respondents during the focus group discussion:

*"The goats in this area are only given to few people who are well-connected or well-known. Therefore, it would be untrue to say that the project has benefited us with goats, and I don't want to make such a false claim."*

The employment benefit also had a lower uptake, with only 4% male and 9% female benefiting out of 219 respondents, representing just 13% of the sample (see table 5.6). The results align with a statement made by one of the respondents during the focus group discussion:

*"The project has actually perpetuated poverty and increased theft in our community. The majority of our youths have started stealing livestock, such as chickens and cattle because they are no longer allowed to go into the forest to make charcoal, hunt, or mine gold leaving them with no option but to steal for us... I think the project developers should really look into ways of helping our youths earn something from the carbon money. If they can't benefit from it directly, maybe through jobs or small businesses, then they won't be tempted to engage in bad behavior like stealing from us or others in the community."*

The study shows that while education and water benefits are widely accessible, other benefits, such as employment, hammer mills, farming inputs, and goats, have much lower benefit rates. The relatively low uptake of these resources suggests that there may be barriers to accessing them or that the benefits are limited in scope or availability. Additionally, the gender distribution of some benefits, such as goats, where more female benefit, points to the prioritisation of women in the distribution of this benefit see Table 5.6.

**Table 5.6: Types of benefits accessed by gender**

<b>Benefits Accessed</b>	<b>Males %(n=219)</b>	<b>Females %(n=219)</b>	<b>Total %(n=219)</b>
Education	46	40	86%
Water	55	45	100%

Employment	8	9	18%
Hammer Mill	9	6	15%
Farming Inputs	5	5	11%
Goats	4	7	11%

Source: Field Data (2023)

#### 5.4.4 Community perception of the fairness of the distribution of benefits

Respondents were asked to rate their level of agreement with various statements regarding the fairness of benefit distribution by Luangwa Community Forest Projects (LCFP) on a scale of 1 to 5, where 1 is "strongly disagree" and 5 is "strongly agree." The statements included: satisfaction with payment methods, fairness of benefits relative to the time, effort, and financial costs invested, satisfaction with the timing of conservation fee payments, perceptions of carbon project implementers retaining most of the proceeds from carbon credit sales, and the distribution of material benefits between poor and wealthier community members.

The study findings, presented in Figure 5.6 reveal significant insights into the community's perceptions of the fairness of benefit distribution from the Luangwa community Forest Project (LCFP). When asked about their satisfaction with the payment methods offered by BCP, a considerable number of respondents expressed dissatisfaction. Specifically, 58% of respondents strongly disagreed (32) and disagreed (94) and 22% (48) remained neutral. Only 31 respondents (14%) agreed, and 14 respondents (6%) strongly agreed. This aligns with the qualitative feedback, where focus group discussants mentioned that benefits are not directly paid to individuals but are instead provided mainly through community-driven projects such as boreholes and schools. While such developments are appreciated, they do not always address the pressing day-to-day needs of individuals. As one male discussant expressed:

*"The conservation fees come to us through community projects, not directly to individuals, which is a problem because we can't feed our families with some of the projects they prioritize because they don't meet our immediate needs."*

This sentiment reflects a desire among some community members for more direct, tangible economic benefits that can immediately improve household livelihoods, in addition to long-term communal infrastructure.

In terms of the perceived fairness of the benefits relative to the time, effort, and financial investment required by the respondents, the results also indicate significant dissatisfaction. A total of 17 respondents (8%) strongly disagreed, and 77 respondents (35%) disagreed, while 75 respondents (34%) were neutral. Only 36 respondents (16%) agreed, and 14 respondents (6%) strongly agreed. This distribution suggests that a large portion of the community feels the benefits they receive are not proportionate to the efforts they invest such as time, labor, resources, and participation (opportunity cost), which points to potential concerns about the equity of the benefit distribution system.

The project is also seen to benefit the same people especially those close to the leaders at CFMG level and above. As expressed in one focus group discussant's view on what they would like to see change going forward:

*"The project leaders repeatedly allocate benefits to the same individuals, which makes it challenging for us to fully appreciate the initiative. During meetings, certain participants consistently dominate the discussions and influence decisions, while others, including myself, feel that our contributions are not given equal consideration. This issue needs to be addressed to ensure we achieve the project's goals. The project is intended to benefit the entire community, not just a select few."*

Satisfaction with the timing of conservation fee payments also emerged as a point of concern. A total of 22 respondents (10%) strongly disagreed, and 81 respondents (37%) disagreed, indicating a substantial portion of the community is dissatisfied with the timing of these payments. Additionally, 62 respondents (28%) were neutral, while 47 respondents (21%) agreed and 7 respondents (3%) strongly agreed. These findings highlight that nearly half of the respondents are unhappy with the timing of the conservation fee payments, suggesting that delays or issues with the payment schedule may be contributing to the community's dissatisfaction. In the qualitative responses, key informants provided insights into the community's struggles with the lack of timely and direct benefits.

The project also is seen to prioritise forest conservation over community livelihoods. Senior Government staff explains: *“The ultimate goal of the carbon market projects under the Paris Agreement is the reduction of greenhouse gases therefore what must win is the environment because that is the original design of the programme.”* As such, BCP and the government find themselves emphasizing forest conservation over community livelihoods as a primary goal and top priority.

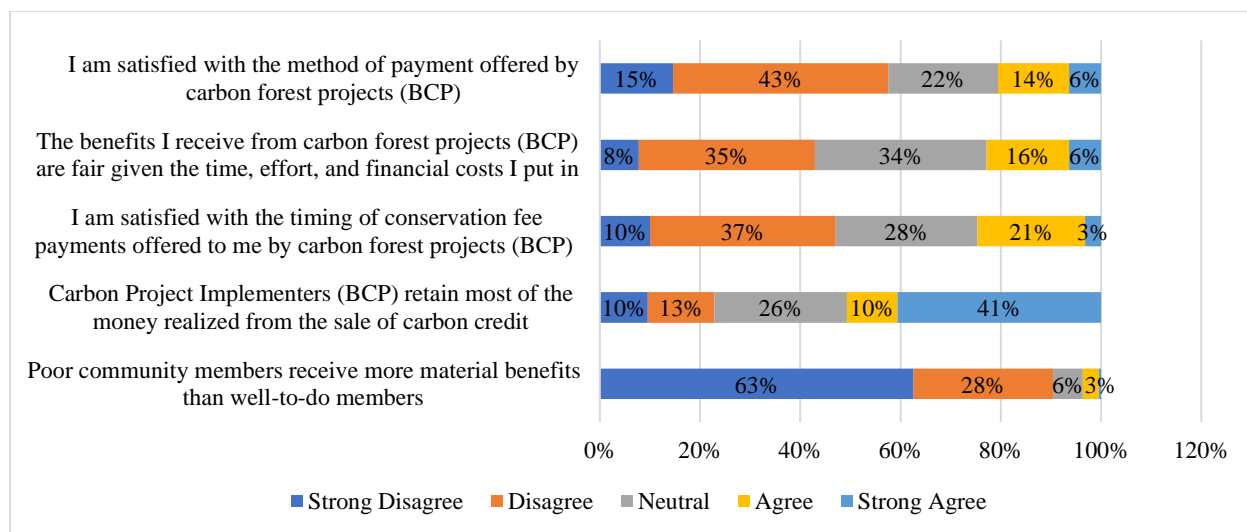
Further concerns were raised about the distribution of proceeds from the sale of carbon credits. A significant 89 respondents (41%) strongly agreed with the statement that carbon project implementers retain most of the conservation fees, and 22 respondents (10%) agreed. In contrast, only 21 respondents (10%) strongly disagreed, 29 respondents (13%) disagreed, and 58 respondents (26%) were neutral (Figure 5.6). This indicates that a majority of the respondents perceive a lack of transparency regarding how the proceeds from the carbon credits are distributed, leading to concerns about the fairness of financial allocations. The male respondent points out that the project decisions are made by a set of stakeholders, including the CRB and VAG, but the benefit-sharing process seems to be viewed as disconnected from the actual needs and desires of the community, contributing to the perception of inequity.

*“BCP involves communities in the entire process, from receiving the carbon fees to identifying and implementing activities. However, the benefits we receive often do not align with our priority needs. Sometimes we have been told that they cannot implement our first priority due to their capital-intensive nature, leaving those who relied on the forest for their livelihood struggling to find alternatives for their losses,”* said a key informant from the study area.

Finally, when asked whether poorer community members receive more material benefits than wealthier members, the majority of respondents disagreed with the statement. A total of 137 respondents (63%) strongly disagreed, and 61 respondents (28%) disagreed, suggesting that the community perceives the material benefits to be distributed more equitably. Only 13 respondents (6%) were neutral, and just 7 respondents (3%) agreed, indicating that the community largely does not believe that poorer members are unfairly favored in the distribution of material benefits (Figure 5.6). This is contrasted with some of the qualitative concerns about the concentration of benefits among influential leaders. For instance, the female respondent in the focus group emphasized that *“even the meetings, the same people are the ones that attend,”* suggesting that those who are

already in leadership positions, like village headmen or those close to the CFMG, might be receiving more opportunities for benefit allocation.

Overall, the findings show community’s dissatisfaction with perceived benefits gained from the LCFP as being less fair. Community members feel disconnected, with benefits concentrated among a small group and delays in payment timing. Additionally, the focus on forest conservation over community livelihoods, along with a lack of transparency, contributes to perceived inequity.



**Figure 5.7: Community perception of the fairness of the distribution of benefits**

Source: Field Data (2023)

### 5.5 Maximising benefits and minimising costs of the Luangwa community forest project

The government and BCP have engaged and involved communities in the project to maximise benefits and minimise costs. Table 5.7 summarise the accountability and equitable distribution of benefits efforts in the LCFP in Mpanshya chiefdom.

**Table 5.7: Accountability and equitable benefit distribution efforts in the LCFP**

Category Type	Accountability Efforts	Equitable Distribution Efforts
Community Engagement	Regular community meetings and need assessments to involve stakeholders in decision-making regarding project activities.	Needs assessment conducted to ensure project activities align with community priorities. Community is involved in creating work plans and budgets.

Grievance Redress Mechanism	A redress mechanism for addressing grievances from community members or stakeholders.	Ensures that concerns about project activities are addressed and that distribution of benefits is transparent.
Monitoring and Reviews	Regular monitoring checks and reviews with partners to assess project progress and take appropriate actions against identified gaps.	Monitoring activities include evaluating whether the benefits distribution aligns with community needs and priorities.
Accountability of Implementers	Government ensures that implementers comply with MoUs, and any deviations are addressed through regular reviews and meetings.	The government ensures that implementers' activities align with the agreed-upon benefit-sharing mechanisms and community needs.
Benefit Sharing Mechanism	Government ensures proceeds from carbon credits are shared equitably among local stakeholders, acknowledging their role in emission reduction.	A benefit-sharing mechanism rewards community involved in the project by ensuring they share in the benefits from carbon credit revenue.
Involvement of Traditional Leadership	Traditional leaders oversee benefit distribution and ensure it aligns with community needs.	Chiefs ensure that at least one identified need is met, providing oversight to ensure that distribution is fair and transparent.
Transparency & Financial Accountability	Project activities, such as hammer mills revenue, are supposed to be communicated clearly to the community, but issues of transparency exist.	There is a mistrust in the financial transparency of benefit distribution, with some community members perceiving mismanagement of funds.
Community Perception of Fairness	Some community members express dissatisfaction with how benefits are distributed, feeling excluded or misinformed.	A lack of clear communication and transparency about financial use has led to feelings of inequity and mistrust among community members.

Source: Field Data (2023)

However, Luangwa Community Forest Project (LCFP) suffers significant challenges related to transparency, financial accountability, and the equitable distribution of benefits. Despite the project's implementation of accountability mechanisms such as regular monitoring, grievance redress systems, and MoU agreements, the community continues to express dissatisfaction with the way the project is managed, particularly regarding the lack of transparency in financial dealings and the inadequacy of the benefits provided.

One of the major concerns raised by community members is the lack of financial transparency. Multiple respondents, including traditional leaders and community members, have expressed frustration over the failure of the project's implementers (BCP) to disclose key financial information, particularly the revenues generated from carbon credits. As one traditional leader mentioned;

*“Some of the challenging experiences we have had with the carbon project implementer is their failure to disclose to us the amount of money they make from our community forest... the carbon procedure is still not very clear to us, and this is one of the big issues we are having with our community members to accept and fully adhere to the rules of the project.”*

This lack of transparency has led to confusion and distrust, with many community members continuing to engage in environmentally harmful practices such as charcoal production because they feel the benefits are insufficient. The frustration is further compounded by repeated requests for financial clarity, with one respondent noting, *“In almost all the meetings we have attended we have always asked them how much they make from carbon credits, but they do not tell us. They do not even want to talk about it.”*

The concerns about financial transparency are not just about disclosure but also about the adequacy of the benefits the project offers. The community was led to believe that carbon credits would provide an alternative income source to replace traditional forest-based livelihoods such as charcoal production. However, the benefits provided so far—such as schools and boreholes—have not met the community's expectations. As a 32-year-old male respondent shared:

*“We were told not to rely on forest products like charcoal for income because the project will provide the income, but we have not yet received any. All they tell us is that the forest we are protecting is not big enough to generate enough money to feed everyone...”*

This statement highlights the disconnect between the promises made by the project and the reality experienced by the community. The lack of immediate, tangible benefits has left many individuals disillusioned, particularly as they face pressing challenges such as droughts and poor agricultural yields. The community members have emphasized that they need *"genuine projects that address our real needs"* and that the current offerings—while important—are not enough to replace the income from the forest. A respondent noted, *"They give the communities things like boreholes and schools. But the question is: will we eat schools and boreholes? Are these the things that can replace what we used the forest for?"*

The community's desire for more relevant benefits is echoed by traditional leaders and other stakeholders who call for the implementation of livelihood projects that directly address the community's economic needs. One traditional leader stated:

*"I would want to see that our implementing partners should support livelihoods projects that will address the real needs of the people. Their livelihood should aim at reducing poverty, improving local food security, and providing new sustainable alternative sources of income."*

There is a clear call for more targeted interventions, such as skills training programs, savings and loans schemes, or alternative livelihood projects, that would empower community members and provide them with sustainable income sources.

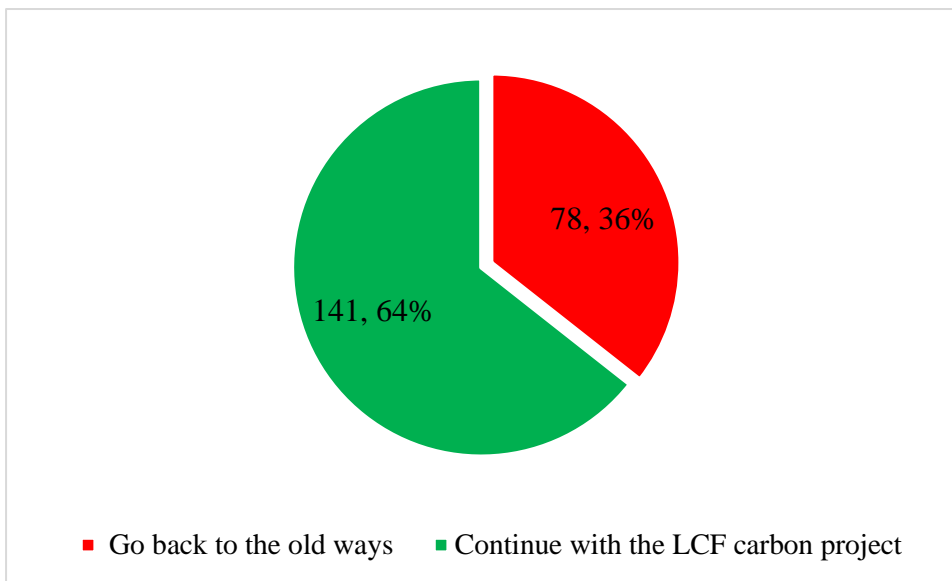
The disconnect between the project's goals and the community's immediate needs has also hindered the willingness of community members to fully comply with the project's conservation rules, such as the prohibition on timber logging and charcoal production. As one discussant pointed out, *"The benefits are visible but not adequate to completely stop us from illegal mining of gold, hunting, and charcoal production, which are the primary sources of income in this area."* The community continues to rely on these activities for income, as the benefits offered by the project are seen as insufficient to replace the livelihood that the forest once provided.

In addition to concerns about the adequacy of benefits, the lack of clarity around how funds are being allocated and used remains a significant issue. Community members are anxious to know how much revenue the project generates and how it is spent. As a traditional leader highlighted, *"We are not sure of the amount of carbon we sell; also we are not sure of the expenditure they put on the paper whether it's true that they spent that much or not."* This lack of financial transparency

undermines trust in the project and makes it difficult for the community to fully engage with the project's conservation efforts.

### 5.6 Community commitment to LCFP in Mpanshya chiefdom

The study sought to understand the level of commitment among respondents to continue with the Luangwa Community Forest Carbon Project (LCFP) or to discontinue and return to traditional methods of clearing trees and producing charcoal. As seen in Figure 5.7, the findings revealed that a majority of 64% (141 respondents) expressed a desire to continue with the project, while 36% (78 respondents) preferred to discontinue and revert to the old ways of tree clearing and charcoal production. This suggests that while most respondents are committed to the LCFP, a significant portion remains unsatisfied or skeptical about the project's benefits compared to traditional practices.



**Figure 5.8: Communities' commitment to LCF project**

Source: Field Data (2023)

#### 5.6.1 Relationship between Sex and commitment to LCFP

A Chi-Square Test of Independence was conducted with 219 respondents to understand the relationship between gender and commitment to the LCFP. The test result showed statistically significant ( $\chi^2 = 6.894$ ,  $df = 1$ ,  $p = 0.009$ ), showing that females are more likely to show commitment to the LCFP than men. This means the observed differences between males and females in their commitment to the LCFP are unlikely to be due to random chance (Table 5.8).

Females are more likely to show commitment to the LCFP, as evidenced by the higher-than-expected number of females wishing to continue and the lower-than-expected number of females wishing not to continue. The result aligns with a female participant aged 36 who said, *"We have really seen the benefits of this project because it has brought boreholes for us and now we able to draw water without walking long distances that's why we're committed to making sure this project continues."*

Conversely, males showed less committed to the LCFP, as fewer males than expected wish to continue, and more males than expected wish not to continue. The results align with a statement made by one male respondent during the focus group discussion:

*"The project is helpful in some areas but does not address the real needs of the people so I would rather focus on finding money to support my family. The project tends to focus on community projects but those can't replace essentials like food. They also say the money we realize from the project can't be given individually because the project area is small compared to the overall population of the chiefdom. But we don't really understand that reasoning because in other places like Shikabeta, people receive direct support like money, iron sheets, and bicycles. There needs to be a better way to address this, otherwise some people will keep turning to illegal activities like mining and charcoal burning to survive and meet their basic needs."*

**Table 5.8: Sex versus commitment to LCFP**

		Commitment to LCFP		Total	
		Yes	No		
Sex	Male	Observed Count	68	52	120
		Expected Count	77.3	42.7	120
	Female	Observed Count	73	26	99
		Expected Count	63.7	35.3	99
Total	Observed Count	141	78	219	
	Expected Count	141	78	219	

Source: Field Data (2023)

**Table 5.9: Chi square test and nominal association sex versus commitment to LCFP**

<b>Chi Square Test</b>			
	<b>Value</b>	<b>Df</b>	<b>Asymp. Sig. (2-sided)</b>
Pearson Chi-Square	6.894	1	0.009
<b>Nominal Association</b>			
Phi	0.177	-	0.009

Source: Field Data (2023)

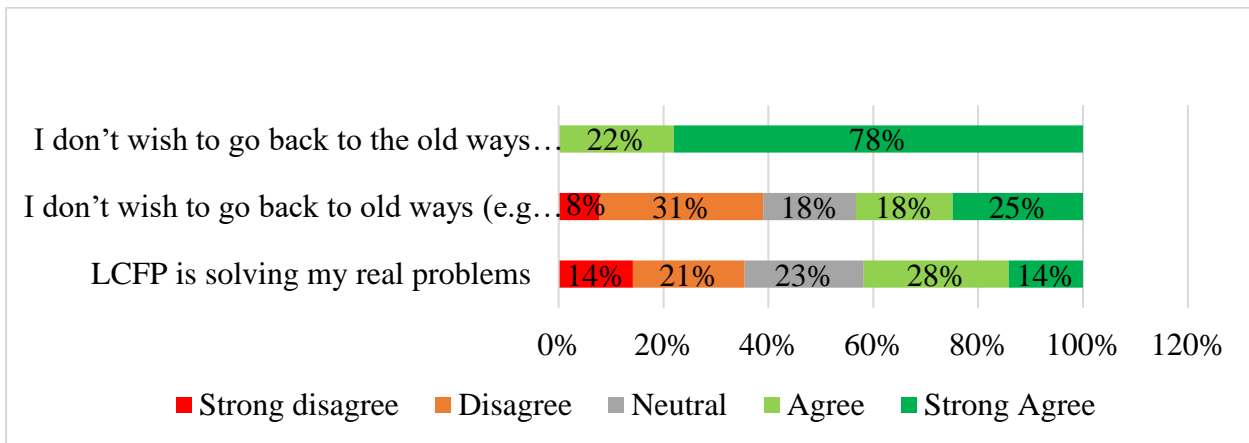
### **5.7 Reason for wishing to continue with the project**

Respondents who expressed a commitment to the LCFP were asked to provide reasons for their decision. They were specifically asked to agree or disagree with three predetermined statements. As in Figure 5.8, the first statement, “I don’t wish to go back to old ways (e.g., charcoal production),” found overwhelming support, 78% (110 respondents) strongly agreed, and 22% (31 respondents) agreed with the sentiment, indicating a strong preference for the LCFP over traditional charcoal production. This result underscores the respondents' commitment to the LCFP, likely driven by concerns about the environmental impact of traditional methods.

However, the responses to the statement, “I don’t wish to go back to old ways (e.g., charcoal production) but LCFP is not as beneficial as the old ways,” were more mixed. 43% (60 respondents) agreed or strongly agreed, suggesting that while these individuals recognize the benefits of the LCFP, they feel that the financial or practical rewards from charcoal production may be greater. Conversely, 39% (55 respondents) disagreed or strongly disagreed, implying that for many respondents, the benefits of the LCFP outweigh those of traditional practices, even if

they are not as immediately profitable. This divide points to the ongoing tension between the long-term sustainability of the LCFP and the short-term economic incentives offered by charcoal production.

Similarly, when respondents were asked whether the LCFP is solving their real problems, the responses were again mixed. This variability suggests that while some respondents view the LCFP as an effective solution to their challenges, others may feel that the project is not addressing their immediate needs or concerns. This mixed perception highlights an area where the LCFP could improve its outreach or support to better align with the practical needs of its participants.



**Figure 5.9: Reason for wishing to continue with the project**

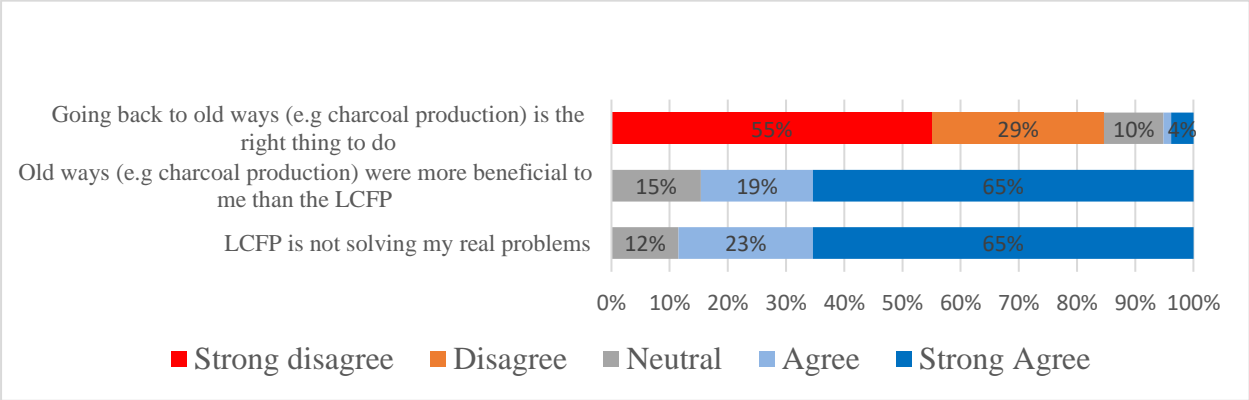
Source: Field Data (2023)

For the 36% (78 respondents) who wished to return to traditional methods, the responses were more telling. As can be seen in When asked if returning to the old ways of charcoal production was the right thing to do, 55% strongly disagreed, and 29% disagreed. Only a small fraction, less than 5%, agreed/strongly agreed with the statement, suggesting that most respondents understand the environmental harm caused by traditional practices.

When the respondents were asked if the old ways were more beneficial to them than the LCFP, the responses were starkly different. 65% strongly agreed, and 19% agreed that the old ways were more beneficial, which suggests that the respondents still perceive significant practical or financial advantages in traditional charcoal production compared to the LCFP. Only 15% remained neutral on this matter, indicating that for most respondents, the economic benefits of charcoal production (e.g., immediate income) outweigh the environmental and long-term sustainability advantages offered by the LCFP. This highlights a key challenge for the LCFP: while the project may have

environmental benefits, it does not yet provide comparable immediate economic returns, which makes the traditional method more appealing to these respondents.

Finally, regarding the statement "LCFP is not solving my real problems," 65% strongly agreed, and 23% agreed, while only 12% were neutral (see figure 5.9. This overwhelmingly negative perception suggests that many of the respondents who favoured returning to traditional practices feel that the LCFP is failing to address their immediate needs or concerns. This could include economic pressures, as the respondents may not find the benefits of the LCFP, such as carbon credits or forest conservation, to be as immediate or tangible as the financial rewards from charcoal production.



**Figure 5.10: Reasons for wishing to return to old ways**

Source: Field Data (2023)

## CHAPTER 6: DISCUSSION OF RESULTS

### 6.1 Introduction

This chapter provides the discussion. It discusses in detail the results presented in chapter five relating them to the research objectives and questions. It further discusses the implications of the findings for policy.

### 6.2 Roles of different local actors in the Luangwa community forest project

The findings revealed that there are multiple stakeholders involved in the project (BCP, FD, DNPW, CFMGs, traditional leaders, local authorities, and community members) each play a distinct role. This is mainly achieved through the Forest Act (2015), Wildlife Act (2014) and other related legislations. The findings are in line with Hearne *et al.*, 2020 who acknowledges the presence of several actors in voluntary carbon trading process, each with specific responsibilities spanning the stages from project design to the issuance and retirement of carbon credits. The high number of actors can be attributed to the various stages in the voluntary carbon trading process.

However, there were institutional overlaps and poor intersectoral coordination, particularly between FD and DNPW, undermining integrated conservation efforts. As a result, stakeholder coordination was persistent challenge for BCP. The overlaps were attributed to the fact that the targeted forest is the game management area where DNPW is traditionally dominate. These results align closely with the findings of Manda and Mukanda (2023) in RuConserve in Rufunsa district that REDD+-related roles are generally not well integrated across state agencies with unclear coordination between the Ministry of Green Economy and Environment, Department of Forest, Department of National Parks and Wildlife, and local authorities.

In addition, the findings suggest that all government departments (FD, DNPW, and local authority) struggles with insufficient funding and more dependence on BCP for operational expenses related to the project. Similarly, Manda and Mukanda (2023) observed that lack of resources prevents effective monitoring, enforcement of benefit-sharing mechanisms, and equitable outcomes in carbon trading initiatives, thereby exposing local communities to potential exploitation by developers.

Moreover, there was mistrust between BCP and other actors due to lack of transparency around the 3% government share from carbon credits. This lack of transparency mirrors findings by Mwansa (2023) and Carbon Market Watch (2023), who observes widespread opaque practices across various carbon developers for purposes of profit maximization.

### **6.3 Community costs of the Luangwa community forest project**

The key findings were that over half of respondents felt their ability to interact with the forest had been limited. Many expressed a sense of exclusion from natural spaces they once accessed freely. This perceived restriction goes beyond practical limitations and is deeply tied to cultural and emotional disconnection. The forest holds historical, spiritual, and subsistence significance for many community members, and the loss of access is viewed as a severing of these bonds. This suggests that conservation efforts, while aiming to protect biodiversity, may inadvertently be undermining local cultural identities and values—potentially reducing support for conservation in the long term.

Interestingly, the majority of community members did not view access to non-timber forest products (NTFPs) as explicitly restricted. However, a significant minority reported avoiding NTFP collection—not because it is officially prohibited, but out of fear that their actions could be misinterpreted as non-compliance with project rules. This reflects a critical disconnect between official project policies and community understanding. It points to a need for clearer communication, enhanced trust-building, and more participatory approaches to rule-making. Ensuring that community members fully understand what is allowed—and feel secure in acting within those boundaries—is essential for both compliance and community confidence. This aligns with Larson *et al.*, (2013) who argue that host communities' lack understanding of their rights can lead to exploitation.

Financial costs were another dominant theme in the data. While the project introduced new income-generating activities, a significant proportion of respondents viewed these alternatives as less profitable than their traditional livelihoods. Frustration largely stemmed from the limited benefits experienced at the household level. Although some community-wide infrastructure, such as boreholes, was provided, these were widely perceived as insufficient substitutes for lost income or restricted access to natural resources. This points to a disconnect between the design of project interventions and the economic realities faced by individual households. For many, the lack of personalized and sustainable livelihood options increased their vulnerability and pressure on forest resources. This finding echoes Pham *et al.* (2013) and Phuc *et al.* (2012), who observed that limited forest areas under carbon projects and insufficient carbon sales undermine the competitiveness of payment for ecosystem services (PFES) against more profitable alternatives. Kemerink-Seyoum *et al.* (2018) contend that climate financing compensation often falls short of covering livelihood

losses. The project's failure to address pressing community needs has potential leave forest-dependent households, such as charcoal producers, suffering. Wittman and Caron (2009) observe such cases in Guatemala and Sri Lanka, where carbon projects perpetuated poverty and social inequality among certain groups of people.

Social costs also emerged clearly in the form of increased conflict within communities. More than half of respondents associated the project with heightened tension, citing perceptions of favoritism and unequal distribution of benefits. These issues have led to disengagement and, in some cases, open resentment. The sense that some individuals or groups were privileged over others eroded trust and raised questions about the fairness and transparency of project governance. This confirms with USAID (2019), which observes tension and distrust in different LCFP sites due to a limited understanding of carbon payment calculations.

Governance-related concerns further contributed to negative perceptions. While enforcement mechanisms were generally regarded as fair, inconsistencies in implementation and poor communication were frequently noted in line with USAID (2019). Although the majority did not view the penalties for non-compliance as overly harsh, a notable minority did express concern about selective enforcement and perceived bias. Such perceptions may damage the project's legitimacy and foster resistance or non-cooperation, particularly if people feel that rules are applied unequally.

In addition, internal conflicts were also apparent, with 54% of respondents perceiving the project as fostering divisions within the community due to unequal access to benefits and a lack of transparency and understanding of benefit-sharing mechanisms.

#### **6.4 Community benefits of the Luangwa community forest project**

One of the more serious findings involved long-term benefit-sharing arrangements that overwhelmingly favoured the developer. Only 16% of carbon credit revenue was controlled by the community, with no clear contractual terms allowing the community to withdraw if the developer failed to meet obligations. This arrangement effectively reduced communities to passive recipients rather than equal stakeholders, raising concerns of carbon exploitation or "carbon piracy."

Political dynamics within the community further complicated benefit sharing. The study found that the project indirectly reinforced existing power structures, with political patronage and informal influence affecting decisions within the CFMG. In particular, the local chief received a

disproportionately large share of project profits—3% of net profit and 2% of gross sales—making her the project’s largest single beneficiary at the community level.

While traditional leaders play an important role in governance, the lack of formal clarity around this fund and its intended purpose raises concerns about fairness and accountability. Historically, chiefs received symbolic tributes or small royalties, but the scale of modern financial benefits raises important questions: Is the current allocation justified by tradition? Who decided on the share? Why has it remained unchanged? And what would constitute a fair and accountable share in today’s context?

These questions are difficult to address openly due to cultural sensitivities, yet they remain critical for ensuring equity. Similar patterns of elite capture have been observed in forest carbon projects in Tanzania (Vyamana, 2009) and Madagascar (Browne & Razafiarimanana, 2022), where traditional authority figures received disproportionate benefits.

Ideally, external actors such as government agencies and BCP could have played a more active role in mitigating these issues. However, the chief’s central role in approving the project—both culturally and politically—likely led to developers prioritizing her satisfaction. In practice, her support was essential to community buy-in, and her influence made it difficult for others to question project decisions or advocate for alternative arrangements.

Findings also revealed that financial benefits were primarily delivered through employment opportunities—such as hiring local community scouts—and through alternative income-generating activities like goat rearing, conservation agriculture, and hammer milling. These outcomes support Atela *et al.* (2015), who argue that carbon projects can provide financial incentives that help reduce poverty and improve livelihoods.

Beyond financial gains, the project also contributed to human capital development. Capacity-building activities included training for lead farmers in climate-smart agriculture, equipping community scouts with forest protection and law enforcement skills, and strengthening the Mpanshya Community Forest Management Group (CFMG). These results align with Herra *et al.* (2019), who emphasize that carbon investments often foster skills in conservation and sustainable land use.

In terms of cultural related benefits, the project helped preserve culturally important forest sites, such as shrines, and communities retained access to these for traditional practices. The project also

appeared to shift local values toward forest conservation, with 64% of respondents expressing a personal commitment to protecting forests. However, fear of penalties—even in areas where cultural access was permitted—led some community members to scale back traditional forest-related practices, affecting cultural identity and heritage.

Political related benefits were also enhanced through the project. The CFMG gained organizational strength and financial support, allowing it to play a more active role in local decision-making. This included advocating for community needs beyond conservation, such as borehole drilling and classroom construction. Notably, the project also opened space for voices outside traditional leadership structures, allowing more inclusive participation in community governance.

Moreover, the findings reveal a mixed picture of community development outcomes, with notable success in basic service delivery contrasted by challenges in equitable benefit distribution and governance.

Access to education and clean water emerged as the most impactful and widely appreciated interventions. The construction of classroom blocks significantly reduced school absenteeism, especially for children in remote areas, and was praised by both men and women. Boreholes provided 100% access to clean water, directly improving health and daily life. These initiatives demonstrated how well-implemented, community-driven infrastructure can effectively meet essential needs.

In contrast, other livelihood benefits—such as hammer mills, farming inputs, and goats—were limited in reach and perceived as unfairly distributed. With uptake ranging from only 10–15%, many community members felt excluded, citing favoritism toward well-connected individuals. While there were signs of gender inclusion, the scale and impact were too small to counter broader inequity.

Concerns about governance were widespread. Over half of respondents expressed dissatisfaction with benefit distribution methods, particularly the timing and indirect nature of conservation payments. Transparency issues further fueled distrust, with many believing project implementers retained most carbon credit proceeds. Youth, in particular, voiced frustration over lost forest-based incomes and a lack of viable alternatives, sometimes leading to theft and insecurity.

## **6.5 Maximising benefits and minimising costs of Luangwa community forest project**

The study examined how forest carbon projects aim to balance the maximization of community benefits with the minimization of social and economic costs. It found that the project had implemented various safeguards and standards focused on transparency, financial accountability, and equitable benefit distribution. These efforts are consistent with the findings of Larson *et al.* (2013) and Poudyal *et al.* (2016), who recognize that many carbon project developers incorporate mechanisms to support sustainable community benefits.

However, one of the most crucial elements for ensuring meaningful benefits—genuine community participation—was found to be largely symbolic. Decision-making was primarily driven by Biocarbon Partners (BCP), the Department of National Parks and Wildlife (DNPW), the Forestry Department, and the Mpanshya Community Forest Management Group (CFMG), with minimal involvement from ordinary community members. This aligns with concerns raised by Rumbul, Parsons, and Bramley (2018) and the European Commission (2022), who warn against "community-washed" projects that give the appearance of inclusion without real power-sharing.

The project emphasized upward accountability to government institutions, but lacked sufficient mechanisms for downward accountability to the communities themselves. As a result, communities felt they had little ability to hold project implementers accountable. This reflects earlier observations by Sunderlin and Sills (2012), who note that developers often fail to meet their obligations to host communities without facing consequences.

These challenges contributed to low overall satisfaction with the project, aside from areas such as education and clean water infrastructure. Notably, 36% of respondents expressed a desire to return to traditional forest use practices—such as charcoal production—despite their environmental unsustainability. This sentiment highlights a risk to the project's long-term sustainability. It is consistent with Aggarwal (2020) and Regan *et al.* (2020), who argue that when carbon projects offer limited or unpredictable returns, communities are less motivated to participate. The volatility of carbon markets further undermines the project's reliability as a sustainable source of income (Pan *et al.*, 2021).

The study also identified major concerns around transparency, particularly regarding the proceeds from carbon credit sales. Communities, including traditional leaders, reported being left out of critical financial information. These findings mirror those of Mwansa (2023) and Carbon Market Watch (2023), who document widespread opacity in carbon project finances across multiple contexts.

## **6.6 Implications of policy**

The findings highlight several key policy implications for improving the legal and institutional frameworks governing carbon trading in Zambia. Strengthening the country's legal framework is essential to optimize the benefits of carbon projects while safeguarding host communities from exploitation. Current gaps, such as the lack of inclusive benefit-sharing mechanisms and inadequate legal protections, leave communities vulnerable to powerful developers. Policies should prioritize implementing clear safeguards, transparency, and oversight to prevent exploitation and align with global standards, such as Article 6 of the Paris Agreement. Ensuring that communities are active and informed participants in decision-making processes is also vital for achieving equitable outcomes.

Institutional coordination and capacity must also be enhanced to ensure the effective implementation and governance of carbon projects. Fragmented mandates among the Department of National Parks and Wildlife, the Forestry Department, and local authorities, combined with limited funding, hinder the enforcement of benefit-sharing mechanisms and project regulation. Policymakers should clarify institutional roles, improve intersectoral coordination, and allocate resources for capacity-building at district levels. Strengthening institutional support will help mitigate governance challenges and foster better outcomes for local communities.

The lack of transparency and accountability within carbon projects further underscores the need for reform. Communities often remain unaware of how benefits are calculated or distributed, leading to distrust and dissatisfaction. Requiring developers to disclose information about carbon credit sales and benefit-sharing agreements can promote downward accountability and build community trust. Additionally, ensuring that Free, Prior, and Informed Consent (FPIC) practices are genuinely participatory and not tokenistic is critical for empowering local communities and addressing grievances.

Safeguarding the livelihoods of forest-dependent communities should be a central policy focus. Restrictions on traditional practices like charcoal production, without providing viable economic

alternatives, place undue financial strain on vulnerable households. Policymakers must design inclusive compensation mechanisms to offset livelihood losses while promoting sustainable practices. This requires aligning project benefits, such as infrastructure development, with the immediate priorities of local communities, such as food, clothing, and shelter.

Moreover, policies should address power imbalances and prevent elite capture within carbon projects. The disproportionate allocation of benefits to traditional leaders exacerbates inequalities and marginalizes vulnerable groups. Transparent benefit-sharing mechanisms must prioritize equitable distribution and prevent exploitation by developers or local elites. Strengthening accountability systems will ensure that all community members have a fair stake in project benefits.

Finally, enhancing the economic viability and sustainability of carbon projects is crucial. Volatility in carbon prices and limited financial returns discourage long-term community engagement. Policymakers should promote diversified income-generating activities and reliable financial incentives to make carbon projects more attractive and sustainable for host communities. By addressing these systemic gaps, Zambia can create a more equitable, transparent, and sustainable framework for carbon trading.

## **CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS**

### **7.1. Introduction**

This chapter gives the conclusions and recommendations drawn from the study. This chapter is divided into two sections. The first section presents the conclusion of the study and the last section presents the recommendations

### **7.2 Conclusion**

The Luangwa community forest project involves several actors, most of whose roles are well-defined, except for the government stakeholders. The relationships among these actors are often marked by mistrust, particularly concerning benefit-sharing arrangements. In terms of benefits, the project has delivered measurable benefits: it has created employment opportunities, provided basic infrastructure like clean water and schools, and contributed to forest conservation and capacity-building within communities. It has also strengthened the organizational role of groups like the Mpanshya Community Forest Management Group (CFMG) and helped raise awareness around climate-smart practices.

However, it has also imposed significant costs to the host communities and in many respects, outweigh the perceived benefits. Communities have lost access to culturally and economically significant forest resources, with many feelings excluded, mistrustful, and financially disadvantaged by the project developer, as evidenced by the disproportionately small share (16%) allocated to communities. The project has also deepened local inequalities through unclear governance structures, elite capture, and inadequate benefit-sharing mechanisms. Furthermore, the lack of transparency and limited community participation in decision-making have undermined trust and ownership factors that are essential for long-term sustainability.

In essence, while the project has demonstrated the potential for positive impact, these gains are undermined by governance failures, social inequities, and financial uncertainties. Without meaningful reforms, the Luangwa project risks alienating the very communities it aims to support and protect.

### **7.3 Recommendations**

- (i) Government should mandate full disclosure of carbon revenue flows, establish independent oversight of fund distribution, and implement clear, community-endorsed guidelines for equitable sharing of proceeds.
- (ii) Government should set minimum percentage of carbon revenue that should be guaranteed for direct household-level benefits, not just community-wide infrastructure.
- (iii) All existing benefit-sharing mechanisms should be reviewed by government to ensure fairness and reduce exploitation because the current benefit-sharing model disproportionately favors project developers and traditional elites, leaving most community members disillusioned.

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## APPENDICES

### Appendix I: Questionnaire

#### Introduction

Good day. My name is -----

I am a Master of Science student in Environment and Natural Resource Management at the University of Zambia. I am conducting a study titled: The costs and benefits of hosting emerging carbon market projects on local communities. Lessons from the Luangwa community forest project in Mpanshya chiefdom of Rufunsa District, Zambia. The study will help add to the limited body of knowledge on the costs and benefits of carbon trading projects in developing countries in sub-Saharan Africa, help the implementers understand the costs and benefits of their interventions on local communities, and also help policymakers and policy analysts design carbon trade mechanisms that puts into consideration the real needs of the local communities. You are invited to take part in the study. The information gathered will be used solely for academic purposes, and the researcher will keep it strictly confidential. Thank you for participating in this survey.

#### Section 1: Demographic and Social Characteristics

1. Sex: Male/Female
2. Age:
3. Education
4. How long have you been in this village?

#### Section 2: Benefits of Carbon Forest Projects to Communities

5. Which of the following actors involved in the Luangwa community forest project (LCFP)?

Actors	Yes	No
Local authority		
BioCarbon Partners (BCP)		
Forestry Department		
Department of National Parks and Wildlife		
Chiefdom Traditional Authorities		

Community forest management groups (CFMGs)		
Community Members		

6. Which of the following benefits have you received from the forest carbon projects (BCP) per year?

Benefits	Yes	No
Employment (jobs or equivalent)		
Education (schools or equivalent)		
Water (boreholes or equivalent)		
Hammer mills		
Farming inputs		
Any other		

7. To what extent are benefits meeting your greatest needs?

Benefits	Extremely low	Very low	Low	Moderate	High	Very high	Extremely high
Employment (jobs or equivalent)							
Education (schools or equivalent)							
Water (boreholes or equivalent)							
Hammer mills							
Farming inputs							
Any other							

**Section 3: Community Members' Perceived Costs of LCF Carbon Project**

8. How would you agree or disagree with the following statements? (use this scale: 1= Strongly disagree 2= Disagree 3= Neither agree nor disagree 4 Agree 5 Strongly agree)

Losses	Scores				
	1	2	3	4	5
Limited non-timber forest products (NTFP) such as wild fruits					
Limited freedom to interact with the forest					
Internal conflict within/among communities					
New livelihoods are not as lucrative as old ones					
Severe punishment for breaking the rules					

**Section 4: Community Perception of the Fairness of the Distribution of Benefits**

9. How would you agree or disagree with the following statements? (use this scale: 1= Strongly disagree 2= Disagree 3= Neither agree nor disagree 4 Agree 5 Strongly agree)

Benefits	Scores				
	1	2	3	4	5
Poor community members receive more material benefits than well-to-do members					
Carbon Project Implementers (BCP) retain most of the money realized from the sale of carbon credit					
The benefits I receive from carbon forest projects (BCP) are fair given the time, effort, and financial costs I put in					
I am fine with the type of benefits offered by LCF carbon projects					

Poor community members receive more material benefits than well-to-do members					
Carbon Project Implementers (BCP) retain most of the money realized from the sale of carbon credit					
The benefits I receive from carbon forest projects (BCP) are fair given the time, effort, and financial costs I put in					

### Section 6: Community Commitment to LCFP in Mpanshya Chiefdom

10. Would you wish to go back to the old ways of interacting with the environment or continue with carbon forest project?

11. If you wish to go back, how would you agree or disagree with the following statement (use this scale: 1= Strongly disagree 2= Disagree 3= Neither agree nor disagree 4 Agree 5 Strongly agree)

Statements	Scores				
	1	2	3	4	5
I would wish to go back to the old ways, forest carbon project is not really helping the my situation					
I would wish to go back to the old ways because they were more beneficial to me than this forest carbon project					
I would wish to go back to the old ways because it's just the right thing to do					

12. If you do not wish to go back, how would you agree or disagree with the following statement (use this scale: 1=Strongly disagree 2= Disagree 3= Neither agree nor disagree 4=Agree 5=Strongly agree)

Losses	Scores				
	1	2	3	4	5
I do not wish to go back to the old ways, forest carbon projects is really beneficial					

I don't wish to go back to the old ways though forest carbon project is not really beneficial and helping the my situation					
I don't wish to go back to the old ways because they are bad for the environment					

## **Appendix II: Interview Guide for Biocarbon Partners**

1. Who are the carbon trading actors in LCFP?
2. What is the role of each of the identified carbon trading actors?
3. How do communities benefit from carbon trading projects in LCFP?
4. How do you ensure active participation of community members in carbon project?
5. How is the money generated from carbon credit sales shared between the actors including local communities and BCP?
6. How do you ensure equitable distribution of conservation funds/fees among community members?
7. How do you determine the amount of conservation funds and number of community projects to be given to the community and implemented respectively?
8. How do community members raise their complaints or grievances?
9. How do you ensure that the expectations of community members are met?
10. How do you ensure transparency and accountability to community members?
11. What are some of the major challenging experiences have you had with community?

### **Appendix III: Interview Guide for Traditional Leaders**

1. What is the role of traditional leaders in carbon project?
2. What are the benefits of carbon trading projects in your community?
3. How are the benefits distributed?
4. How do you ensure equitable distribution of the benefits in your community?
5. How are the decisions made to carry out projects in your community?
6. How do you ensure the decision made by carbon projects implementers reflects that of the community?
7. What good experiences do have with carbon projects in your community?
8. What are some of the challenging experiences have you had with the community members as well as the carbon projects implementers?
9. What are the some of the changes would you want to see in the way carbon projects are implemented?

#### **Appendix IV: Interview Guide for the Ministry of Green Economy and Environment**

1. What are the direct benefits of government from carbon projects?
2. How does government ensure equitable distribution of the money generated from carbon projects between implementers and community?
3. How does government ensure community accountability of carbon projects implementers?
4. What are the major legal and policy issues affecting the responsiveness of carbon project implementers to community needs?

## **Appendix V: Interview guide for Carbon Forest Experts**

1. Who are the carbon trading actors in LCFP
2. What is the role of each of the identified carbon trading actors?
3. Who are the winners and losers in carbon projects among the actors and why?
4. In view of the social power relations, how can exploitation of weaker actors be avoided?
5. What are the major legal and policy issues affecting the responsiveness of carbon project implementers to community needs?
6. How can carbon projects minimize losses and maximize benefits among community members?
7. How should benefit-sharing mechanisms (conservation fees) be developed to satisfy community expectations and desires?
8. What are some of the major gaps in the current carbon trading model in Rufusa conservancy
9. What are the implications of these gaps?
10. How can these gaps be addressed?

## **Appendix VI: Focus Group Discussion Guide Community members (FGDs)**

1. What community projects have carbon forest implementers carried out in this community?
2. How are these projects helping you?
3. How do you participate in the Carbon Forest Projects in this community?
4. Why do you participate?
5. How has carbon forest projects changed your livelihoods?
6. How are conservation fees from carbon projects shared among community members?
7. How are community projects shared among villages?
8. How do you decide the type of projects to be implemented when, where, how, and who?
9. What challenging experiences do have with carbon project implementers?
10. What major things should Carbon Forest Projects implementers do that they are not doing in this community? Explain why?
11. What major things should Carbon Forest Projects implementers stop doing that they are doing in this community? Explain why?
12. What do you miss about those days before carbon projects were introduced?
13. How do you raise your complaints or grievances?

## Appendix VII: Ethical Clearance



### THE UNIVERSITY OF ZAMBIA DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road Campus | P.O. Box 32379 | Lusaka10101 | Tel: +260-211-290 258/291 777  
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#### APPROVAL OF STUDY

***IORG No. 0005376***  
***NASRECREC IRB No. 00006465***

25<sup>th</sup> August, 2023

**REF NO. NASREC-2023- JUL – 005**

Ms.M ubiana Mushimbei,  
The University of Zambia,  
School of Natural Sciences,  
P.O. Box 32379,  
**LUSAKA.**

Dear, Ms. Mubiana Mushimbei,

**RE: “THE COSTS AND BENEFITS OF HOSTING EMERGING CARBON MARKET PROJECTS TO LOCAL COMMUNITIES. LESSONS FROM LUANGWA COMMUNITY FOREST PROJECT IN MPANSHYA CHIEFDOM RUFUNSA DISTRICT, ZAMBIA”**

Reference is made to your protocol dated as captioned above. NASREC resolved to approve this study and your participation as Principal Investigator for a period of one year.

<b>REVIEW TYPE</b>	<b>ORDINARY REVIEW</b>	<b>APPROVAL NO.</b> <b>NASREC-2023 JUL - 005</b>
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Approval and Expiry Date	Approval Date: 25 <sup>th</sup> August , 2023	Expiry Date: 24 <sup>th</sup> August, 2024
Protocol Version and Date	Version - Nil.	24 <sup>th</sup> August, 2024
Information Sheet, Consent Forms and Dates	<ul style="list-style-type: none"> <li>English.</li> </ul>	To be provided
Consent form ID and Date	Version - Nil	To be provided
Recruitment Materials	Nil	Nil
Other Study Documents	Questionnaire.	

Specific conditions will apply to this approval. As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study sponsors and other regulatory authorities will be informed.

### CONDITIONS OF APPROVAL

- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to NASREC within 5 days.
- All protocol modifications must be approved by NASREC prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to NASREC within 5 working days.
- All recruitment materials must be approved by NASREC prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. NASREC will only approve a study for a period of 12 months.
- It is the responsibility of the PI to renew his/her ethics approval through a renewal application to NASREC.
- Where the PI desires to extend the study after expiry of the study period, documents for study extension must be received by NASREC at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Documents received within 30 days after expiry will be labelled “late submissions” and will incur a penalty fee of K500.00. No study shall be renewed whose documents are submitted for renewal 30 days after expiry of the certificate.
- Every 6 (six) months a progress report form supplied by The University of Zambia Natural and Applied Sciences Research Ethics Committee as an IRB must be filled in and submitted to us. There is a penalty of K500.00 for failure to submit the report.
- When closing a project, the PI is responsible for notifying, in writing or using the Research Ethics and Management Online (REMO), both NASREC
- and the National Health Research Authority (NHRA) when ethics certification is no longer required for a project.
- In order to close an approved study, a Closing Report must be submitted in writing or through the REMO system. A Closing Report should be filed when data collection has ended and the study

team will no longer be using human participants or animals or secondary data or have any direct or indirect contact with the research participants or animals for the study.

- Filing a closing report (rather than just letting your approval lapse) is important as it assists NASREC in efficiently tracking and reporting on projects. Note that some funding agencies and sponsors require a notice of closure from the IRB which had approved the study and can only be generated after the Closing Report has been filed.
- A reprint of this letter shall be done at a fee.
- All protocol modifications must be approved by NASREC by way of an application for an amendment prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address or methodology and methods. Many modifications entail minimal risk adjustments to a protocol and/or consent form and can be made on an Expedited basis (via the IRB Chair). Some examples are: format changes, correcting spelling errors, adding key personnel, minor changes to questionnaires, recruiting and changes, and so forth. Other, more substantive changes, especially those that may alter the risk-benefit ratio, may require Full Board review. In all cases, except where noted above regarding subject safety, any changes to any protocol document or procedure must first be approved by NASREC before they can be implemented.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

On behalf of NASREC, we would like to wish you all the success as you carry out your study.

Yours faithfully,



*Dr. Mususu Kaonda*

**VICE-CHAIRPERSON  
THE UNIVERSITY OF ZAMBIA NATURAL AND APPLIED SCIENCES RESEARCH ETHICS  
COMMITTEE - IRB**

CC: Director, Directorate of Research and Graduate Studies  
Assistant Director (Research), Directorate of Research and Graduate Studies  
Assistant Registrar (Research), Directorate of Research and Graduate Studies